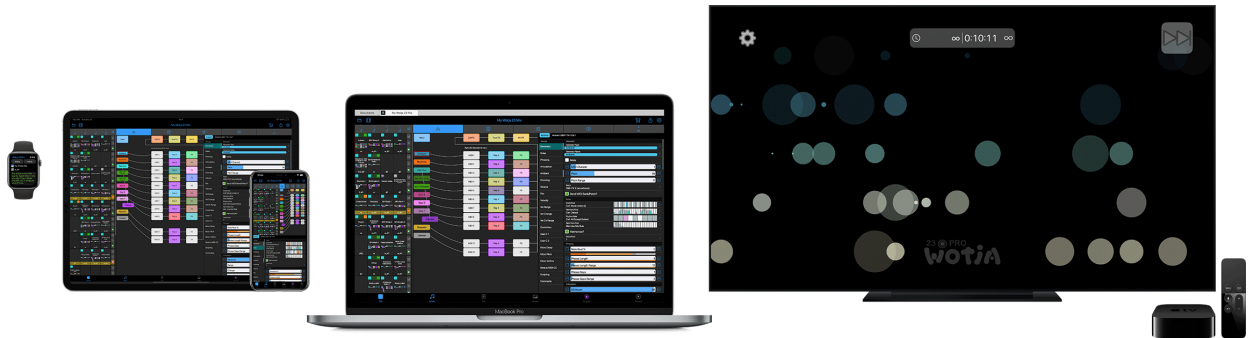


Wotja 23 User Guide [DOC ARCHIVE]

v23.14.0 | 23 Feature Set | PDF > Doc Archive


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Wotja is FREE for: Phone, Tablet, Laptop, Desktop, TV, Watch; **OS:** iOS, iPadOS, macOS, Windows, Android, tvOS, Android/Fire TV, watchOS; **Bundle:** AUv3/VST3 Host + AUv3/VST3 Plug-in

What is Wotja? |

Wotja (🔊) "whah-chah" [alt "wot-yah"; Siri "woa-chah"]) is a **FREE** and powerful **Generative Music & MIDI 'Creator Player System'**. It is lovingly developed by us at [Intermorphic](#) .

Use it to **CREATE & PLAY** live generative music, relaxing soundscapes, ambient drones, text-to-music melodies + more - and to do it all locally on your device, i.e. not in the cloud.

If all you want to do is to sit back and chill out to relaxing generative music - then you can! Simply **play a 1-tap 'Flow'** (a Flow is a succession of auto-generated **mixes** created in the **Flow Player**, akin to a local radio station just for you), or easily **create & play an Album**. Enjoy 30 mins play for **FREE!**

Wotja for Apple OS and Windows both include an App, which is also a **Plug-in Host**, and a Wotja Plug-in (either AUv3 for Apple or VST3 for Windows respectively). Wotja for Android is just an App.

Wotja operates by default in capable and powerful [Lite mode](#) - which is [FREE to use](#). If you want to do the max then there are a number of low cost options to [Go Pro](#).

[Actively developed & extended](#), and [our life passion](#) [↗](#), Wotja has a [distinguished provenance](#) [↗](#) stretching right back to 1992+ [SSEYO Koan](#) [↗](#), 2007+ [Noatiki](#) [↗](#) & [Mixtiki](#) [↗](#) etc. *and we have continued to evolve it ever since.*

Wotja includes 100s of editable [templates](#) and supports use of add-on [Paks](#). This User Guide also includes sections on the Wotja [WME](#) / [WAE](#) / [WSE](#) engines. With it and our [Tutorials](#) and [FAQs](#) you have all you need to begin your creative journey with Wotja.

How does Wotja work?

It is *way easier* to use Wotja than it is to describe how it works - and you can get going in seconds.

- See the [Quick Start](#) and [How does Wotja work?](#)

A good analogue is to consider how easy it is to drive a car vs having to know in great detail how every bit of a car works - *before you can drive it!*

The 'magic' in Wotja, with its powerful engines (music, audio & script), largely results from how we use 'chance' and randomization techniques (with [Schemas](#)) in combining 100s of included editable templates - and you can create/use your own schemas and templates, too.

That magic is a consequence of 30+ years of continuous improvement & extension (meaning our craft, passion and blood, sweat & tears!).

See also: [Music Mode Schematic](#).

- At the core of the Wotja Generative Music System are 4 main types of user-editable files:
 - [Wotja Template File](#) ("Template"; filetype: `.wotja_tp`);
 - [Wotja Schema File](#) ("Schema"; filetype: `.wotja_sc`);

- [Wotja Mix File](#) ("Mix"; filetype: `.wotja`);
- [Wotja Album File](#) ("Album"; filetype: `.wotja_al`).
- [Wotja Template File](#):
 - User editable Wotja Templates are used to populate Cells in Mix Files, and auto-population of Cells can be achieved through use of Schemas (below).
 - Each Wotja Template comprises a [Generator Network](#) of one or more [Generators](#) that generate MIDI notes/controller events, the Generators being any of those included in the [Wotja Music Engine \(WME\)](#).
 - Each Generator creates MIDI notes and events according to its [Generator Type](#), the settings of the [Rule Objects](#) it uses (e.g. [Scale](#), [Harmony](#), [Rhythm](#) and [Next Note](#)), as well as other related parameters like [Phrasing](#), [Chording](#) and [Articulation](#) etc.
 - Each Wotja Template also includes a [Wotja Audio Engine \(WAE\) Synth & FX Network](#) for each Generator, this being used to generate audio from that Generator's MIDI notes/events (use of the WAE is optional, and it can be turned off).
 - You can instead if you wish use [Hosted Plug-ins](#) or send the MIDI to a 3rd Party DAW/Synth for use by that.
 - Many Wotja Templates are built-in to Wotja, but they can also be exported from a Cell.
- [Wotja Schema File](#):
 - These are used to generate mix files, 'flows' and albums (all of which use Template) and many are built-in to Wotja, but they can be added/duplicated and edited in the Schema Editor.
 - Each Wotja Schema comprises all settings necessary to create a Wotja Mix file or a '[Flow](#)' (a sequence of auto-generated mix files generated in the [Flow Player](#)) from a random selection of selected Wotja Templates, selected Sound Presets and selected FX Presets.
- [Wotja Mix File](#):
 - These are the editable files that generate music and they can be manually populated or populated from Schemas.

- Each Mix File comprises **Cells** which are arranged in grid of 4 columns and 12 **Tracks** (i.e. 48 Cells in total).
 - Each Cell can have a Template added to or merged into it, OR have links to a WAV or MIDI file in a Pak.
 - WAE **Wavetable Units** in Templates can also refer to external SF2 files.
 - Any such SF2 and Paks must be located in the **Wotja Folder**.
- Various mix-related settings such as **Cell Properties** and **Mix Properties**.
 - See **How long does a Cell play for?**

Notes:

- WAE FX can also be applied directly as *Generator FX*, *Cell FX*, *Track FX* or even as *Mix FX*.
- In any Track only one Cell can play at a time.
- When a Mix File is saved ALL Template settings/edits are saved to the Mix file.

[↑](#) What's New in Wotja 23?

Wotja 23 has a host of exciting new features, capabilities, content and improvements. Below are some of the *biggest* things (refer also to the [Releases](#) page).

IMPORTANT: Wotja 23 saves files to a new format that cannot be opened in Wotja 22. This is because of support required for its new features. Do not save any earlier Wotja files in Wotja 23 unless you intend to move to Wotja 23 or you back them up first!

Major New Features, Capabilities, Content and Improvements

- **'Featuregrade' Business Model:** There is now just one free Wotja App or bundle/download per App Store and all updates are free. To unlock [Pro mode](#) there are 3 different types of In-App Purchase (IAP) options: [Subscription \(SUB\)](#), [30 Day Unlock \(30U\)](#) and [One Time Buy \(OTB\)](#).
 - See also: [Do I ever need to get the next major version of Wotja?](#)
- **WAE Sample Player Unit:** New modulatable & polyphonic Tone Generator (TG) unit that plays Ogg and (generative) [Template](#) file data (Templates are "cooked" in memory to audio before use); it has support for (MIDI & Controller) pitch shifting, direction reverse and several loop/play modes as well as an optional built-in envelope.
- **WAE Filter Unit:** New 2-pole and 4-pole Filter Types.
- **WAE LFO Unit:** New Euclidian [LFO Type: Euclidian](#) for modulation with euclidian patterns.
- **WAE R2XL FX Unit:** 10 new 'go to' ABC Reverb Presets (also included as ABC Reverb [FX Presets](#)).
- **Mix files:** Sample Player source data (loaded via the [WAE Sample Player Unit](#)) can be saved to the mix file for sharing of completely self contained and unique-sounding mixes.

- **Schemas** (formerly called Randomization Presets): Now edited in the [Schema Editor](#), accessed from [Flows screen](#) > [Flow Actions Button](#).
- **Documents Screen:** [Flows screen](#) where non-included Schemas have thumbnails generated from colours in the [Schema](#).
- **Documents Screen:** New [Recordings Screen](#) to make it easy to find/play your Wotja folder (saved) recordings.
- **Documents Screen:** New [List view](#) and faster loading of mix files.
- **Add File:** You can now edit the file name before saving a newly created file.
- **Music Mode:** Much improved and simplified [Cell layout](#) with badges and thumbnails, Track Mute/Solo highlighting, and new options to display a specific column in the Grid button menu.
- **Music Mode:** New "One Tap Trigger" [Track Play Type](#) for quick/easy playing of a cell and live performance.
- **Music Mode:** [Template browser](#) now supports Cell referencing of Audio (WAV, Ogg) and MIDI files directly from the [Wotja Folder](#) (they no longer have to be in Paks [zip files]).
- **Music Mode:** [Template Editor](#) for easy editing/saving/exporting of Template Files.
- **Recording:** New auto and manual Ogg encoding (export a .WAV file to an .Ogg file for use in [WAE Sample Player Unit](#)).
- **TV Player:** Android version re-instated.
- **Included SF2:** New "UK Woodland Birds" with many awesome samples for use in the [WAE Wavetable unit](#).
- **Included Templates:** New "WJ23 Drones", "WJ23 Basses", "WJ23 Classic Polysynth", "WJ23 Environments" and "Sample Player Resources" Paks which include many awesome Templates and Ogg samples.
- **Schemas:** Two new settings [Environment Cells](#) and [Drone Cells](#) settings to control how many Cells are populated with the related Templates.
- **Included Schemas:** New "Environments 1" and "Drones 2" (subject to change).

- **Filetype extensions:** Changed to be `.wotja_tp` (Template), `.wotja_al` (Album), `.wotja_ls` (Playlist), `.wotja_sc` (Schema), `.wotja_sy` (Synth Preset) and `.wotja_fx` (FX Preset), plus revised [web file sharing](#) extensions.
- **Wotja URL (text string) format for Schemas:** This now makes this Wotja [filetype](#) easy to share (see Schema Editor > [Actions Menu](#)) via emails, web files and even to webplay via the Safari Extension (see [Sharing](#)).
- **Documents > Actions > Import to Documents/Wotja** [Android only]: Menu option to allow 'missing' Wotja files to be recovered via import.
- **Performance improvements:** Better CPU & UI performance plus addition of a CPU % indicator.
- **"V23 Play me!" mix:** Shows some of the new templates and capabilities in action.
- **Lite mode improvements:** 30 mins play time for all Flows and Albums now supported (enjoy!), removed all Lite mode Mix file locks, removed 'Pro mode only' limitations from several features (e.g. Script Editing, some Import/Export options etc.), removed limitations on [creating auto-Albums](#) - ([see the list](#))!
- **Wotja App icon:** No longer references version number as all major version updates are free!

Deprecated:

- Cell Properties: Loop and Track Rule settings are no longer available - see [Track Play Type](#)
- Legacy Filetype Extensions: No longer used in the App, but still supported.

Guide Schematics

This User Guide provides schematics for each key screen, making it easy to get to grips with Wotja. Each schematic is surrounded by color-coded buttons.

Tap a button around the outside of a schematic for further info on that UI element. Tap it again (or use your browser back button) to return to the schematic.

In a desktop browser hover over the button for a pop-up description of the item; on an iOS device tap/hold the button for a quick preview. Easy!

Color-coded buttons and examples from the [Music Mode Schematic](#) :

 : **Area/screen** e.g.  [Flows \(Schemas\) Screen](#)

 : **Button/selector** e.g.  [Cell Selector](#)

 : **Display item** e.g.  [MIDI Channel](#)

 : **WME (Music)** e.g.  [Generator Button](#)

 : **WAE (SFX)** e.g.  [Generator FX Button](#)

[↑](#) File Types

IMPORTANT: As they support new V23 capabilities, opening/loading/using a Wotja 23 mix file or filetype requires Wotja 23 or later.

[Wotja File Sharing](#) | *Tip:* How do I get files into Wotja? [See this FAQ](#).

- **Wotja can directly open/save/import/export (no save to legacy):**
 1. **.wotja** [**Mix** file extension]: Contains all parameters (WME, WAE, WTE), text and image needed to play and display a mix. Mix files are shown in the Documents > [Mixes \(& Templates\) screen](#). See also: [Sharing Wotja Files](#).
 - *Web file (W23.5+)*: Change the above file extension to **.SKM**, where **M** stands for **Mix**
 - Note: **.SKD** was used prior to W23.5+ and might still work in W23.5+.
 2. **.wotja_tp** [**Template** file extension; AKA 'Design' file]: Added to a [Cell](#) via the [Template List](#). Like Mix files, these are shown in the Documents > [Mixes \(& Templates\) screen](#). See also: [Sharing Wotja Files](#).
 - *Web file (W23.5+ required)*: Change the above file extension to **.SKD**, where **D** stands for **Design**
 - Legacy extension: **.noatik1** (see [legacy](#) below).
 3. **.wotja_a1** [**Album** file extension; AKA 'Play-only' file]: A playlist container including up to 20 **.wotja** files. Album files are shown in the Documents > [Albums screen](#). See also: [Sharing Wotja Files](#).
 - *Web file (W23.5+ required)*: Change the above file extension to **.SKP**, where **P** stands for **Play**
 - Legacy extension: **.wotjabox** (see [legacy](#) below).
 4. **.wotja_sc** [**Schema** file extension; AKA 'Transmute' file]: A [Schema](#) contains all parameters/settings needed to generate a 'Flow', auto-create a mix file, or for use for in-mix

randomization; previously called "Randomization Scheme", "Randomization Preset" or "RP". Schema files are shown in the Documents > [Flows](#) screen.

- [Web file](#) (*W23.7+ required*): Change the above file extension to [.SKT](#), where **T** stands for **T**ransmute
- Legacy extension: [.wotjarp](#) (see [legacy](#) below).

5. [.wotja_ls](#) [**Playlist** file]: References [.wotja](#) files located in the [Wotja](#) folder

- Legacy extension: [.wotjalist](#) (see [legacy](#) below).

6. **Legacy file extensions**: Still openable, but Wotja saves to new extension above.

- [.wotjarp](#) [Schema file]: See [.wotja_sc](#) files above.
- [.wotjabox](#) [Album/Box file]: See [.wotja_al](#) files above.
- [.wotjalist](#) [Playlist file]: See [.wotja_ls](#) files above.
- [.noatikl](#) [**Noatikl** file (Template)]: See [.wotja_tp](#) files above.
- [.mixtikl](#) [**Mixtikl** file (Mix)]: Auto-converted to [.wotja](#) file when opened via [Documents](#)
- [.liptikl](#) [**Liptikl** file]: Auto-converted to [.wotja](#) file when opened via [Documents](#)

• **Wotja can also import/export:**

1. [.wotja_sy](#) [**WAE Synth Network** file]: AKA "Synth Preset"

- Legacy file extension:
 - [.tg](#): Import, but not export.

2. [.wotja_fx](#) [**WAE FX Network** file]: AKA "FX Preset"

- Legacy file extension :
 - [.fxm](#): Import, but not export.

3. '[WJURL](#)'(Wotja URL):

- A wotja file ([.wotja](#), [.wotja_al](#) or [.wotja_tp](#)) in the form of a URL (i.e. a text string, see [Export Mix to Clipboard](#) and [Sharing](#));
 - Any/all referenced [.zip](#), [.sf2](#), [.midi](#), [.wav](#) files are not included;
 - [.ogg](#) files can be embedded in a mix file via a [Sample Player](#) unit.

4. **Plain text**: words/characters, cut-up, cut-up rules, patterns etc.

- **Wotja can use:**

- **.sf2**: Referenced from the [Wotja Folder](#) or [SF2 Paks](#) via an [WAE Wavetable Unit](#).
- **.wav**: Referenced from an [Audio Pak](#) or Wotja folder and added to a [Cell](#) via the [Template List](#).
 - Formats: WAV (8/16/24-bit PCM, 32-bit float)
- **.ogg**: Referenced from an [Audio Pak](#) or the Wotja folder and added to a [Cell](#) via the [Template List](#) or added via a [Sample Player](#).
 - Formats: Any kHz
- **.midi**: Referenced from a [MIDI Pak](#) or the Wotja folder and added to a [Cell](#) via the [Template List](#).
- **.jpg/.png**: Image files can be added as a background to a mix file via the [picture](#) setting
- See also the FAQ: [The "Wotja Folder" - Where is it and when should I use it?](#).

- **Wotja can record to:**

1. **.wav** (convertable to **.ogg**), **.midi**

[↑](#) 串 Glossary

- **Album:** A Wotja Album file (`.wotja_al`) includes a number of Wotja Mix files and is packaged as a zip file [AKA a Wotja 'Box']. Albums can be exported to the Clipboard as a WJURL (Wotja URL). *See also:* [Filetypes](#) and [Album/Playlist Player](#).
- **Audio Unit (AU/AUv3):** An [Audio Unit \(AU\)](#) [Apple link] / Audio Unit Extension / Audio Unit Plug-in (the latest iteration of which is Version 3) is most easily thought of as a self-contained program that can run in an Audio Unit Host. It is a proprietary plug-in architecture that is used by Apple, and so is different to Steinberg's VST format/architecture. *See also:* [Plug-in Hosting](#) and [Wikipedia Audio Units](#).
- **Audio-rate unit:** A WAE Unit (e.g. TG Wavetable or Reverb FX) that generates audio at your device's Audio Output rate (e.g. 48 kHz). *See also:* [WAE Units](#) and [Synth & FX Editor](#).
- **Control-rate unit:** A WAE Unit (e.g. LFO unit or Envelope) that operates at a low frequency, most typically between 0 - 50 Hz. *See also:* [WAE Units](#) and [Synth & FX Editor](#).
- **Cell:** At the heart of a Wotja Mix, a Cell can include one of A) a generative Template (unmodified, modified or even several merged into it); B) an Audio loop; or C) a MIDI file. *See also:* [Cells](#) and [Cell Duration](#).
- **CPU:** Acronym for Central Processing Unit. Wotja does not know (or care) how your device processes its audio (it could be the CPU, or a Digital Signal Processor (DSP) or even A N Other chip that does it, or any combination). That being so, we use the CPU acronym e.g. on the [Music Mode Tab](#) as a catch all to cover any processing activity.
- **Cut-up Text:** Text selected at random from a "word pool", a technique that is particularly helpful for coming up with fresh ideas. The wordpool can include text from Mix Text Mode Sources and Libraries (User, General and Wotja). Cut-up text is very useful when used as a source for Text to Music (TTM) as generation can be set to

occur at certain intervals. See also: [Text Mode](#) , [Text Properties](#) and [Generator - Text to Music](#).

- **Flow:** A succession of mixes that are auto-generated in the Flow Player using settings in the selected [Schema](#) - it is a bit like a local radio station just for you! See also: [Flow Player](#).
- **Generator:** One of 6 different MIDI note/MIDI controller event generator "types" in the WME:
 - **Rhythmic:** The original Generator and used for generating MIDI notes with durations only as available in the Generator's specified Rhythm Rule (which also specifies probability weightings). Several of the parameter settings for this generator type are common to other generators. *Typical use:* Melodies. See also: [Generator - Rhythmic](#).
 - **Ambient:** Used for generating MIDI notes with durations/ranges specified via parameters (i.e. not the Rhythm Rule). *Typical use:* long MIDI notes (Drones, pedals); short random duration MIDI notes (e.g. effects like raindrops). See also: [Generator - Ambient](#).
 - **Sequence:** Used for generating note sequences. Does not generate notes itself, but uses one of its supported sub-types to do that. It is easiest to think of it as a list which supports a number of list items where each list item includes all the parameter values needed for the generator sub-type to create note sequences. See also: [Generator - Sequence](#).
 - **Euclidian:** A Sequence Generator sub-type, it composes note sequences from 3 main Euclidian parameters - Steps, Fill and Rotation. *Typical use:* Easy and FAST creation of melodies requiring no musical knowledge; for beat generation. See also: [Sequence - Euclidian](#).
 - **Text to Music:** A Sequence Generator sub-type, it composes note sequences from manually entered or auto-generated text and the Generator's Scale Rule. *Typical use:* Easy and FAST creation of melodies requiring no musical knowledge. See also: [Sequence - Text to Music](#).
 - **Pattern:** A Sequence Generator sub-type, it composes note sequences just like a Rhythmic Generator unless it is being

used to play note patterns (there are 3 different kinds: B, R, F). *Typical use*: Providing a melodic structure (muted or not) for other Generators to compose around and/or to be followed (Follower); for playing predefined melodies (and sequences) *See also*: [Sequence - Pattern](#).

- **Follower**: Used for generating MIDI notes that follow those created by another Generator (of any type). You can select note delay options and a composition "strategy" of Chordal Harmony, Interval Within Scale Rule or Semitone Shift (but to be generated a note still must be permitted by the Generator's Rule). *Typical use*: Creating (delayed) harmonies on composed notes; generating notes for Listener Generators. *See also*: [Generator - Follower](#).
- **Repeater**: Composes just like a Rhythmic Generator but can repeat bars of MIDI notes that it has generated earlier. *Typical use*: Occasionally repeating previously composed bars of notes. *See also*: [Generator - Repeater](#).
- **Listener**: Listens out for incoming MIDI notes and, when detected, these can be played by a Follower Generator or used for Scripting with the WSE. *Typical use*: Hyper Instrument / Adaptive Music where external MIDI input can be used to influence/direct composition (albeit with some latency as the WME composes a little in advance). *See also*: [Generator - Listener](#).
- **Generator Network**: The particular combination of Generators in a Cell. *See also*: [Generator Network View](#).
- **Mix**: A Wotja Mix file ([.wotja](#)) that includes all the settings Wotja needs to play it. Mixes can be exported to the Clipboard as a WJURL (Wotja URL). *See also*: [File Types](#) and [Music Mode](#).
- **Playlist**: A Wotja Playlist file ([.wotja_ls](#)) *references* Wotja Mix files that exist in your Wotja Folder (it does not include them like an Album does). *See also*: [File Types](#) and [Album/Playlist Player](#).
- **Plug-in or Plugin**: *See also*: Audio Unit (AUv3) above or VST below.
- **Rule**: One of 4 different Rules in the WME where each rule specifies a number of discrete values (scale elements, note durations) and

probability weighings that govern how likely any element is to be selected by a Generator. The Scale, Harmony and Next Note rules are inter-dependent meaning that a particular note can be selected for composition ONLY if it is available in all of them AND it is possible with the Generator's Pitch/Range parameter settings:

- **Scale:** The Generator Rule that specifies the available scale elements (pitches) that can be used for composition, starting at the Mix Root. If an element is not available it will not be used. *Example:* If the Mix Root was C then scale element 0 would be a note of pitch C, 1 would be C# (minor Second, 2 would be C (major Second) etc. See also: [Scale Rule](#).
- **Harmony:** The Generator Rule that specifies what harmony intervals are permitted when it composes notes (in a Cell or even the Mix). If an interval is not available it will not be used. *Example:* If there is a note already playing (and so needs to be considered for harmonization) then a Rule element of 0 would represent a note of the same pitch, 1 a minor Second above that pitch, 2 a major Second above that pitch etc. See also: [Harmony Rule](#).
- **Next Note:** The Generator Rule that specifies how far away from its last composed note (in terms of intervals, + or -) the next note needs to be. If an interval is not available it will not be used. *Example:* If there is a note already playing then a Rule element of 0 would represent a note of the same pitch, 1 a minor Second above or below that pitch, 2 a major Second above or below that pitch etc. See also: [Next Note Rule](#).
- **Rhythm:** The Generator Rule that specifies what note durations can be selected when a note is generated. If an interval is not available it will not be used. *Example:* A Rule element of 1 is a whole note (240 Wotja units), 1/2. a dotted half note 180 (240 Wotja units), 1/2 a half note (120 Wotja units) etc. See also: [Rhythm Rule](#).
- **Schema:** A Wotja Schema file (`.wotja_sc`) is a collection of parameter settings that can be used to create an automatic mix, a 'flow' in the [Flow Player](#) or when in-mix randomization is used.

Schema files (AKA 'Touch' files) are displayed in the [Flows screen](#).
See also: [Filetypes](#), [Schemas](#) and [in-mix randomization](#)

- Formerly referred to as Randomization Preset (RP) or Randomization Scheme (RS).
- **Synth & FX Network:** A particular configuration of WAE units created in the Synth & FX Editor. See also: [Synth & FX Editor](#).
- **Template:** A Wotja Template file (`.wotja_tp`) is required in any Cell that generates *generative music*. Templates must contain at least one Generator and can also include Synth & FX networks (Generator FX and/or Cell FX). Wotja includes many hundreds of editable Templates and you can also export your own from a Cell [Pro mode only]. See also: [Filetypes](#) and [Templates](#).
- **Tone Generator:** An audio-rate unit in the WAE. These generate sounds from MIDI events composed by the Generators, and are available only behind the Synth button in the Generator Network Editor. See also: [Generator Network View](#).
- **Track:** A group (line) of 4 Cells. Use the Grid Button to see all Cells in a Track. Tracks can be muted/soloed and have a Track Cell Sequencing button. This allows the Cells in the track to be sequenced (played one after the other), triggered or looped. Tracks can also have their own WAE Network. See also: [Grid Button](#) , [Track Play Type](#) and [Track FX](#).
- **TTM (Text to Music):** The technique of generating melodies from manually entered or auto-generated text and a Generator's Scale Rule. See also: [Generator - Text to Music](#).
- **VST3:** An VST3 Plug-in is most easily thought of as a self-contained program that can run in an VST3 Host. VST3 is Steinberg's latest Plug-in format and is different to Apple's Audio Unit format. See also: [Plug-in Hosting](#) and [Wikipedia Steinberg VST](#).
- **Wotja Folder:** This is where Wotja finds and saves files. See also: [Wotja Folder](#).
- **WJURL:** A Wotja URL ('`WJURL`') is a Wotja Mix, Album or Schema exported as a long text string in the form of a URL. It can be embedded in a web page, shared in a message or saved as the relevant Wotja file. See also: [File Types](#) and [Sharing](#).

- **WAE:** The optional WAE (Wotja Audio Engine) is what Wotja uses for *audio/sound generation* (it can be turned off in Settings > Audio MIDI+ > WAE for Sounds & FX). It comprises a number of audio-rate tone generators (synths), FX units, control-rate units and connectors and junctions (to hook up more complex configurations). Complex networks of these units can be created in the Synth & FX Editor. See also: [WAE](#) , Setting [WAE for Sounds & FX](#) and [Synth & FX Editor](#).
- **WME:** The WME (Wotja Music Engine) is what Wotja uses for *MIDI note and MIDI controller event generation* . It utilizes a range of chance / aleatoric / stochastic / algorithmic music techniques and features 6 generator "types", each with related parameter settings. Those settings are what determine the notes that it composes/generates. See also: [WME](#).

[↑](#) → Quick Start

The easiest way to get going with Wotja is to check out the following two quick Tutorials.

These show 2 easy, yet different, ways to generate your own personal live ambient generative music which, **in FREE Lite mode, you can enjoy for 30 minutes(!)**:

- [Play a 'Flow'](#)
 - A Flow is a succession of auto-generated Mixes.
- [Create & Play an Album](#)
 - An Album is a collection of Mix files.
 - Albums can be entirely auto-generated (as shown in the Tutorial), or you can add your own Mix files.

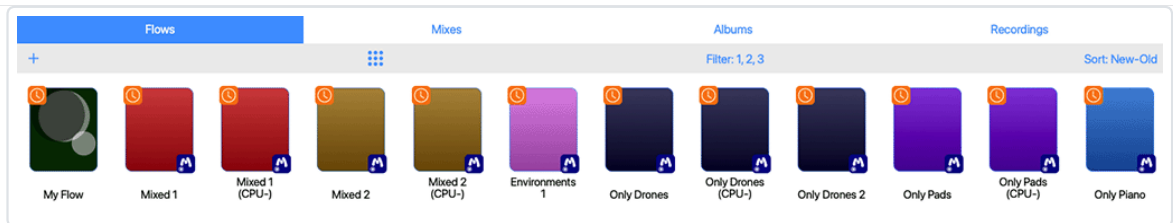
Other Quick Tutorials

- [Open/Play an Album](#)
- [Create an Auto-mix](#)
- [Open/Play a Mix](#)
- [More quick tutorials...](#)

How to Play a 'Flow'

If you don't want to watch the 'Play a 'Flow'' tutorial above (it's under 30 seconds!), then just do this:

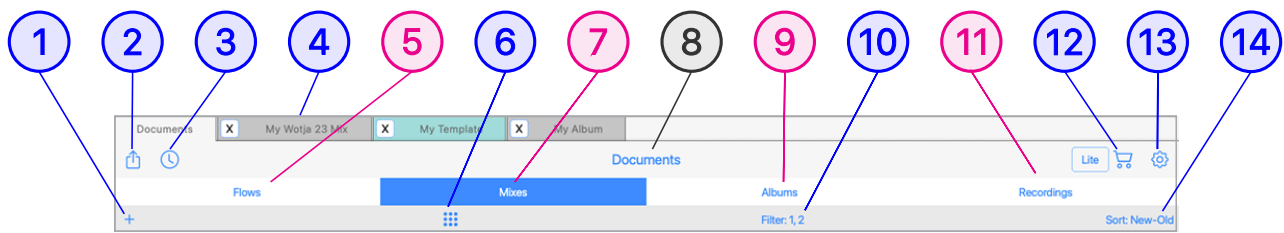
1. Load Wotja.
2. In the [📁 Documents screen](#), tap the [⑤ Flows \(Schema\) Screen Selector](#) to show the [Schemas screen](#), below.
 -



Tap for large

3. Tap any one of the **(E) Flow Buttons**.
 - or for that button tap the **(G) Flow Actions Button** (the file name below the thumbnail or the menu button to the right, depending on the **File Display Button**) and then select 'Flow Player' from the pop-up Actions menu.
4. Wotja will start generating flows for you in the **∞ Flow Player!**

↑ Documents



(tap circle for info, hover for tooltip; tap image for large)

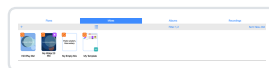
Tip: The schematic above shows the items common to most of the file views (screens).

Documents

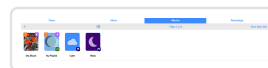
- Documents is shown after you have launched the app and it is where you add/open/delete and rename files.
- It comprises four different document file views/screens, each of which can be selected by tapping the relevant Screen selector:



⑤ Flows
(Schemas)



⑦ Mixes (&
Templates)



⑨ Albums



⑪ Recordings

- **Desktop versions:** These allow multiple files (Schemas, Mixes, Albums and Playlists) to be open at the same time. Each file is shown in a different ④ File tab at the top of the screen. The User Guide schematics use Desktop screenshots and so show this. See also [Desktop Menu](#).
- **iOS version:** When you first start the app you're prompted if you want to use iCloud or Local. See [iCloud Settings](#).

Tutorials

- [Create an Auto-Mix](#)

- [Create an Empty Mix](#)
- [Create an Album](#)
- [Create a Playlist](#)
- [Delete a File](#)
- [Rename a File](#)

① + **Add File Button**

Note: During the "Add File" process you will see a pop-up dialog "Save Document with Name...". Should you wish it, this allows you to use a different name for the file.

Tap the button for the relevant pop-up menu (button not shown in Recordings screen).

See:

- [Schema Add Button](#)
- [Mixes Add Button](#)
- [Albums Add Button](#)

② **Actions Button**

Displays the pop-up Actions menu with the following options:

- **Refresh**
 - Refreshes the display in the Documents screen and re-syncs to iCloud (if in use).
- **Show Plug-in Scanner... (macOS/iOS/Windows only)**
 - Shows the [Plug-in Scanner](#) screen.
- **Help - Resources**
 - Displays the [Help Resources page](#) (for a quick overview / links etc.) in a pop-up window.
 - Whether this is an in-app or online page depends on the value of Settings > General > "[Help: In-App \(uncheck for Online\)](#)".
- **Help - User Guide**

- Displays the User Guide in a pop-up window.
- Whether this is the in-app or online version depends on the value of [Settings: General > "Help: In-App \(uncheck for Online\)"](#).
- **Import to Documents/Wotja... (Android only)**
 - **IMPORTANT:** Wotja for Android can only load files from/save files to internal device memory (i.e not an SD Card), specifically a folder called `<Internal Storage>/Documents/Wotja` ('Internal Storage' might be referenced slightly differently on different devices).
 - This menu item lets you select files to import into the `<Internal Storage>/Documents/Wotja` folder *from* a temporary folder e.g. `<Internal Storage>/Documents/tempWotja`.
 - For details on the work flow required to move files in/out of the '/Documents/Wotja' folder see [How do I copy files \(Wotja, audio, MIDI, SF2 etc.\) into the 'Documents/Wotja' folder for use in Wotja?](#).
- **Demo Files...**
 - Takes you to [this weblink](#) on the wotja.com website.
- **Cancel**
 - Closes the menu.

📁 ③ 🕒 / 🕒 **Sleep Timer Button (Pro mode only)**

Tutorial: [Set a Sleep Timer.](#)

- 🕒 **(Off) [Default]:**
 - Sleep Timer is inactive.
- 🕒 **(On):**
 - Sleep Timer is active

Tip: When the Sleep Timer value is changed Wotja will auto-restart whatever is playing.

📁 ④ **File Tab**

File tabs are only shown in the Desktop variants which permit multiple Wotja files to be open at the same time (Schemas, Mixes, Albums and Playlists). Any open Mix, Album and Playlist files can be played, including simultaneously (subject to the capabilities of your PC).

Note: Mix files have grey tabs and Template files have teal tabs.

Note: Included Albums and Included Schemas are non-editable so they do not open in a tab.

📁 5 Flows (Schemas) Screen



(tap circle for info, hover for tooltip; tap image for large)

The Flows (Schemas) screen displays a number of thumbnail buttons, arranged in a grid or list (see: 6 File Display button), where each button represents a **Schema** (.wotja_sc file; see **Filetypes**). Schemas can be edited in the **Schema Editor**.

A Schema contains all the settings needed to play a 'flow' in the ∞ **Flow Player** (a 'flow' being a succession of mixes auto-generated from a Schema').

To start a 'flow' playing, just tap the thumbnail of an unlocked file or tap on the Schema Actions button and select 'Play'.

Note: For a User Schema to be shown it must be in the **Wotja folder**.

📁 5 (A) Add File Button

Note: During the "Add File" process you will see a pop-up dialog

mixes that have a richer sound. If you can play these without issue/breakup/glitching then these are the ones you will probably want to play!

3. **Built-in: Lower CPU impact (CPU-)**

- Select (tick) to display built-in Schema files for devices with slower processors. The sound is still great, but just not quite as rich as that using those above. You should use these if you are having issues/breakup/glitching using the ones above.
- Note: These Flows display with 'CPU-' appended to the Flow name.


4. **Search:**


- Allows you to enter a search term to search for a file by name or part name.
- The value is discarded if you restart the app.

5 **D** **File Sort Button**

See the common **14** **File Sort button**.

5 **E** **Top Left Badge**

 **Get New Version:** This red badge trumps any other badge in this position. It signifies that this file was originally created in a later major version of Wotja and that you are using an earlier major version of Wotja. Such a file may not open at all, but if it does then A) it will probably not sound as intended and B) if resaved the file MAY also show this badge. **Solution:** [Get the latest major version of Wotja](#) which is always a free update.

 **Lite mode Auto-Timeout:** This orange badge signifies that when this file is played or edited Wotja will operate in [Lite mode](#) with an Auto-Timeout. **Solution:** [Go Pro](#).

5 **F** **File Button**

To start a 'flow' playing, just tap any thumbnail.

See also:  [Flow Actions Button](#).

Actions Button

Tap for a pop-up menu with the following options:

- **Flow Player**
 - Play the Schema, as a 'flow', in the Flow Player.
- **Edit Schema (Pro mode only)**
 - Edit the Schema in the [Schema Editor](#).
- **Delete [User Added Schemas only]**
 - Delete the file.
- **Rename [User Added Schemas only]**
 - Rename the file.
- **Duplicate**
 - Duplicate the file.
- **Show in Finder (macOS only)/Show in Explorer (Windows only)**
 - Opens a window with the file selected.
- **Cancel**
 - Exit the pop-up menu.

Built-in File Badge

Shown bottom right on a built-in Schema file.

Note: Built-in Schema files cannot be renamed or deleted.

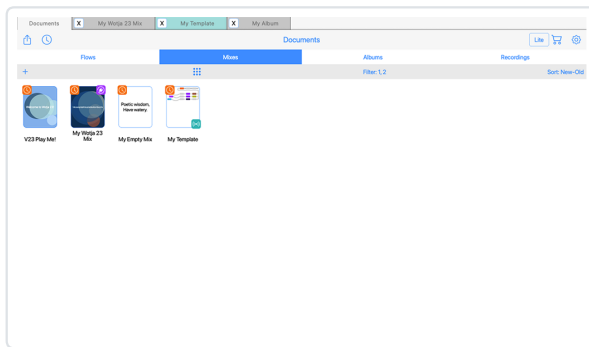
/ **File Display Button**

This control is shown in the Schemas, Mixes and Albums screens.

Tap the File Display button to toggle between Grid and List views.

-

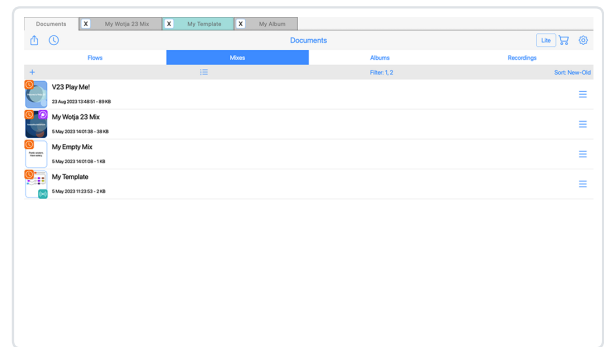
Grid



Tap for large

Files are displayed in a grid. The Actions menu button is the File Name shown below the thumbnail (Ⓔ Flow Actions Button, Ⓔ Mix Actions Button and Ⓔ Album Actions Button).

List



Tap for large

Files are displayed in a list. The Actions menu button is the button to the right of the list (Ⓔ Flow Actions Button, Ⓔ Mix Actions Button and Ⓔ Album Actions Button).

7 Mixes (& Templates) Screen



(tap circle for info, hover for tooltip; tap image for large)

The Mixes (& Templates) screen displays a number of thumbnail buttons, arranged in a grid or list (see: Ⓔ File Display button), where each button represents a Mix (.wotja) or Template (.wotja_tp) file; see Filetypes).

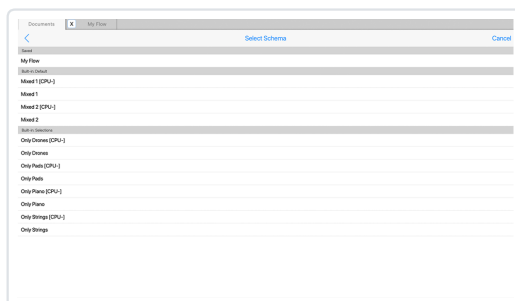
Note: For a Mix or Template file to be shown it must be in the **Wotja folder**.

📁 7 (A) Add File Button

Note: During the "Add File" process you will see a pop-up dialog "Save Document with Name...". Should you wish it, this allows you to use a different name for the file to the auto-generated one.

Tap for a pop-up menu with the following options:

- **Auto (Schema name)**
 - Tutorial: Create an Auto-mix
 - Creates a new Mix file (.wotja, see [Filetypes](#)) based on the currently selected [Schema](#) which is then opened in [Music Mode](#).
- **Empty**
 - Tutorial: Create an Empty Mix
 - Creates a new empty Mix file (a mix with no Cells populated) based on the currently selected [Schema](#) which is then opened in [Music Mode](#).
- **From Clipboard**
 - Tutorial: Import a Mix
 - Imports from the Clipboard (if any) a mix file and saves it to the Wotja folder.
- **Select Schema**
 - Lets you select the [Schema](#) you wish to use when adding files.
 -



Schema Select Screen

📁 7 (B) File Display Button

Toggles the file display between grid and list views.

See the common [⑥ File Display button](#).

[⑦](#) [Ⓒ](#) **File Filter Button**

Tap for a pop-up menu with the following options:

1. Mix Files

- Select (tick) to display Wotja Mix files (`.wotja`, see [Filetypes](#)) that you have created or otherwise added to the Wotja folder.
- Note: This includes Mix files in older formats (`.skd`, `.mixtikl` and `.liptikl`, see [Filetypes](#)).

2. Template Files

- Select (tick) to display Template files (`.wotja_tp`; see [Filetypes](#)) that you have created or otherwise added to the Wotja folder.
- Note: This includes Templates in older format (`.noatikl`; see [Filetypes](#)).


3. Search: (Pro mode only)

- Allows you to enter a search term to search for a file by name or part name.
- The value is discarded if you restart the app.


[⑦](#) [Ⓓ](#) **File Sort Button**

See the common [⑭ File Sort button](#).

[⑦](#) [Ⓔ](#) **Top Left Badge**

 **Get New Version:** This red badge trumps any other badge in this position. It signifies that this file was originally created in a later major version of Wotja and that you are using an earlier major version of Wotja. Such a file may not open at all, but if it does then A) it will probably not sound as intended and B) if resaved the file

MAY also show this badge. **Solution:** [Get the latest major version of Wotja](#) which is always a free update.

 **Lite mode Auto-Timeout:** This orange badge signifies that when this file is played or edited Wotja will operate in [Lite mode](#) with an Auto-Timeout. **Solution:** [Go Pro](#).

File Button

To open a Mix file ([.wotja](#); see [Filetypes](#)), just tap the thumbnail of an unlocked Mix file and it will open in [Music Mode](#) (it should open in the last used view (e.g. Music, Text etc.)).

To open a Template file ([.wotja_tp](#); see [Filetypes](#)), just tap the thumbnail of an unlocked Template file and it will open in [Music Mode: Template Editor](#) (it should open in the last used view (e.g. Music, Text etc.)).

See also: [Ⓒ Mixes Actions Button](#).

Note: The *appearance* of the thumbnail depends on a number of factors:

1. Schema

- When a mix is created, the mix button can display Cut-up, TTM or no text and with a solid color or thumbnail of the screensaver, all depending on the settings in the [Schema](#) that is used.

2. Filetype

- There are different icons shown if it is an old format Wotja file, Mixtikl file or Template file (see [Filetypes](#)).

3. Manually changed

- If you have added a background image to your mix it will show in the thumbnail (see: [Display Mode > Background Image](#)).
- If you have created an Empty Mix or Cut-up Mix then the thumbnail will have a white background until you select

your preferred Display settings (see: [Display Mode](#) > [4](#) Properties).

📁 7 **Ⓞ** Actions Button

Tap for a pop-up menu with the following options:

- **Open**
 - Open the file.
- **Delete**
 - Delete the file.
- **Rename**
 - Rename the file.
- **Duplicate**
 - Duplicate the file.
- **Show in Finder (macOS only)/Show in Explorer (Windows only)**
 - Opens a window with the file selected.
- **Cancel**
 - Exit the pop-up menu.

📁 7 **Ⓜ** Template File Badge

Tutorial: [Export a Template](#)

Shown bottom right on a Template file (`.wotja_tp`; see [Filetypes](#)). Tap the button to open the Template File in the Template Editor (See: [Music Mode](#) > [File Tab: Template](#)).

📁 7 **Ⓜ** Plug-in File Badge

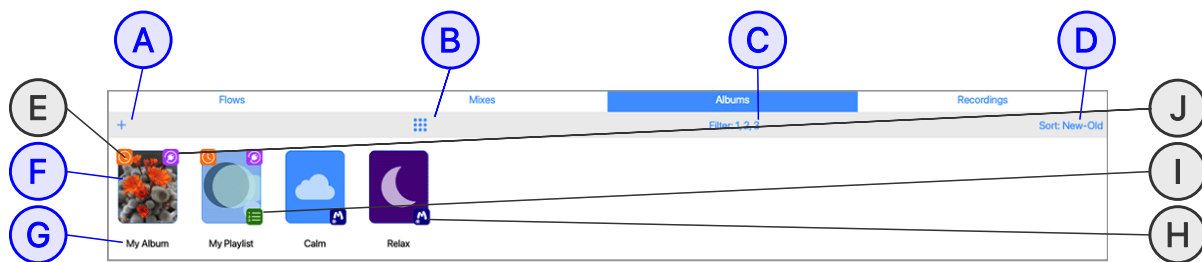
Shown top right on any mix file that uses [Plug-ins](#).

📁 8 **Ⓜ** Screen Title

Desktop versions: The Screen title is "Documents".

Mobile versions: The Screen title shows "Wotja".

9 Albums Screen



This screen shows a number of thumbnail buttons, arranged in a grid or list (see: [6 File Display button](#)).

Each button represents an Album (`.wotja_al`) or Playlist (`.wotja_ls`) file; see [Filetypes](#)).

The buttons which are shown depend on the filter settings selected in the [10 File Filter button](#) menu.

Note: For an Album or a Playlist file to be shown it must be in the [Wotja folder](#).

9 A Add File Button

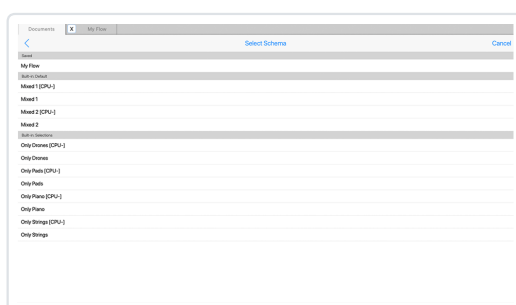
Note: During the "Add File" process you will see a pop-up dialog "Save Document with Name...". Should you wish it, this allows you to use a different name for the file to the auto-generated one.

Tap for a pop-up menu with the following options:

- **Auto (Schema name)**
 - Tutorial: [How to create an Album file \(.wotja_al\)](#)
 - Creates a new Album file (`.wotja_al`, see [Filetypes](#)) populated with with collection of Wotja mix files generated according to the currently selected [Schema](#), which is then opened in the [Album Player](#).
- **Empty (Pro mode only)**
 - Creates a new empty Album file (i.e. with no mixes) based

on the currently selected [Schema](#) which is then opened in the [Album Player](#).

- **From Clipboard**
 - Imports from the Clipboard (if any) an album file and saves it to the Wotja folder.
- **Playlist only (Pro mode only)**
 - Creates a new empty Playlist file ([.wotja_ls](#), see [Filetypes](#)).
- **Select Schema**
 - Lets you select the [Schema](#) you wish to use when adding files.
 -



Schema Select Screen

📁 9 B File Display Button

Toggles the file display between grid and list views.

See the common [6](#) File Display button.

📁 9 C File Filter Button

Tap for a pop-up menu with the following options:

1. Albums

- Select (tick) to display Album files ([.wotja_a1](#), see [Filetypes](#)) that you have created or otherwise added to the Wotja folder.

2. Playlists

- Select (tick) to display Playlist files ([.wotja_ls](#), see [Filetypes](#)) that you have created or otherwise added to the Wotja folder.

3. Built-In

- Select (tick) to display the built-in Albums, currently 'Calm' and 'Relax'.


4. Search: (Pro mode only)


- Allows you to enter a search term to search for a file by name or part name.
- The value is discarded if you restart the app.

File Sort Button

See the common  [File Sort button](#).

Top Left Badge

 **Get New Version:** This red badge trumps any other badge in this position. It signifies that this file was originally created in a later major version of Wotja and that you are using an earlier major version of Wotja. Such a file may not open at all, but if it does then A) it will probably not sound as intended and B) if resaved the file MAY also show this badge. **Solution:** [Get the latest major version of Wotja](#) which is always a free update.

 **Lite mode Auto-Timeout:** This orange badge signifies that when this file is played or edited Wotja will operate in [Lite mode](#) with an Auto-Timeout. **Solution:** [Go Pro](#).

File Button

To open an Album or Playlist, just tap the thumbnail of a file and it will open in the [Album Player](#).

If the Album includes a background image then you will see that image on the Album button.

See also:  [Albums Actions Button](#).

Actions Button

Tap for a pop-up menu with the following options:

- **Open**
 - Open the file.
- **Delete**
 - Delete the file.
- **Rename**
 - Rename the file.
- **Duplicate**
 - Duplicate the file.
- **Show in Finder (macOS only)/Show in Explorer (Windows only)**
 - Opens a window with the file selected.
- **Cancel**
 - Exit the pop-up menu.

Built-in File Badge

Shown bottom right on a built-in Album file.

Note: Built-in Album files cannot be renamed or deleted.

Playlist File Badge

Shown bottom right on any Playlist file (`.wotja_1s`; see [Filetypes](#)).

Note: The thumbnail used by the Playlist is that of the first mix in it.

Plug-in File Badge

Shown top right on an Album file which includes any mixes that use [Plug-ins](#).

File Filter Button

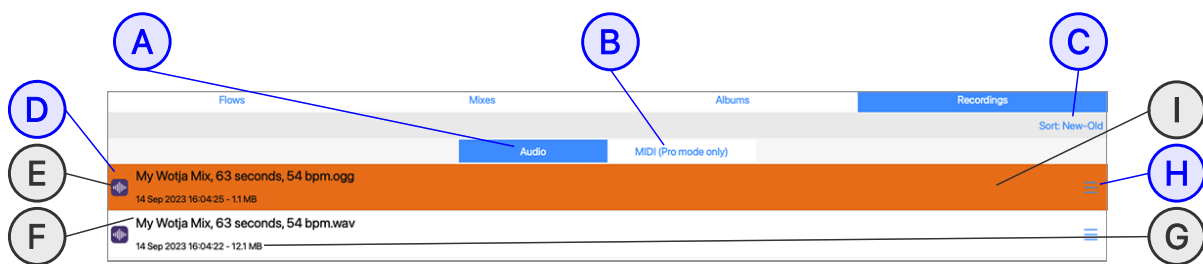
This control is shown in the Schemas, Mixes and Albums screens; tap link below for the relevant details.

Tap to display the "Filter Files" pop-up menu with options that govern what files are displayed. Select what you require.

Note: The button text indicates the selected items, where each one is represented by a number e.g. "Filter..." if nothing set, "Show: 1, 2, 3" etc.

- **Flows File Filter**
- **Mixes File Filter**
- **Albums File Filter**

📁 (11) Recordings Screen



Documents: Recordings

(tap circle for info, hover for tooltip; tap image for large)

This screen shows a number of list items where each one represents a Recording of either type WAV, Ogg, or MIDI (see [Filetypes](#)).

Note: For a Recording to be shown it must be in the [Wotja folder](#).

📁 (11) (A) Type Audio

Tap to display a list of Audio recordings (.wav, .ogg) in the Wotja Folder.

📁 (11) (B) Type MIDI

↳  **File Type**

Tap to display a list of MIDI recordings (.midi) in the Wotja Folder.

↳ **File Sort Button**

See the common  **File Sort button**.

↳ **File Play Button**

To play a recording, just tap the list item. Tap it again (if still playing) to stop playing it.

See also:  **Playing Status Indicator**.

↳ **File Type Badge**

Shown in the relevant list, there are badges for Audio and MIDI files.

↳ **File Name**

Shows the file name.

↳ **File Date and Size**

Shows the file creation date and file size.

↳ **Actions Button**

Tap for a pop-up menu with the following options:

- **Show in Finder (macOS only)/Show in Explorer (Windows only)**
 - Opens a window with the file selected.
- **Open With... (iOS only)**
 - Opens an action sheet where you can choose how to export/share your recording to e.g. to iCloud Drive, Facebook, Dropbox etc. depending on what you have installed. See also [this FAQ](#).
- **Delete**

- Delete the file.
- **Rename...**
 - Rename the file.
- **Export to Ogg... (WAV file only)**
 - Displays a pop-up dialog where you confirm if you wish to export an OGG version of the WAV file.
- **Cancel**
 - Exit the pop-up menu.

📁 11 ⓘ **Playing Status Indicator**

When the file is playing the list item has a yellowish tinge.

See also: ⓘ [File Play Button](#).

📁 12 🛒 **Store Button**

A Store button is shown in the [Documents](#), [Settings: General](#), [Flow Player](#), [Album Player](#) and all 5 Mix Editing screens ([Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Recording](#)).

When tapped on, the Store button takes you to the [In-App Store](#) (or to a Store info page in the Plug-in).

The Store button in Flow and Album Player screens toggles between 2 display states:

- **Active mode:**
 - To the left of the Store button is shown the active [mode](#) of operation. In Wotja 23 this can be either: Lite, Pro, 23 Pro, Play or 23 Play.
- **'Love it!' Tip:**
 - To the left of a 'Cup' icon is shown the words 'Love it!'

📁 13 ⚙️ **Settings Button**

The Settings button takes you to either the [Settings: General](#) or [Settings: Audio MIDI+](#) screen, depending on which you last used.

📁 14 **File Sort Button**

This control is shown in all four screens.

Displays a pop-up menu that lets you select the sort order for files in this screen.

The button text shows the selected sort order e.g. "Sort..." buttons, e.g. "Sort: A-Z".

Select one from the following:

- **Sort: New-Old**
- **Sort: Old-New (Pro mode only)**
- **Sort: A-Z (Pro mode only)**
- **Sort: Z-A (Pro mode only)**

[↑](#) Desktop Menu

Wotja (Mac)	File	Window	Help
About	New	Show Window	Show Wotja data folder
	Open	Resize	User Guide - Online
	Close		Desktop Menu - Online
	Save		Online Tutorials
	Recent		End User License Agreement - Online
	Exit		Find out about Wotja 23
			Install Wotja VST3 (Win)
			How to Install the Wotja VST3 Plug-in (Win)
			Show the Wotja VST3 Folder (Win)
			About Wotja 23 (Win)

The Desktop versions of Wotja (the App but not the AUv3 Plug-in) allow you to have open multiple mixes/boxes/playlists/albums ('files'). Each file will be shown in a separate tab at the top. If your computer is powerful enough then you play all of the files at the same time!

Being able to have multiple files open can be really handy when you wish to copy between mixes, and it is a key feature advantage the desktop versions have over the mobile versions.

To carry out normal file related activities for the Desktop versions e.g.

delete/duplicate/rename files etc. you can use either the '[Documents](#)' screen or Finder / Windows Explorer.

Keyboard shortcuts: The Desktop menu items show the keyboard shortcuts that can be used to select them, e.g. Cmd+W (macOS) or Ctrl+W (Windows) to close a tab.

Tip: To change the Audio Output Device see [Settings: Audio MIDI+ > Audio Output Device](#).

Note: If you have the macOS and iOS versions of Wotja and have iCloud, then, instead of using the local [Wotja Folder](#) for your Wotja Files (the Wotja Data Folder menu item will show you the location of this) you may instead prefer to use the Wotja iCloud Drive folder (recommended). A key benefit of using the Wotja iCloud Drive folder is that you will then be able to access your Wotja files on any iOS or macOS device that shares the same iCloud account. See the [iCloud FAQ](#).

WOTJA BACKUPS: Make these by: A) Using iCloud to store your files, or by B) backing up your device with Time Machine or equivalent; or C) emailing yourself a backup copy of each wotja. Using iCloud is the easiest way to manage your files.

[↑](#) Wotja 23

- **About (macOS)**
 - Displays the Wotja version number.
- **Other entries (macOS)**
 - Various usual Mac items.
- **Quit (macOS)**
 - Quit Wotja; if you have unsaved changes you can choose to quit without first saving.
 - *Keyboard shortcut:* Cmd+Q.

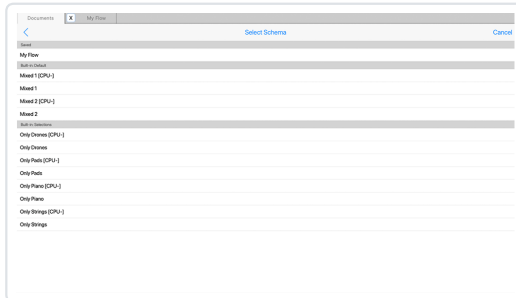
[↑](#) File Menu

- [↑](#) **New...**
 - Mix
 - [Auto \(Schema name\)](#)

- [Tutorial: Create an Auto-mix](#)
- Creates a new mix file (`.wotja`, see [Filetypes](#)) based on the currently selected [Schema](#) and then opens it in [Music Mode](#).
- Empty
 - [Tutorial: Create an Empty Mix](#)
 - Creates a mix with no Cells populated (but still includes a Cut-up) and then opens it in [Music Mode](#).
- From Clipboard
 - [Tutorial: Import a Mix](#)
 - Imports a mix file on the Clipboard (if any) and creates a new mix file.
- Album
 - Auto
 - Creates a new Album (`.wotja_al`; see [Filetypes](#)) and opens it in the [Album/Playlist Player](#).
 - The Album is populated with with collection of Wotja mix files generated according to the currently selected [Schema](#).
 - Empty (Pro mode only)
 - Creates a new empty Album (`.wotja_al`; see [Filetypes](#)) and opens it the [Album/Playlist Player](#).
 - Add to it the Wotja mix files you want to be in it.
 - From Clipboard
 - Imports an Album (`.wotja_al`; see [Filetypes](#)) from clipboard and opens it the [Album/Playlist Player](#).
 - Playlist (Pro mode only)
 - Creates a new empty Playlist file (`.wotja_ls`; see [Filetypes](#)) and then opens it in the [Album/Playlist Player](#).
 - Add to it the Wotja mix files you want to be in it.
- Schema
 - Schema (Flow) (Base on [Schema name](#)) (Pro mode only)
 - Lets you add a new [Schema](#), based on the currently

selected Schema.

- From Clipboard
 - Imports a Schema that is on the Clipboard.
- Select Schema
 - Lets you select the [Schema](#) you wish to use.
 -



Schema Select Screen

• [↑](#) **Open...**

- Shows a list of openable files using a standard Finder or Windows Explorer browse dialog.
- The filetypes that Wotja can open directly are: .wotja, .wotja_al, .wotja_ls, .wotja_tp and legacy variants (see [Filetypes](#)).
- Note: Wotja cannot directly open .zip or .sf2 files, but it can play .midi, .wav or .ogg files via the [Recordings screen](#).
 - .sf2: can be referenced in templates via an WAE [Wavetable Unit](#)
 - .wav, .ogg, .midi: can be added to a Content Cell via the Template List
 - .ogg: can be added to a WAE [Sample Player Unit](#)
- See the FAQ: [The "Wotja Folder" - Where is it and when should I use it?](#).
- *Keyboard shortcut*: Cmd+O (macOS) or Ctrl+O (Windows).

• [↑](#) **Close**

- Close the currently open file (i.e. tab).
- *Keyboard shortcut*: Cmd+W (macOS) or Ctrl+W (Windows).

• [↑](#) **Save / Save As... (With Lite mode restrictions)**

- For the currently open file displays the Save dialog allowing you

to browse to where you want to save to:

- If you have iCloud enabled then for your files to show in the Documents folder you *must* save to the Wotja iCloud folder.
- If you are not using iCloud, we *strongly recommend* saving files to the [Wotja Folder](#).
- See the FAQ: [The "Wotja Folder" - Where is it and when should I use it?](#).
- *Keyboard shortcut(s)*: Cmd+S/Cmd+shift+S (macOS) or Ctrl+S/Ctrl+shift+S (Windows).
- *Saving mix files*: See [23 Feature Set](#) for limitations when saving in Lite or Play mode.
- [↑](#) **Open Recent**
 - Shows a list of recently opened files. You can clear this list using the bottom "Clear Menu" menu item.
- [↑](#) **Exit**
 - Close the Wotja app.
 - *Keyboard shortcut*: Ctrl+Q.

[↑](#) Window Menu

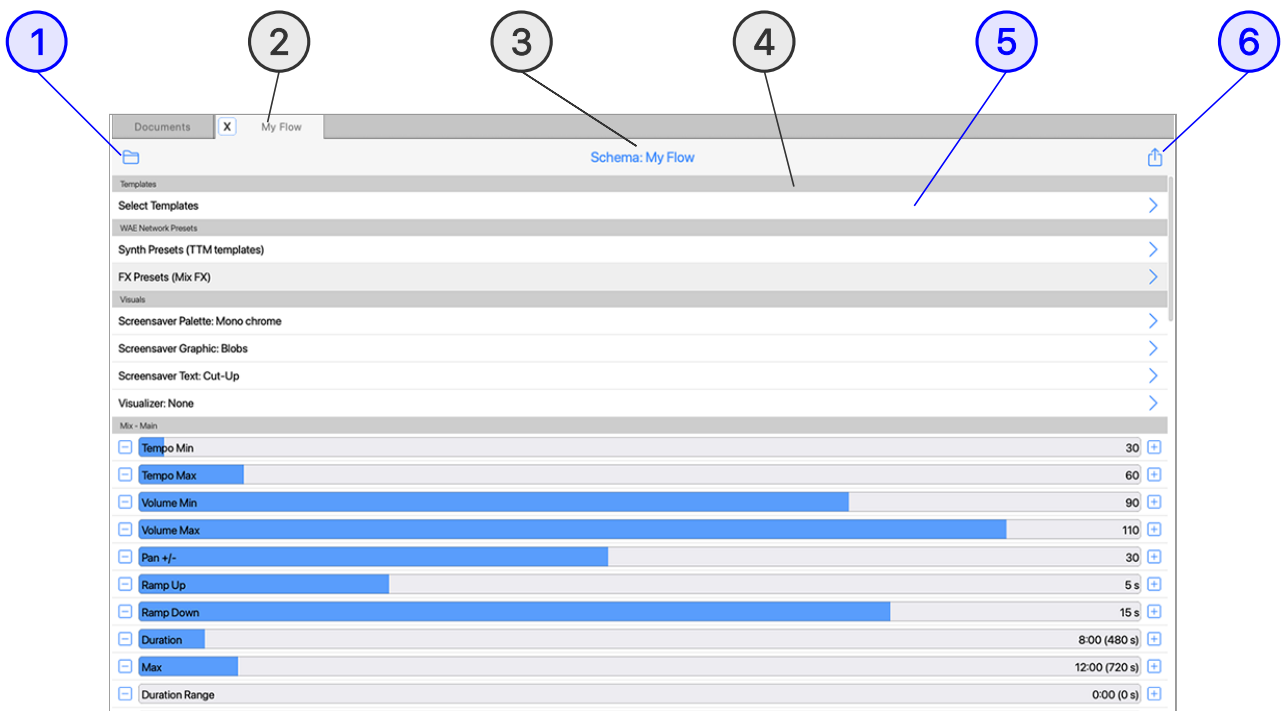
- [↑](#) **Show Window**
 - Brings the Wotja app window to the front.
- [↑](#) **Resize content area**
 - Available options are 640x480, 960x540, 1280x720, 1920x1080, 3840x2160.
 - An option is only presented if your screen size is larger.
 - These options are particular use when it comes to capturing videos, this option resizes the Wotja content area *below the window title bar* to 640x480 pixels and positions the Wotja window top left of the screen. *Tip*: To hide the window title bar itself see [Display > Actions](#) and select either "Full Window" or "Full Window & Restart/Stop (640x480)".

[↑](#) Help Menu

- [↑](#) **Show Wotja data folder**

- This will display in Finder (macOS) / Explorer (Windows) the Wotja folder where you save Wotja files, i.e. mixes, albums/boxes, playlists, Sound & FX presents, Schemas and recordings (WAV/MIDI).
- **Various weblinks**
 - Useful weblinks to this User Guide, [video tutorials](#) and the [EULA](#).
- [↑](#) **Find out about Wotja**
 - Takes you to the [Releases](#) page on our website to check what the latest version is.
- [↑](#) **VST3 Related Menu Items (Windows)**
 - These items all relate to manual installation of the Wotja VST3 Plug-in. [See this FAQ](#).
- [↑](#) **About (Windows)**
 - Shows the version number.

↑ [Menu Icon] Schemas (→ 'Flows'): Schema Items



(tap circle for info, hover for tooltip; tap image for large)

Note: The Schema Editor is only accessible in Pro mode.

Schema Editor: Documents > Flows (Schemas) Screen > Actions Button > Edit Schema > Schema Items

Play a 'flow': Documents > Flows (Schemas) Screen > Flow Button

Overview: What is a Schema?

- Schemas

Screen:



- Schemas are found in the Flows (Schemas) screen. All the settings in the currently selected Schema can be edited in the Schema Editor which is selected via the "Edit Schema" menu item in the Flows Actions button.

- Previously referred to as a "Randomization Preset", a Schema is a collection of settings used for creating mixes, 'flows' and for in-mix randomization.
- There are over 40 different settings in each one, described below. These range from Template selections (including ones you have made), Sound & FX preset selections (again including ones you have made) right through to Cut-up rules and the number of cells/tracks in an auto mix.
- Each Schema can have completely different settings, too, meaning they can be configured exactly as you want - whether you want to change just one setting or all of them is up to you.
- Randomization can be used in a number of places in Wotja and the randomization parameters in a Schema determine how it is used. Examples of this are how the mixes in 'flows' and Albums are created and whether e.g. text is displayed on screen in Flow Player and/or the Playlist Player Fullscreen mode. They are also used to determine how mix Cells are populated with templates when using the Random function in Wotja, how TTM Generator text randomization is applied to mixes and how Cut-up is generated in the [Text Editor screen](#) - plus a lot more, too.
- **Select** a Schema:
 - [Documents](#) > [Flows Screen](#) > [File Button](#)
- **Rename / Delete / Duplicate** a Schema:
 - [Documents](#) > [Flows Screen](#) > [Actions Menu](#) > Rename / Delete / Duplicate
- **Save** a Schema:
 - Tap the [① Schema Save/Exit](#) button for a pop-up menu where you can save changes to the current Schema or to save as another one (i.e. create your own!).

[① Documents](#) **Save/Exit Button**

Displays the Save Changes Menu pop-up before exiting to the [Documents](#) screen:

- **Save & Close**
 - Save the changes you have made to your file and return to the Documents screen.
- **Save & Continue**
 - Save the changes you have made to your file and then continue working on it.
- **Save a Copy (Pro mode only)**
 - Creates a new file (which you can rename) based on the current state of the open file (a snapshot of where you are if you like), but leaves you in the current open file - meaning if you then exit the file you will see this pop up dialog *again* letting you choose what to do with the file.
 - *Note:* This is NOT the same as Save As so please remember to save your file if you want to keep your changes to it.
- **Discard**
 - Lose any changes made to your file since you opened it.
- **Cancel**
 - Dismiss this popup and return to the Display screen.

② **File Tab**

The File Tab shows the name of the Schema.

Note: Tabs are only supported in the Desktop variants.

③ **File Name**

Shows the name of the Schema.

④ **Group Header**

Related items are grouped together. The Group Header shows the name of the group.

⑤ **Item/Parameter Control**

Tap the control and select/edit the setting you want for the item/parameter

item/parameter.

See: [Schema Items](#)

⑥ **Actions Menu Button**

Displays the Actions Menu pop-up:

- **Export to Clipboard**
 - Exports the Schema to Clipboard for easy sharing as a [WJURL](#).

Schema Items

See: [What is a Wotja Schema?](#)

- **Templates**
 - Select Templates
- **WAE Network Presets**
 - Synth Presets (TTM Templates)
 - FX Presets (Mix)
- **Visuals**
 - Screensaver Palette (Select Palette)
 - Screensaver Graphic (Random Screensaver)
 - Screensaver Text (Text Display Mode)
 - Visualizer
- **Automatic Text Change**
 - At Mix Start
 - After Seconds
 - Seconds Between
 - Seconds Between Range
- **General/Mix**
 - Environment Cells/Column (min)
 - Environment Cells/Column (max)
 - Drone Cells/Column (min)
 - Drone Cells/Column (max)
 - TTM Cells/Column (min)
 - TTM Cells/Column (max)
 - TTM Words (min)
 - TTM Words (max)
 - Tracks
 - Cells
 - Generative %
 - Blank Cell %
 - Tempo (Min)
 - Tempo (Max)

- Use Saved Section Text?
- Use Saved Text: Random Sequence?
- **Cut-up**
 - EOL Rhyme?
 - Cut-up Rules
 - Use Words
 - Word Mix
 - Text for Source #0
 - Cut-up Mode
- **Text to Speech**
 - Speech Enabled
 - Voice Name
 - Voice Language
 - Allow Regional Variations
 - Voice Change
 - Speech Style
 - Voice Gender
 - Speech Volume
 - Speech Volume Range
 - Speech Rate
 - Speech Rate Range
 - Speech Pitch
 - Speech Pitch Range
- Volume (Min)
- Volume (Max)
- Pan +/-
- Ramp Up
- Ramp Down
- Duration
- Duration Max
- Duration Range
- Duration Range Max
- **Cells**
 - Generative Bar Min
 - Generative Bar Max
 - Generative Bar Range
 - Cell Repeat Min
 - Cell Repeat Max
 - Cell Repeat Range
- **Auto Boxes/Flow**
 - Mixes in Box
 - Max
- **Reset**

[↑](#) General/Mixes

- [↑](#) **Environment Cells/Column (min)**
 - *Values: 0-8*
 - The minimum number of "WJ23 Environments" Pak populated Cells that will be in a column, assuming you have a "WJ23 Environments" Pak available for selection

when randomizing. These Cells are populated first.

- See: [Cells](#).
- [↑ Environment Cells/Column \(max\)](#)
 - *Values: 0-8*
 - The maximum number of "WJ23 Environments" Pak populated Cells that will be in a column, assuming you have a "WJ23 Environments" Pak available for selection when randomizing.
 - See: [Cells](#).
- [↑ Drone Cells/Column \(min\)](#)
 - *Values: 0-8*
 - The minimum number of "WJ23 Drones" Pak populated Cells that will be in a column, assuming you have a "WJ23 Drones" Pak available for selection when randomizing. These Cells are populated after any Environment Cells.
 - See: [Cells](#).
- [↑ Drone Cells/Column \(max\)](#)
 - *Values: 0-8*
 - The maximum number of "WJ23 Drones" Pak populated Cells that will be in a column, assuming you have a "WJ23 Drones" available for selection when randomizing.
 - See: [Cells](#).
- [↑ TTM Cells/Column \(min\)](#)
 - *Values: 0-8*
 - The minimum number of TTM populated Cells that will be in a column, assuming you have a TTM Pak available for selection when randomizing. These Cells are populated after any Drone Cells.
 - See: [Cells](#).
- [↑ TTM Cells/Column \(max\)](#)
 - *Values: 0-8*
 - The maximum number of TTM populated Cells that will be in a column, assuming you have a TTM Pak available for selection when randomizing.

- See: [Cells](#).
- [↑](#) **TTM Words (min)**
 - *Values: 1-100*
 - The minimum number of words that will be added to a Text to Music (TTM) Text field on creating a new random mix or in the [TTM Text Editor](#) when using the Randomize button with Randomize option selected.
 - See: [Text to Music](#).
- [↑](#) **TTM Words (max)**
 - *Values: 1-100*
 - The maximum number of words that will be added to a Text to Music (TTM) Text field on creating a new random mix or in the [TTM Text Editor](#) when using the Randomize button with Randomize option selected.
 - See: [Text to Music](#).
- [↑](#) **Tracks**
 - *Values: 1-12*
 - The number of Tracks that will have their cell contents (below) randomized (starting with Track 1).
 - See: [Track Play Type](#)
- [↑](#) **Cells**
 - *Values: 1-4*
 - The number of Cells in the Tracks above that will have their contents repopulated from the list of available templates.
 - See: [Track Play Type](#)
- [↑](#) **Generative %**
 - *Values: 0-100%*
 - The chance that a randomized Cell will be repopulated with a generative template.
 - See: [Cells](#).
- [↑](#) **Blank Cell %**
 - *Values: 0-100%*

- The chance that a randomized Cell will be empty.
- See: [Cells](#).
- [↑ Tempo \(Min\)](#)
 - *Values: 20-400 bpm*
 - The minimum tempo of a new, random mix.
 - See: [Mix Tempo](#).
- [↑ Tempo \(Max\)](#)
 - *Values: 20-400 bpm*
 - The maximum tempo of a new, random mix.
 - See: [Mix Tempo](#).
- [↑ Volume \(Min\)](#)
 - *Values: 1-127*
 - The minimum volume of a track in a new, random mix.
 - See: [Track Mixer](#).
- [↑ Volume \(Max\)](#)
 - *Values: 1-127*
 - The maximum volume of a track in a new, random mix.
 - See: [Track Mixer](#).
- [↑ Pan +/-](#)
 - *Values: 1-64*
 - How far away from center that pan can be for a Track in a new, random mix.
 - See: [Track Mixer](#).
- [↑ Ramp Up](#)
 - *Values: 0-20 s*
 - How long a mix takes to ramp up to its full volume.
 - See: [Mix Ramp Up](#).
- [↑ Ramp Down](#)
 - *Values: 0-20 s*
 - How long a mix takes to ramp down to zero volume.
 - See: [Mix Ramp Down](#).
- [↑ Duration](#)

- **Values:** 1 s - 2 hrs (7200 s)
- The minimum time a mix is configured to play for in a Flow or automatically generated Box.
- See: [Flow Play Time](#) and [Mix Actions > Mix Overrides screen](#).
- [↑](#) **Duration Max**
 - **Values:** 1 s - 2 hrs (7200 s)
 - The maximum time a mix is configured to play for in a Flow or an automatically generated Box.
 - See: [Flow Play Time](#) and [Mix Actions > Mix Overrides screen](#).
- [↑](#) **Duration Range**
 - **Values:** 0 s - 2 hrs (7200 s)
 - The minimum duration that is added to a mix's Duration above *when the Box is created*.
 - See: [Mix Actions > Mix Overrides screen](#).
- [↑](#) **Duration Range Max**
 - **Values:** 0 s - 2 hrs (7200 s)
 - The maximum duration that is added to a mix's Duration above *when the Box is created*.
 - See: [Mix Actions > Mix Overrides screen](#).

[↑](#) Cells

- [↑](#) **Generative Bar Min**
 - **Values:** Infinite(0)-1-100
 - The minimum base value for the number of bars a generative template will play for and to which the range value (below) is added. *Special Value:* If this value is set far left to ∞ then once play in a Track reaches such a cell the generative content in that cell will continue to play either for as long as the mix plays or until you manually select another cell in that Track to play.
 - See: [Cell Gen Bars](#).
- [↑](#) **Generative Bar Max**

- *Values: 0-100*
- The maximum base value for the above.
- See: [Cell Gen Bars](#).
- [↑](#) **Generative Bar Range**
 - *Values: 0-100*
 - Sets the range that applies to the above base value.
 - See: [Cell Gen Bars Range](#).
- [↑](#) **Cell Repeat Min**
 - *Values: 0-100*
 - The minimum base value for the number of times a cell will repeat after it has played through once and to which the range value (below) is added. For a generative template each bar counts as one repeat; for audio or MIDI content this is the length of the content rounded up to the end of a bar). *Note: If the cell contains generative content and the Generative Bar Min is value is set to ∞ then this setting takes no effect as the cell never repeats!*
 - See: [Cell Repeats](#).
- [↑](#) **Cell Repeat Max**
 - *Values: 0-100*
 - The maximum base value for the above.
 - See: [Cell Repeats](#).
- [↑](#) **Cell Repeat Range**
 - *Values: 0-100*
 - Sets the range that applies to the above base value.
 - See: [Cell Repeats Range](#).

[↑](#) Auto Boxes/Flow

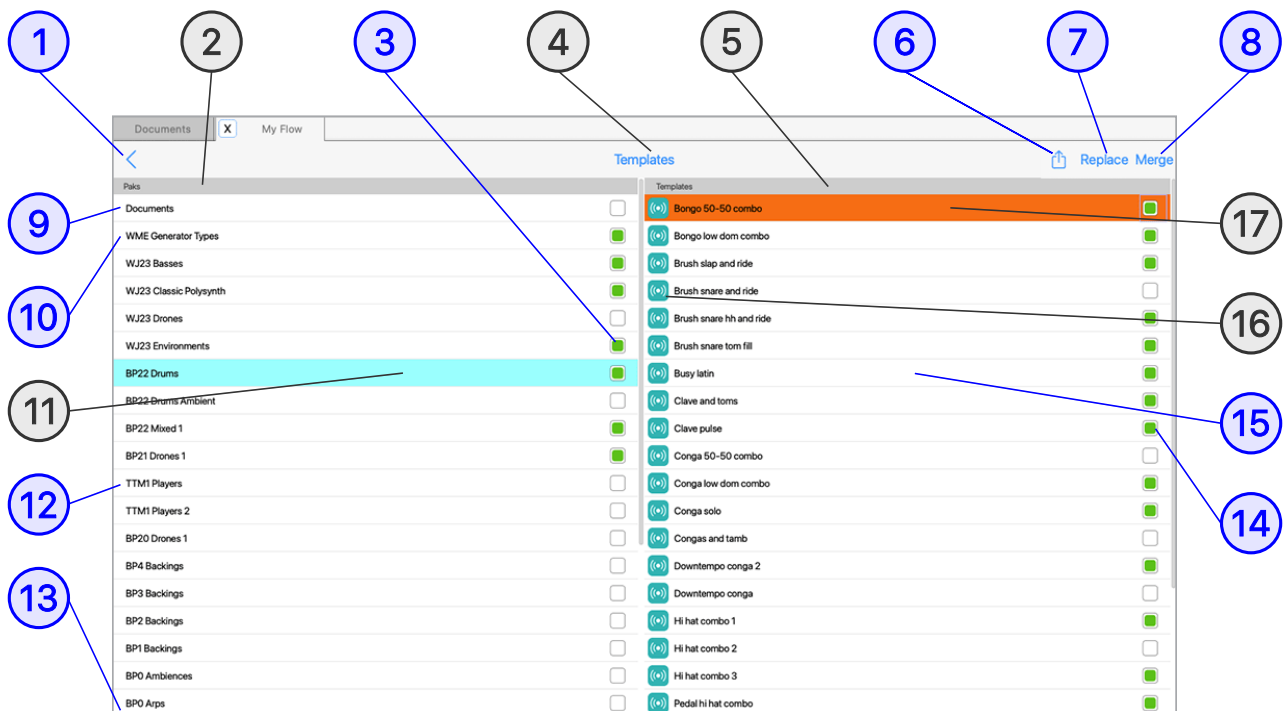
- [↑](#) **Mixes in Box**
 - *Values: 1-20*
 - The minimum number of mixes in an automatically generated Box.
 - See: [Album/Playlist Player](#).
- [↑](#) **Max (Mixes in Box)**

- *Values: 1-20*
- The maximum number of mixes in an automatically generated Box.
- See: [Album/Playlist Player](#).

[↑](#) Reset

- [↑](#) **Reset Settings of this Schema to Defaults**
 - Displays a pop-up message allowing you to reset all values back in the Schema back to their Defaults.

↑ ((•)) Templates



(tap circle for info, hover for tooltip; tap image for large)

Templates

- Wotja includes 100s of editable "Templates" (`.wotja_tp`; see [Filetypes](#)) - see also [What is a Template?](#)
- Templates are at the core of Wotja because every [Mix file](#) is comprised of [17 Cells](#) and for any Cell to play it *must* have in it either:
 - a Template, be that in an included one or one one you or a 3rd party has created.
 - an Audio or MIDI file (in the Wotja folder either as a file or in a [Paks](#)).
- Mix files are auto-created from a [Schema file](#) (when using the [Add File Button](#) in the [Mixes Screen](#)) or in the [Flow Player](#), which is why this section comes before the other "Edit Mode" sections.

Tutorials

- [Add Template to Cell](#)
- [Export Template from Cell](#)

What is a Template?

In our terminology a Template is basically a self contained "generative music and sound preset". This simply means it contains all the parameter settings for the [WME](#) (Music Engine), [WAE](#) (Sound & FX Engine) and anything else Wotja needs to generate music. It can include just a single [Generator](#) (these generate MIDI notes) to very complex complex network of Generators, each with their own WAE Sound & FX networks (used to generate sound and FX).

Once a Template is added to a [26](#) [Cell](#) you can edit/customize any of its settings, but you do not have to - they sound great as they are! There are hundreds of editable Templates included in Wotja that you modify and save to use as your own (see [9](#) [Documents "Pak" \(Wotja Folder\)](#)).

How are Templates used?

Automatic Mixing:

- A [Schema](#) is used to create [Flow Player](#) mixes, [A](#) [Auto mixes](#) and [A](#) [Auto albums](#) from random selections of [Templates](#).
- To select Paks and Templates for the Schema see: [12](#) [Pak Selector](#), [14](#) [Template toggle](#)

Manual Mixing:

- Templates are selected, [16](#) [previewed](#), and added to a Cell via the Template List which is accessed via a [26](#) [Cell Selector Button](#), [5](#) [Generator Menu Button](#) or a pop-up menu from a [32](#) [Generator Button](#).
- Templates can also be selected in the [Schema Editor](#) for use in Schemas.

Takes you back to the screen you came from.

2 Paks List

Displays a list of installed Paks that you can select a Template (or other supported [FileType](#)) from.

3 Pak Toggle

Note: The Pak toggle is only shown when you are accessing the Template List via the [Schema Editor](#).

For the purposes of randomization the Pak toggle allows you to specify which Paks you want Templates to be selected from for the current Schema.

4 Screen Title

Displays the name of the screen.

5 Templates List

The list of Templates (or other supported [FileType](#)) in the selected Pak.

6 Actions Button

The Action button displays a pop-up menu a number of useful options to help with Template and Pak selection (those marked with * are only shown in [Schema Editor](#)):

- **Sort: Value**
 - New-Old
 - Old-New (Pro mode only)
 - A-Z (Pro mode only)
 - Z-A (Pro mode only)
- **Select All Paks ***
- **Deselect All Paks ***
- **Select All Templates in Pak ***

- ***Deselect All Templates in Pak ****
- ***Select All Paks and All Templates ****
- ***Deselect All Paks and All Templates ****
- ***Older Paks: Hidden > Show / Shown > Hide***
- ***Help - User Guide***
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General > "Help: In-App \(uncheck for Online\)"](#).

☞ 7 Load/Replace Button

If the Cell is empty then you will see a Load button which when tapped simply adds the Template to the Cell.

If the Cell is not empty then you see a Replace button that allows you to Replace the content in a Cell with the selected Template.

☞ 8 Merge Button

The Merge button allows you to merge the selected Template with the generative content that is already in a Cell. An example would be if you had a Cell with say a TTM Generator in it and you wanted to add another TTM Template to that.

Note: You are not allowed to Merge in a Template if there are insufficient free MIDI channels to accommodate the Template.

Note: The Merge button is only shown if accessing the Template List from a non-empty Cell.

☞ 9 Documents Pak

The Documents "Pak" is always shown at the top for easy access. It is not really a "Pak" at all, but just lists all the generative templates (.wotja_tp files) that are present in the [Wotja Folder](#), whether you have saved some to there (see [4 Grid Button > Export Cell to Template](#)) or have copied/moved into it.

(◁) 10 Generator Types Pak

The WME Generator types Pak includes simple "starter" Templates for each of the [6 Generator types](#), as well as a couple of examples of them in action. These Templates are for those that want to build a mix from the most basic starting point.

The reason for the extra examples (see below) is because two of them do nothing by themselves (Follower, Listener) and so if you add one of those you will not hear anything. And, although Repeater can work by itself, it is also meant for use with another generator (to repeat it).

Note: The [6 Generator types](#) are also the Templates that are added when you select "Add Generator of Type" from a Generator's pop-up menu.

Here is what is included:

- **Ambient**
 - A Generator of Type [Ambient](#) (you will hear something).
- **Follower**
 - A Generator of Type [Follower](#) (it will be silent as it is not following anything).
- **Generator + Follower**
 - A *Generator Network* comprising a Generator of Type [Follower](#) set up to follow another Generator (so that you will hear something).
- **Generator + Repeater**
 - A *Generator Network* comprising a Generator of Type [Repeater](#) set up to repeat another Generator (so that you will hear something).
- **Listener + Follower**
 - A *Generator Network* comprising a Generator of Type [Listener](#) set up to work with a Follower Generator (so that you will hear something if you send MIDI input into Wotja).
- **Listener**
 - A Generator of Type [Listener](#) (it will be silent as a Follower Generator is required to generate sound).

- **Repeater**
 - A Generator of Type [Repeater](#) (you will hear something).
- **Rhythmic**
 - A Generator of Type [Rhythmic](#) (you will hear something).
- **Sequence - Both (B)**
 - A Sequence Generator of Type [Pattern: Both \(B\)](#) (you will hear something).
- **Sequence - Euclidian (Euc)**
 - A Sequence Generator of Type [Euclidian](#) (you will hear something).
- **Sequence - Fixed (F)**
 - A Sequence Generator of Type [Pattern: Fixed \(F\)](#) (you will hear something).
- **Sequence - Rhythm (R)**
 - A Sequence Generator of Type [Pattern: Rhythm \(R\)](#) (you will hear something).
- **Sequence - Text to Music (TTM) Custom**
 - A Sequence Generator of Type [Text to Music](#), configured to use custom text (you will hear something).
- **Sequence - Text to Music (TTM) Cut-up**
 - A Generator of Type [Text to Music](#), configured to use Cut-up Text line (you will hear something).

11 **Selected Pak**

A light blue background on a Pak indicates that it is the selected Pak.

Similarly, a light blue background on a Template indicates that it is the selected Template.

12 **Pak Selector**

Tap a Pak to select it and displays its templates in the right hand Templates list.

See "[How are Templates Used?](#)".

These are what some of the Paks are:

- **WME Generator types**
 - Simple templates that let you start a cell with just one Generator type.
- **BP22 Drums**
 - A collection of (Euclidian) Drum Templates.
- **BP22 Drums Ambient**
 - A collection of Ambient Drum templates.
- **BP22 Mixed**
 - A mixed collection of templates.
- **BP21 Drones 1**
 - A collection of Drone Templates.
- **TTM 1 Players/TTM 1 Players 2**
 - Templates that use Text-to-Music techniques to generate melodies.
- **BP20 Drones 1**
 - A collection of Drone Templates optimized for Wotja 20.
- **BP1-4 Paks**
 - These include templates optimized for Wotja 19.
- **BP0 Paks**
 - These include templates optimized for Wotja 4.
- **Flows Pak**
 - A Pak that includes special Templates used in some Flows.
- **BP00 Paks (see [Actions](#) > **Older Paks: Hidden** > **Show / Shown** > **Hide**)**
 - Shown in dark grey, and only if "Older" Paks are selected to be shown in Actions.
 - The Paks that were available for Noatikl 3 and Mixtikl 7.
- **BP000 Paks (see [Actions](#) > **Older Paks: Hidden** > **Show / Shown** > **Hide**)**
 - Shown in dark grey, and only if "Older" Paks are selected to be shown in Actions.
 - These include generative templates that came with Noatikl 1 and Mixtikl 1-5.

- **3rd Party Paks**

- Paks such as the free [Morphing Drum and Bass \(MDB\) and Audio Loop Collections Paks](#)
- Note: Loading Zips from the file system is a 'Pro' mode feature.

(☞) **13 3rd Party Pak**

3rd Party Paks are shown below at the very bottom of the included Paks list (i.e. below the Flows Pak), e.g. the free [Morphing Drum and Bass \(MDB\) and Audio Loop Collections Paks](#).

Note: Loading Zips from the file system is a 'Pro' mode feature.

(☞) **14 Template Toggle**

For the purposes of randomization the Template toggle allows you to specify which Templates you want to be selected for the current Schema.

See "[How are Templates Used?](#)".

Note: The Template toggle is only shown when you are accessing the Template List via Settings > Randomization > Templates.

(☞) **15 Template Selector**

Tap to select or preview a Template; tap again to stop the preview.

(☞) **16 Content Type Icon**

Shows the icon for the filetype.

- **Schema:** Only templates are shown and can be selected.
- **Cells:** Templates, audio and MIDI files are shown and can be selected.

(☞) **17 Preview Indicator**

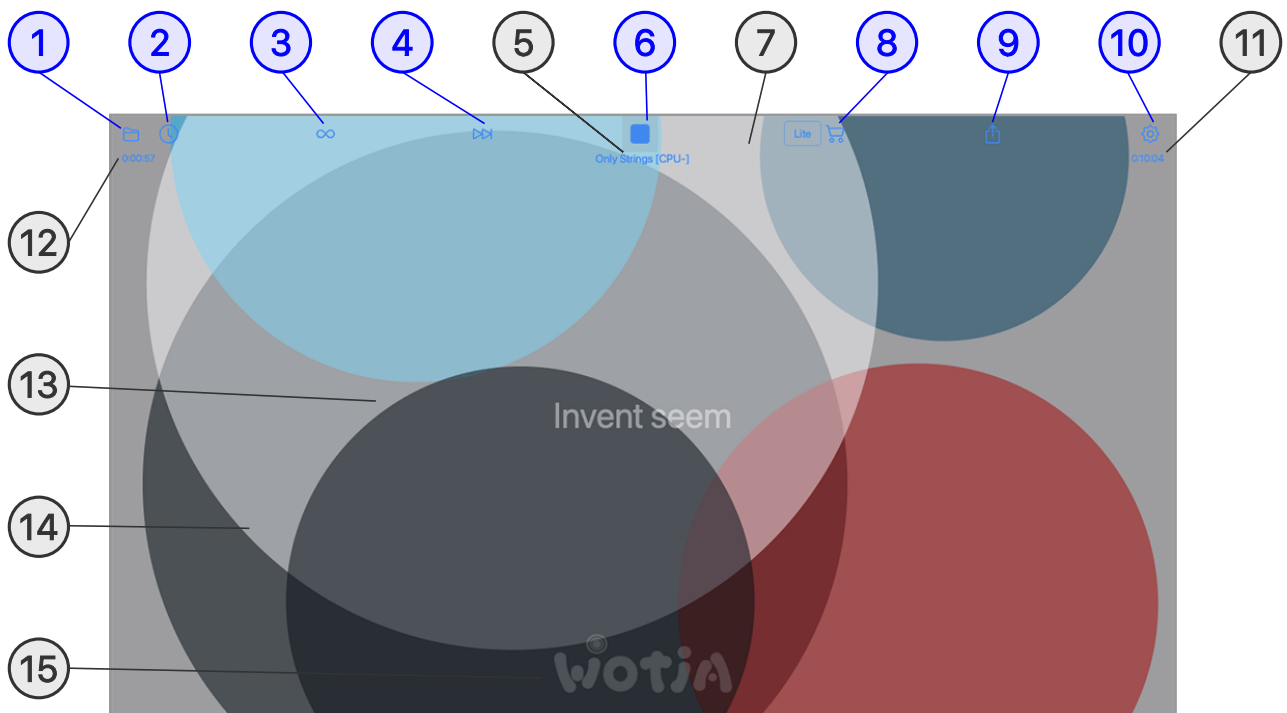
Important: A template must always be previewed before it can be added to a mix.

A Template can be previewed when a mix is playing.

You can preview it without having to open it and when being previewed it has an orange background.

Tap to select or preview a Template; tap again to stop the preview.

[↑](#) : ∞ Flow Player



(tap circle for info, hover for tooltip; tap image for large)

Tutorial

- [Play a Flow](#)

∞ Flow Player

- [Documents](#) > [5 Flows Screen](#) > [E File Button](#)

- Schemas

Screen:



- The Flow Player generates a succession of freshly created auto-mixes (a 'flow') from the various settings in the currently selected [Schema](#), previously referred to as a Randomization Preset.
- The Documents screen lists all the Schemas included in Wotja as well as any that are in the [Wotja Folder](#) i.e. any that you have added or created yourself.

- Flow mix play time is governed by the [Mix Duration](#) value in the Schema.
- Playback will continue until either the Sleep Timer kicks in (if active) or if the Lite mode auto-timeout is reached.

∞ ① 📁 **Exit Button**

Takes you back to the [Documents](#) screen.

∞ ② 🕒 / 🕒 **Sleep Timer Button (Pro mode only)**

Tutorial: [Set a Sleep Timer.](#)

- 🕒 **(Off) [Default]:**
 - Sleep Timer is inactive.
- 🕒 **(On):**
 - Sleep Timer is active

Tip: When the Sleep Timer value is changed Wotja will auto-restart whatever is playing.

∞ ③ ∞ **Repeat Button**

- ∞ **(Off) [Default]:**
 - A new Flow mix will be generated/play when the current Flow mix has reached its end.
- 🔄 **(On):**
 - The currently playing Flow mix is *restarted* when it reaches its end, rather than new one being generated.
 - *This is a Pro feature.*

∞ ④ ⏭ **Next Button**

Forces another Flow mix to be generated.

∞ ⑤ **Schema Name**

Displays the name of the Schema currently in use.

∞ ⑥ ▶ / ■ **Play/Stop Button**

A Play/Stop toggle that will start or stop the Flow mix.

∞ ⑦ **Full Screen Top Panel**

When displayed, this panel can help to see the various Menu buttons at the top of the screen. You can have it auto hide after 2 seconds by toggling off the "Show Full Screen Top Panel" in [Settings: General](#).

∞ ⑧ 🛒 **Store Button**

When tapped on, the Store button takes you to the [In-App Store](#) (or to a Store info page in the Plug-in).

The Store button in Flow and Album Player screens toggles between 2 display states:

- **Active mode:**
 - To the left of the Store button is shown the active [mode](#) of operation. In Wotja 23 this can be either: Lite, Pro, 23 Pro, Play or 23 Play.
- **'Love it!' Tip:**
 - To the left of a 'Cup' icon is shown the words 'Love it!'

∞ ⑨ 📄 **Action Button**

Displays a pop-up menu with the following options:

- **Save Flow to Wotja Mix File (Pro mode only)**
 - Saves the current Flow to a new Mix file ([.wotja](#), see [Filetypes](#)).
- **Save Flow to Wotja Album File (Pro mode only)**
 - Saves a new Album file ([.wotja_al](#); see [Filetypes](#)) that includes the current Flow Mix file ([.wotja](#), see [Filetypes](#)).
- **Full Screen [mobile] / Full Window [desktop]**
 - Displays Wotja full screen on your device and the mix (if playing) continues to play. At any time tap the screen to leave full screen display and return to Display mode.

- **Full Screen with Camera Background (iOS/Windows)**
 - Tip: [Watch the Video tutorial](#) (48 seconds in).
 - Displays your device Camera feed in a Window on top of Wotja (which may restart play on going into this mode).
 - At any time tap the screen to return to Full Screen Display mode.
 - For a composite live generative music and video feed use iOS Control Center / a relevant 3rd party app to screen mirror to a TV.
 - Perfect for use as a big screen audio-visual experience e.g. installations, nature video feeds etc.
- **Full Screen & Restart/Stop (for videos) [mobile] / Full Window & Restart/Stop (for videos) [desktop]**
 - Wotja displays full screen on your device and the mix (if playing) is stopped and then restarted after 2 seconds, making it easier to find a start point in a screen video recording. At any time tap the screen to leave full screen display and return to Display mode. Alternatively, use the Record Seconds or Bars setting to have the mix auto-stop when that value is reached and then have Wotja wait 2 seconds before returning to Display mode.
 - *macOS Desktop version:*
 - The Wotja window title bar is hidden and a content area sized to e.g. 640x480 pixels is positioned top left of the screen below the App title bar. The available content area sizes are the same as those listed in the [Titlebar](#) > [Window](#) menu.
- **Mini Game - Follow the Line**



- Displays a simple, but fiendishly hard, mini game in the Play Screen area.
- Tap the line and keep following it to build up a score.
- Score and top score (reset when Flow is exited) is shown below the top panel.
- Tap the small top left X to close the game.

- See this YouTube video example:
<https://youtu.be/fRfurwR4r5c?t=26>

- **Mini Game - Bat & Ball**



- Displays a simple mini game in the Play Screen area.
- Tap/drag on the the screen at the bottom to move the paddle.
- Tap the small top left X to close the game.
- See this YouTube video example:
<https://youtu.be/fRfurwR4r5c>

- **Help - User Guide**

- Displays the User Guide in a pop-up window.
- Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

∞ ⑩ ⚙️ **Settings Button**

Takes you to the [Settings: General](#) or [Settings: Audio MIDI+](#) screen, depending on what was last used.

∞ ⑪ **Mix Time Remaining**

Displays the Play Time remaining for the current Flow mix.

Tip: To change how long mix will play for try changing the Duration/Max and Duration Max/Range values in the [Schema](#) that is being used. Doing that lets you override what is in the Schema. It's fun!

∞ ⑫ **Flow/Play/Sleep Time Remaining**

If you are in 'Lite' mode or if you have an active [② Sleep Timer button](#) then this indicator shows the time remaining before Wotja will stop playing.

Otherwise this area just show the word "Flow" to let you know you are in

Flow mode.

∞ ⑬ **Text Area**

Whether any text is displayed here depends on the Icon Text value used by the Schema (Settings > Randomization). The text is present in the underlying mix file and can be Cut-up or TTM text.

Tip: To change what is displayed try changing the 'Icon Text' value in the [Schema](#) that is being used. Doing that lets you override what is in the Schema. It's fun!

∞ ⑭ **Background/Screensaver**

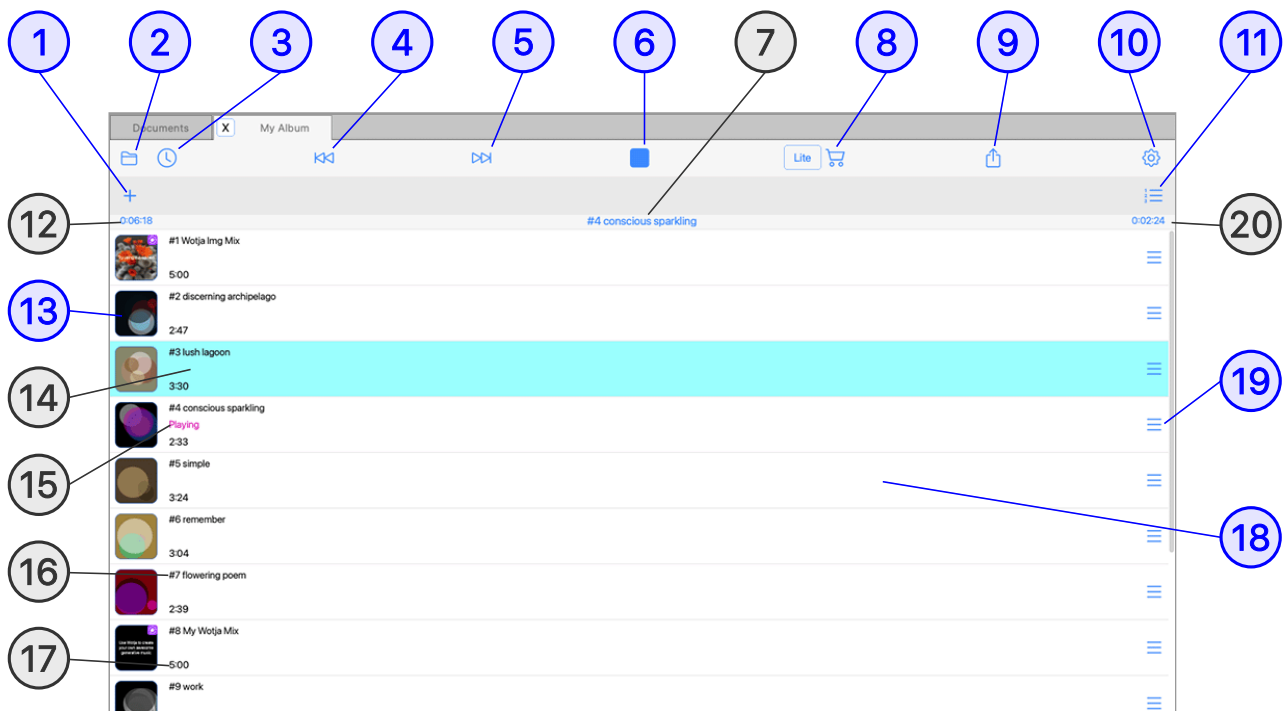
The background used in Flow Mode depends on the Icon Palette and Icon Graphic values used by the Schema.

Tip: To change what is displayed try changing the Icon Palette and Icon Graphic values in the [Schema](#) that is being used. Doing that lets you override what is in the Schema. It's fun!

∞ ⑮ **Wotja Watermark**

This is where the Watermark displays if the [Settings: General](#) > Show Watermark toggle is on.

: Album/Playlist Player



(tap circle for info, hover for tooltip; tap image for large)

Tutorials

- [Play an Album](#)
- [Play a Playlist](#)
- [Create an Album](#)
- [Create a Playlist](#)

Album/Playlist Player

- [Documents](#) > [Albums Screen](#)
- Albums Screen:



- Plays the following Wotja files:
 - Wotja Album (`.wotja_al`; see [Filetypes](#)):
 - Container files contain up to 20 Wotja mix files (`.wotja`), making them great for playing or sharing your favorite mix

creations.

- Note: Album files can include any mixes, even mixes that reference 3rd party templates, audio loops or Plug-ins. However, to play those mixes correctly the referenced content must be installed in the [Wotja Folder](#) and any relevant Plug-ins already installed.
- Note: Built-in albums do not allow exporting of mixes or editing of Mix Overrides.
- Wotja Playlist ([.wotja_1s](#); see [Filetypes](#)):
 - Playlists contain references to Wotja mix files ([.wotja](#)) saved to your Wotja folder. If you change the file in Wotja, then the Playlist just references that changed file.
- Also used to:
 - Create *user created* Albums from Playlists.
 - Add Wotja mix files ([.wotja](#)) to an Album.
 - Re-order the files in a Playlist.
 - Edit Mix Override settings for Albums and Playlists (these values are saved back to that file).

① + **Add Button**

Tap this button for the following pop-up menu:

- ***New Random Mix [Album files only] (Pro mode only)***
 - Tap to add a new Random mix to your Album.
- ***Browse Mixes (Pro mode only)***
 - Browse the Wotja folder to add a Mix or Saved Mix to your playlist.
- ***Cancel***
 - Return to the playlist.



② **Exit/Save Button**

Note: Saving changes to Albums/Playlists is a Pro mode feature.

Displays the Save Changes Menu pop-up before exiting to the [Documents](#) screen. For the menu items see the [🎵 Music](#) > [① Save/Exit](#) button.

[③](#) / **Sleep Timer Button (Pro mode only)**

Tutorial: [Set a Sleep Timer](#)

-  **(Off) [Default]:**
 - Sleep Timer is inactive.
-  **(On):**
 - Sleep Timer is active

Tip: When the Sleep Timer value is changed Wotja will auto-restart whatever is playing.

[④](#) **Previous Mix Button**

Takes you to the previous playlist item.

[⑤](#) **Next Mix Button**

Takes you to the next playlist item.

[⑥](#) / **Play/Stop Button**

Tutorials: [Play an Album](#) | [Play a Playlist](#)

A Play/Stop toggle that will start or stop the mix.

[⑦](#) **Playing Mix Name**

Displays the name of the playing mix.

[⑧](#) **Store Button**

When tapped on, the Store button takes you to the [In-App Store](#) (or to a Store info page in the Plug-in).

The Store button in Flow and Album Player screens toggles between 2 display states:

- **Active mode:**
 - To the left of the Store button is shown the active [mode](#) of operation. In Wotja 23 this can be either: Lite, Pro, 23 Pro, Play or 23 Play.
- **'Love it!' Tip:**
 - To the left of a 'Cup' icon is shown the words 'Love it!'

9 **Action Button**

- **Full Screen [mobile] / Full Window [desktop]**
 - **Only shown when in Play screen** (see [13 Mix Thumbnail button](#)).
 - Wotja displays full screen on your device and the mix (if playing) continues to play. At any time tap the screen to leave full screen display and return to Display mode.
- **Full Screen with Camera Background (iOS/Windows)**
 - *Tip:* See the [Video Feed Tutorial](#) (48 seconds in).
 - Displays your device Camera feed in a Window on top of Wotja (which may restart play on going into this mode).
 - At any time tap the screen to return to Full Screen Display mode.
 - For a composite live generative music and video feed use iOS Control Center / a relevant 3rd party app to screen mirror to a TV.
 - Perfect for use as a big screen audio-visual experience e.g. installations, nature video feeds etc.
- **Full Screen & Restart/Stop (for videos) [mobile] / Full Window & Restart/Stop (for videos) [desktop]**
 - **Only shown when in Play screen** (see [13 Mix Thumbnail button](#)).
 - Wotja displays full screen on your device and the mix (if playing) is stopped and then restarted after 2 seconds, making it easier

to find a start point in a screen video recording. At any time tap the screen to leave full screen display and return to Display mode. Alternatively, use the Record Seconds or Bars setting to have the mix auto-stop when that value is reached and then have Wotja wait 2 seconds before returning to Display mode.

- macOS Desktop version: The Wotja window title bar is hidden and a content area sized to e.g. 640x480 pixels is positioned top left of the screen below the App title bar. The available content area sizes are the same as those listed in the [Titlebar](#) > [Window](#) menu.

- **Export to Clipboard as Wotja Album**

- This is for when you want to share the Album as a Wotja URL ('WJURL'), [.wotja_al](#); see [Filetypes](#)).

- **Save Wotja Album to File**

- Allows you to export your Wotja Album to a locally saved file ([.wotja_al](#); see [Filetypes](#)). You might choose to do this to if you wish to share your Album.
- Displayed in User Albums screen.

- **Refresh ALL mixes (Pro mode only)**

- This will refresh all items in the Album file with the latest versions that you have saved locally (this is for Album authors who have the local original files).
- Displayed in Album files only.

- **Help - User Guide**

- Displays the User Guide in a pop-up window.
- Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

10 **Settings Button**

Takes you to the [Settings: General](#) or [Settings: Audio MIDI+](#) screen, depending on what was last used.

11 / **Sequential/Random Play Button**

Tap to toggle between sequential play (shown) and random play.

12 Playlist Name/Sleep/Play Time Remaining

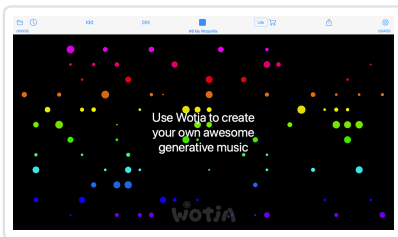
If you are in 'Lite' mode or if you have an active Sleep Timer then this shows the time remaining before Wotja will stop playing. Otherwise this area just show the name of the Album or Playlist.

Tap the Sleep Timer button in the top toolbar to go to the [Settings: General Screen](#) where you can configure the Sleep Timer.

13 Mix Thumbnail Button

Tap the mix thumbnail to go to "Play Screen" display mode below (see also the "Full Screen" option in the [Action Button](#)).

Play Screen



Play Screen

(tap image for large)

The Play Screen is a full screen mode of operation but it still has a toolbar. It is great when you want to sit back, look at any included image/message and reflect on the music, but also to have access to the top toolbar. When you first go into it a Fullscreen Top Panel background appears behind the Menu Bar to help you see the controls. To have it always on see: [Settings: General & Show Play Screen Top Panel](#).

The Play Screen layout is similar to that of the [Flow Player](#) except that it has the [Album/Playlist Player](#) Menu Bar instead of the [Flow Player](#) Menu Bar. Although very similar, the Status Bar is also slightly different as the [left hand area](#) shows the Mix Name (instead of Flow) and the [right hand area](#) shows the Mix Remaining Play Time.

Tap in the center of the Play Screen to return to the Playlist Player screen.

(14) **Selected Mix Indicator**

A faint blue highlight indicates the currently selected mix, this may be different from the playing mix.

(15) **Playing Mix Indicator**

The center line displays "Playing" when the mix file is playing.

(16) **Mix Number/Name**

Show the number of the mix in the list and its name.

(17) **Mix Duration/Range**

Displays the minimum and maximum values for Mix Duration, i.e. the range of values for how long the mix can play for each time. These values are set in the mix file but can be overridden via the [\(19\) Mix Actions button](#) (Album file only).

(18) **Mix Selector**

Tap the central area (not the thumbnail) to play or stop the mix without going into the Play Screen (see [\(13\) Mix Thumbnail button](#)).

(19) **Mix Actions Button**

Button not shown in Built-in Albums

Note: In the Mix Overrides screen below you can choose to override the related settings that are in the Mix File (i.e. [Music Mode](#) > [Mix Properties](#) > [Mix Fades](#)).

Menu options

- ***Mix Overrides [Option not shown in Playlists] (Pro mode only)***



Mix Overrides Screen

(click image for large)

- **Ramp Up**: Sets how long it takes for the file volume to ramp up once the file has started to play.
- **Duration**: Sets how long the file will play for (Mix Duration).
 - Note: This Mix Override has a *minimum value of 1 second*, and the use case for that is when you want your album to have a custom thumbnail:
 - An album thumbnail is always based on the **Display mode** settings of the first mix file in the album.
 - If you don't want it to be what is in your "real" first mix then create a silent/empty mix file that displays as you want.
 - Add this mix file to the album, make it the first mix and use Mix Overrides to set its duration to 1 second.
 - When the Album plays it will play this silent mix file for 1 second (you will hardly notice!) and then play will immediately move to the next mix file (your "real" first mix).
- **Range**: Sets a range on how long the file can play for (Mix Duration Range).
- **Ramp Down**: Sets how long it takes for the file volume to ramp down before play moves to the next file.
- **Random Icon [Album file only] (Pro mode only)**
 - Allows you to randomly generate a new icon according to the **Schema > Visuals** settings.
- **Export Mix to File (Pro mode only)**
 - Where available, this item lets you export your mix so that you can further edit it.
- **Refresh Item from File [Album file only] (Pro mode only)**

• Refresh Item from File [Album file only] (Pro mode only)

- If you have exported a mix, changed it and saved it, this allows you to refresh the file in the album. Only shown if you have exported that mix file and it is shown in the Documents screen.
- **Move Up (Pro mode only)**
 - Allows you to move a file up.
- **Move Down (Pro mode only)**
 - Allows you to move a file down.
- **Delete (Pro mode only)**
 - Allows you to delete a file.
- **Cancel**
 - Cancel out of the pop-up.

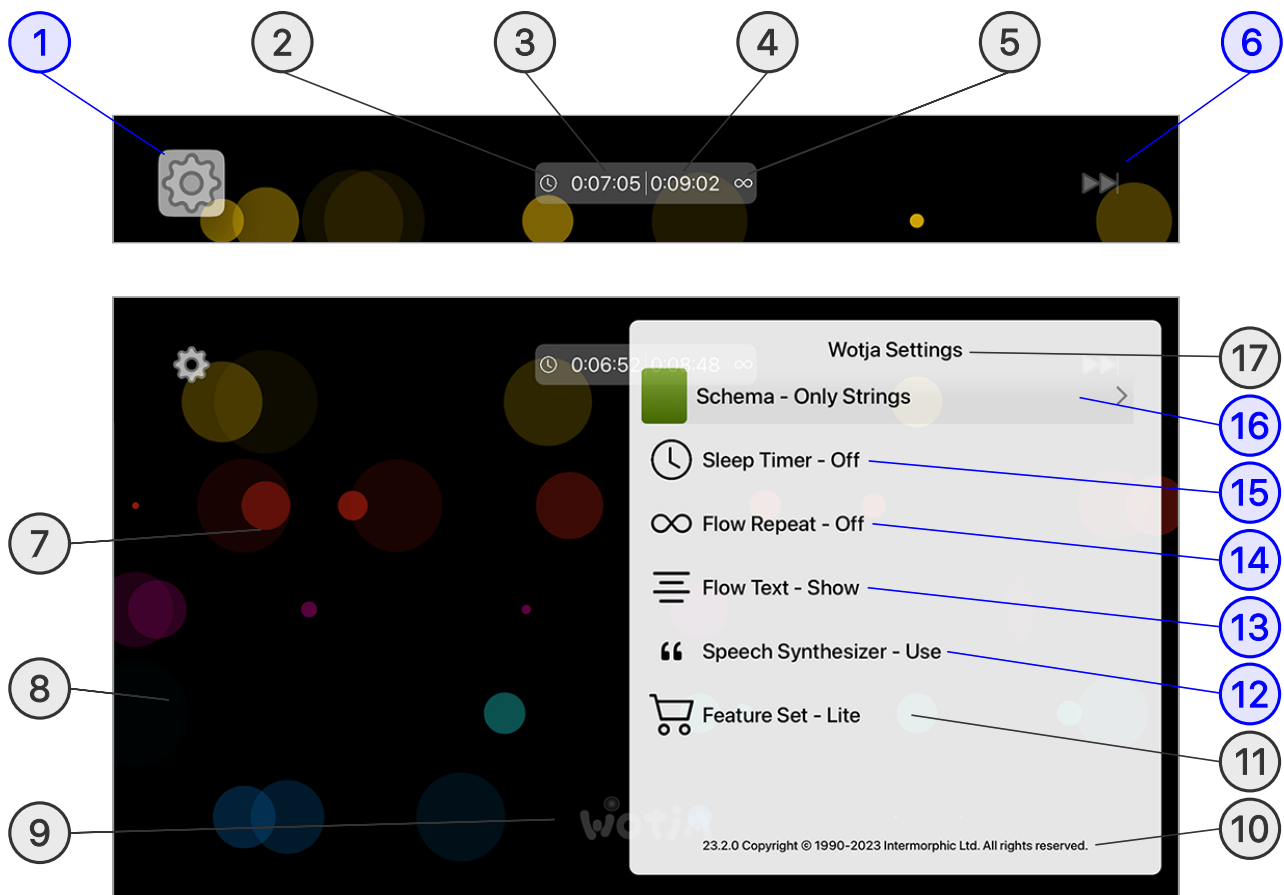
(20) **Mix Time Remaining**

This displays the Play Time remaining for the current file.

This value can only be adjusted in Mix Overrides (Box file only) - see [\(19\) Mix Actions button](#).

Note: The maximum duration for a mix is 4 hours.

[↑](#) : TV Player



(tap circle for info, hover for tooltip; tap image for large)

TV Player for Apple TV, Fire TV and Android TV

- A simple TV 'player' app (included in the Wotja App Bundle) that is launched from the Wotja app icon on your Apple TV, Fire TV or Android TV (requires the relevant OS version of Wotja to be installed).
- It operates as a '[Flow Player](#)' meaning that it generates a succession of freshly created mixes, but it also lets you repeat the current mix if you so wish ('Pro' only Feature).
- Once started, the player generates music until such time as you stop music generation via the TV control's Play/Stop button, the Sleep Timer kicks in (if active) or any auto-timeout is reached.

- The music generated, screen background and any text displayed all depend on the various settings in the selected [16 Schema](#) (these are not editable in the TV Player).
- *Tip:* Use the play/stop buttons on your TV remote control play/stop music being generated by the Wotja app.

[1 Settings Button](#)

Displays the pop-up [17 Settings Panel](#).

[2 Sleep Timer Status](#)

The icon shows whether the Sleep Timer is on, where it has is a solid shape, or off [as shown], where it is an outline shape.

[3 Sleep/Play Time Remaining](#)

If a Sleep Timer has been set this will reflect that time. If not, then when the TV Player is in Play or Pro mode it will show an infinity symbol.

[4 Mix Time Remaining](#)

Shows how long the current mix has left to play before the next mix is generated or the mix is repeated (if the [14 Repeat Selector](#) is toggled to On).

[5 Repeat Status](#)

The icon shows whether a new mix is to be generated at the end of the mix play time ("Continuum"; squiggle forward icon) or the current mix will repeat ("Repeat"; loopback icon).

See: [14 Repeat Selector](#).

[6 Next Button](#)

Select this button to force another mix to be generated.

7 Screen Text

Whether any text is displayed here depends on the 16 Schema being used.

8 Background/Screensaver

The background used depends on the 16 Schema being used.

9 Wotja Watermark

This is where the Watermark displays.

10 Version number

Displays the version number and copyright statement.

11 Mode

Note: There is no In-App Store in the TV Player and any IAP must be made in the relevant Wotja App.

This button displays the current **mode** of operation.

Tap on this for a "Restore In-App Purchases" pop-up menu with OK/Cancel buttons.

- **Cancel:**
 - If you select this the alert disappears and nothing happens.
- **OK:**
 - If you select this then you're prompted in the normal to enter your Store credentials and the app tries to restore any purchased IAP; if it can, then it updates the table to display the current **mode** of operation.

12 Speech Synthesizer Toggle [Apple TV only]

Default (Use): Lets you turn on/off support for Text to Speech (TTS).

13 Text Display Selector

Select this to choose whether any text is displayed on screen or not (which also depends on the selected 16 Schema, as some simply do not show text). The text can be Cut-up or TTM text, depending on the Schema.

14 ∞ / ↺ Repeat Selector

- ∞ **(Off) [Default]:**
 - A new Flow mix will be generated/play when the current Flow mix has reached its end.
- ↺ **(On):**
 - The currently playing Flow mix is *restarted* when it reaches its end, rather than new one being generated.
 - *This is a Pro feature.*

Note: How long a mix will play for is a setting that is defined in the selected 16 Schema.

15 ⌚ / ⌚ Sleep Timer Selector (Pro mode only)

Select this to display a list of available sleep times ranging from 'Off' to '8 hours'. Select the one you want to return to the Settings menu.

- ⌚ **(Off) [Default]:**
 - Sleep Timer is inactive.
- ⌚ **(On):**
 - Sleep Timer is active

Tip: When the Sleep Timer value is changed Wotja will auto-restart whatever is playing.

16 Schema Selector

Select this to display a list of built-in Schema. Amongst other things, these determine how long each generated mix will be. Select the Schema you want to return to the Settings Panel.

Schemas are not editable in the TV Player.

■ ①7 Settings Panel

The Settings Panel also displays the App Name, this being "Wotja".

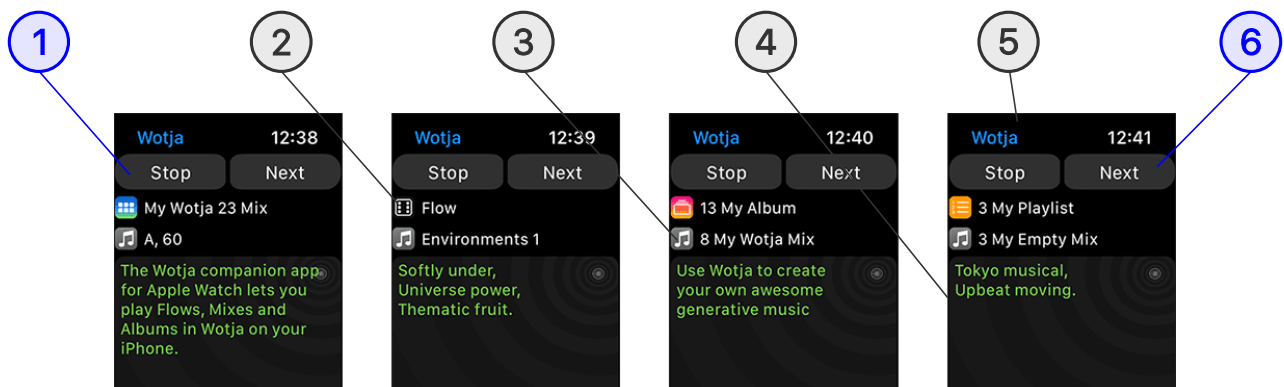
[↑](#) : Apple Safari Extension

See: [Web Play a WJURL](#)

The Wotja Safari Extension is included in the Wotja App Bundle for Apple devices. It is a *facilitator for the Wotja App* and allows it to load and play a webpage-embedded Mix or Album [WJURL](#).

- *Note 1:* Always assume that the [latest version of Wotja](#) is required to correctly play a WJURL! If there are multiple versions of Wotja installed then this might actually launch one of those instead so either first delete or archive them.
- *Note 2:* WJURL Mixes (and Mixes in Albums) can reference hosted AUv3/VST3 Plug-ins (e.g. see [Fan Favorites](#)) but to play as intended all Plug-ins MUST be **already installed** and available for use by Wotja on the "player" device!

[↑](#) : Apple Watch Player



(tap circle for info, hover for tooltip; tap image for large)

Apple Watch Player

- The Watch Player is a Wotja companion app for Apple Watch. It controls playback of Wotja on an iPhone and requires that the relevant version of Wotja is installed on your iPhone.
- To use it, first load Wotja on your iPhone. If you then press the [1 Play/Stop button](#) on the watch app it will by default start in "Flow Player" mode in the Wotja app for iPhone. You can use the [6 Next button](#) to force a new Flow mix to be created (using the currently selected Schema).
- To use it, first load Wotja on your iPhone and in Documents either tap on a Schema to load it in the [Flow Player](#), or open a Mix, Album or Playlist.
- If you then press the [1 Play/Stop button](#) on the watch app it will start Wotja playing (if it is not already). For 'flows' you can use the [6 Next button](#) to force a new flow mix to be created; for albums and playlist this will cause the next file to be played.
- The icon displayed in the [2 File Type](#) area will depend on whether Wotja for iPhone is in the Flow Player, or has a Mix, Album or Playlist file open.

① **Play/Stop Button**

Tap this to start or stop play of Wotja on your iPhone.

② **File Type**

Displays the icon for the relevant file type/mode, and the name of what is playing.

- **Flow:**
 - Shows the Schema badge icon and "Flow".
- **Mix:**
 - Shows a Wotja Mix icon and name of the mix.
- **Album:**
 - Shows the Album badge, the number of mixes in the box/album and the name of the box/album.
- **Playlist:**
 - Shows the Playlist badge, the number of mixes in the playlist and the name of the playlist.

③ **File Info**

Depending on what is playing the text next to this icon displays as follows:

- **Flow**
 - Name of the Schema in use.
- **Mix**
 - Root and tempo of the playing mix.
- **Album**
 - Number and name of the mix that is playing.
- **Playlist**
 - Number and name of the mix that is playing.

④ **Screen Text**

Where a mix or Schema is configured to display it, this area shows any included Cut-up or TTM text. This area can be scrolled with the crown.

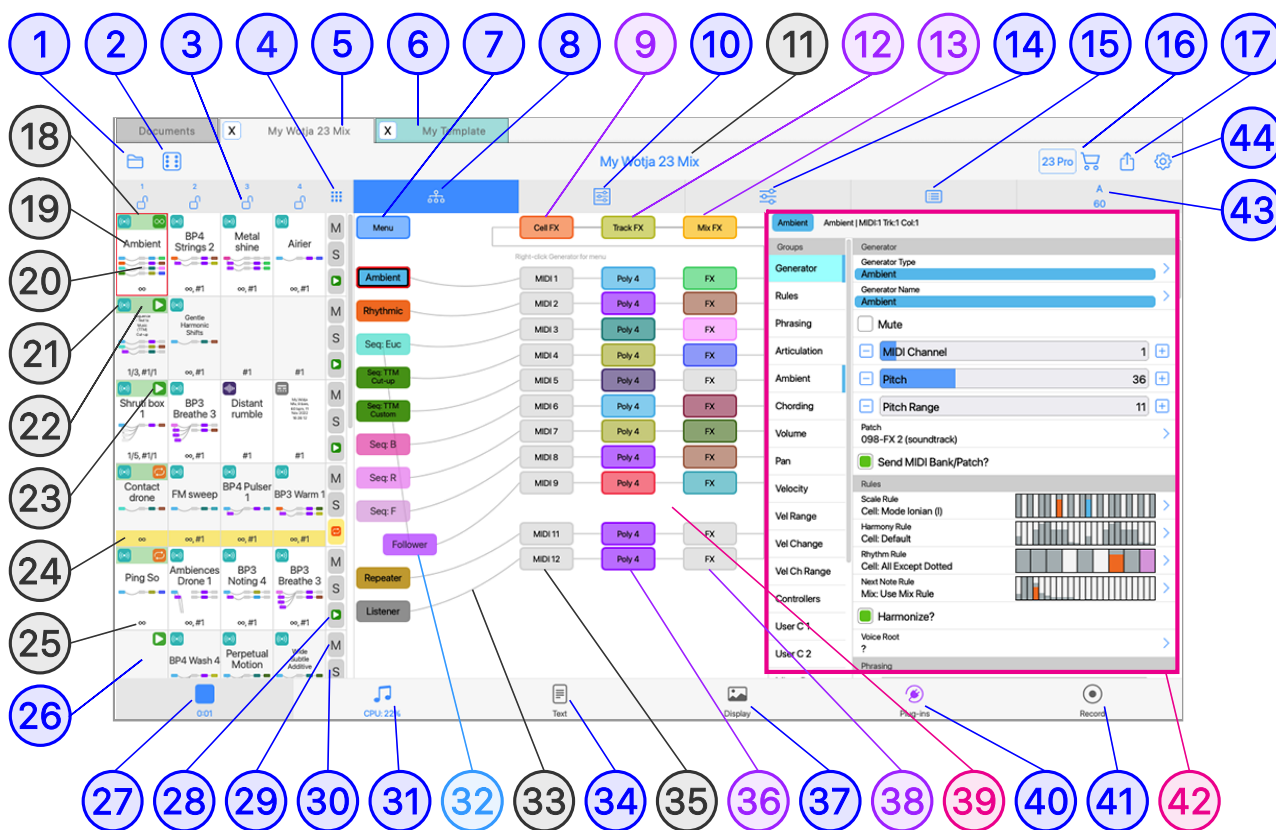
 ⑤ **App Name**

This is Wotja!

 ⑥ **Next Button**

Tap this to move to the next mix in an Album or Playlist in Wotja on your iPhone or, using the currently selected Schema, to force a new mix to be created in the Flow Player.

↑ Mix: 🎵 Music



(tap circle for info, hover for tooltip; tap image for large)







Tutorials

- [Play a Mix](#)
- [Edit Mix Properties](#)
- [Edit Cell Properties](#)
- [Cell Display](#)
- [Cell Sequencing](#)
- [Mix Volume](#)

🎵 Music

- [Documents](#) > [5 Mix File](#) > [31 Music Tab](#)
- This is where you add/delete [Templates](#) to/from your mix [Cells](#) and edit all their [Music \(WME\)](#) parameters, [Sounds & FX \(WAE\)](#) parameters and [Cell Rule](#) related settings. You can also access the

parameters and [Cell Rule](#) related settings. You can also access the [Cell Mixer](#) and [Track Mixer](#), edit [Mix Rules & Mix FX](#) - and so more.... but it can also be used just for mix playback.

- The main mix editing tabs are as follows:
 -  [Play/Stop button](#)
 - Tap to stop or start your the generative mix (if any) in your wotja.
 -  [Music](#)
 - The editing mode where you configure your mix, using to 16 Tracks each with 4 Cells, and can edit all parameters of the Intermorphic Music Engine ([WME](#)) and Intermorphic Synth Engine ([WAE](#)).
 -  [Text](#)
 - The editing mode where you can create and edit Cut-up and text.
 -  [Display](#)
 - The editing mode where you decide how you want your wotja to look, this being important should you wish to share it.
 -  [Plug-ins](#)
 - The editing mode where you set up how you want the mix to use hosted 3rd party Plug-ins (Optional; iOS/macOS and Windows only).
 -  [Record](#)
 - A special non-editing mode where you can make Audio or MIDI recordings of the open mix, as well as manage and preview them.

1 Save/Exit Button

Displays the Save Changes Menu pop-up before exiting to the [Documents](#) screen:

- **Save & Close**
 - Save the changes you have made to your file and return to the Documents screen.

- **Save & Continue**
 - Save the changes you have made to your file and then continue working on it.
- **Save a Copy (Pro mode only)**
 - Creates a new file (which you can rename) based on the current state of the open file (a snapshot of where you are if you like), but leaves you in the current open file - meaning if you then exit the file you will see this pop up dialog *again* letting you choose what to do with the file.
 - *Note:* This is NOT the same as Save As so please remember to save your file if you want to keep your changes to it.
- **Discard**
 - Lose any changes made to your file since you opened it.
- **Cancel**
 - Dismiss this popup and return to the Display screen.

🎵 ② 📄 **Randomize Button**

Displays the Randomize Menu pop-up:

- **Randomize Mix**
 - Replace your current mix with a new randomized mix created in accordance with the currently selected [Schema](#).
- **Randomize Mix Patterns**
 - For all Content Cells randomizes all melodic patterns (these being patterns of B or F type) being used by a Generator of type "Pattern".
- **Randomize Cell**
 - Tap any cell (including looping cells) to replace its contents with another randomly selected template. This template is chosen from paks/templates in the Template List that are tagged as available for selection and also uses relevant settings in Randomization Settings (see Edit Randomization Settings).
- **Randomize Cell Melodic Patterns**
 - Tap any cell to randomize all melodic patterns used in it by a Generator of type "Pattern", these being patterns of B or F type.

- **Randomize Column**

- Tap any cell in a column to randomly replace the contents of all currently populated cells in the column EXCEPT those that are set to be looping (i.e. locked). Tip: By setting a cell to loop (tap/hold = orange bar) you can ensure that the contents of that cell are not changed when randomizing.

- **Randomize Column (ALL)**

- Tap any cell in a column to randomly populate / replace the content of potentially ALL cells in the column (including looping cells). The number of cells randomized is determined by the "Tracks" setting in [Schema](#). Tip: Use carefully.

- **Randomize Track**

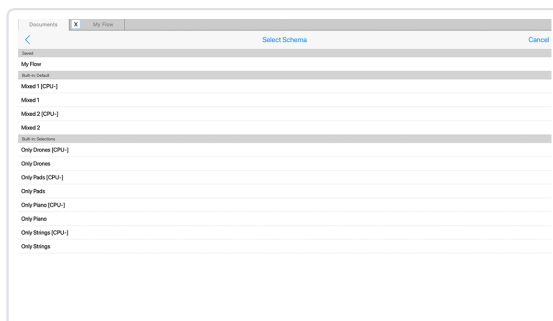
- Tap any cell in a track to randomly replace the contents of all currently populated cells in the track EXCEPT those that are set to be looping (i.e. locked). Tip: By setting a cell to loop (tap/hold = orange bar) you can ensure that the contents of that cell are not changed when randomizing.

- **Randomize Track (ALL)**

- Tap any cell in a track to randomly populate / replace the content of ALL cells in the track (including looping cells). The number of cells randomized is determined by the "Cells" setting in [Schema](#). Tip: Use carefully.

- **Select Schema (Schema Name)**

- Lets you select the [Schema](#) you wish to use.
-



Schema Select Screen

- **Cancel**

- Cancel out of the pop-up menu.

🎵 ③ 🔒 / 🔓 **Column Lock/Unlock Button**

Tap on this button to lock a column to force the play of all cells in that column; tap again to unlock it. Locking of a column only has effect on Cells in a Track with ③① **Track Play Type** of type "Sequence".

Tip: If you are in "One column" view (see ④ **Grid Button** > "Display: One Column"), then you can see the column number at the top of the ④② **Generator Editor Panel** (assuming you have set it to show).

🎵 ④ **Grid Button**

Tap the Grid button for the pop-up "Grid Display Mode and Cell Action" Menu. Cell Actions are the same as the **Cell Actions Menu**

Tip: you can also double tap a Cell for this pop-up menu.

- **Display: Focussed Cell**

- Select this to display in the left area just the selected (focussed) Cell. This is great for when you just want to focus on editing the contents of just one Cell, perhaps for the creation of a Template or even to create a complete 'piece' in one Cell.

- **Display: Column 1 / 2 / 3 / 4**

- Select the relevant item to display just that column of Cells in left area (which may or may not include the selected Cell). This mode still gives access to the Cell and Track Mixers to set the levels/pans in each Cell and for each Track and is particularly useful if you want to mix together just one column of Cells without Cell sequencing (i.e. a 1 column mix).

- **Display: 4 Columns**

- Select this to display a grid of 4 columns of Cells in left area. It is an overview mode that lets you see how "Cell Sequencing" is working when the Track Rule is set to Sequence. Cell Sequencing can be used to apply a level of arrangement to your mix, allowing spaces for example via empty Cells. It is particularly useful when using loops and if you want to loop different cells that use the same track FX. This mode is also great for "live performance" mixing, too, where you tap/hold a

cell to force it to "loop".

- **Show/Hide Generator Editor Panel**

- *Default value - Visible:* For in-screen editing of a Generator's WME parameters this toggle governs the display or hiding of an optional Generator Editor sub-panel to the right or below (according to device orientation) in the Generator Network Editor panel.
- Layout:
 - Landscape: The panel is shown to the right of the Generator Network.
 - Portrait: The panel is shown below the Generator Network.
- Operation:
 - Simply tap/click a Generator button/icon in the Network view to update what is shown in the parameter panel.
 - Clicking the Generator button in the network view on an unfocused Generator will give focus to that Generator and update the panel but doesn't show the pop-up Generator menu.
 - Clicking on previously focused Generator does show the menu.

- **Other items: See [Cell Actions Menu](#)**

🎵 ⑤ File Tab: Mix

Tabs for Mix files are coloured grey.

Select one to show the full Music Mix Editor, as shown in the Schematic above.

🎵 ⑥ File Tab: Template (Template Editor)

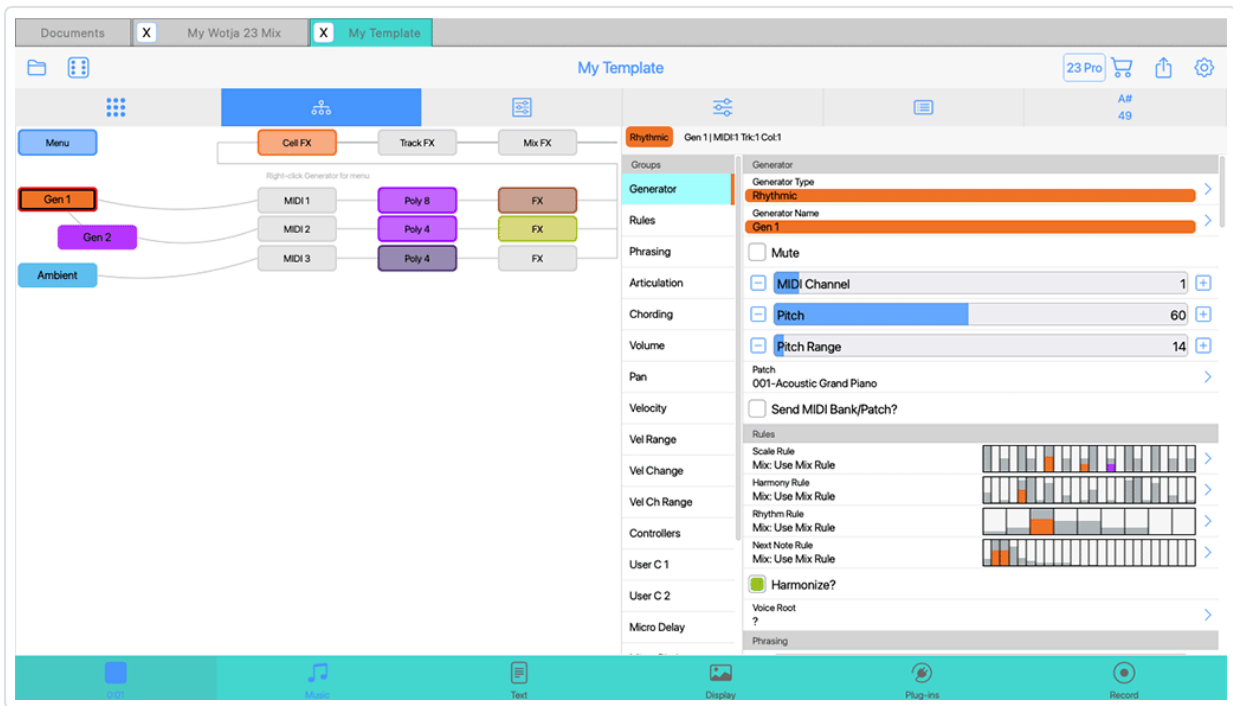
Template files (`.wotja_tp`; see [Filetypes](#)) are in effect the contents of a single Cell. They are loaded (just like a Mix file) by tapping on the [File Button](#) in the Mixes screen, when they open in the Template Editor (below).

Template Editor

The Template Editor is an abridged version of the Mix Editor that displays only in [single \('focussed'\) Cell mode](#) and with various menu options suppressed/changed. It shows the bottom toolbar with a teal colour (similar to that used for the [Template file badge](#)). The Desktop version also uses that colour for its File Tab.

Tech: The Template file is actually loaded/saved in the top-left cell within a hidden container Mix.

- **Important:** For testing of your Template the Template Editor *does* allow you to edit various e.g. Mix-related properties but those are *NOT saved* to the Template when it is saved/exported.
 - **Tip:** You can still export your Template as a Mix, either to Clipboard or File, via the [Actions Button](#).
- This is why when it opens you will see a popup message "Mix-specific properties will not be saved in this mode, but are useful for testing your template (e.g. [Text](#), [Display](#), [Plug-ins](#); and [Mix / Cell level rules](#), [Track FX](#), [Mix FX](#))." If you do not want to see that again just tap the button "Don't tell me again".
- What is saved to the Template includes **ONLY Cell-related data**, meaning the following:
 - [Generator parameters](#), [Generator FX](#), [Cell FX](#), [Cell Mixing](#), [Cell Rules](#) (if custom ones are specified).
 - As well as: [Cell Script](#), [Cell Meter](#), [Template Title](#), [Template Author](#) and [Template Notes](#) (but no other [Cell Properties](#)), [Mix Root](#) and [Mix Tempo](#) (but no other [Mix Properties](#)).
 - *Tip:* Templates *can* contain custom TTM text in a Generator ([TTM Custom Text](#)), but if you want to set up Generators to use/reference Cut-Up then we auto-generate Cut-Up text (for the hidden container mix file) using the currently selected [Schema](#).



Tap for large

🎵 ⑦ Generator Menu Button

Note: See the [Wotja Music Engine \(WME\) Guide](#) for details on Generator parameters.

Tap on this button (and/or right click in the Desktop version) for the pop-up "Generator Menu" below:

- **Edit {Selected Generator}**
 - Go to that Generator in the full-screen [Generator Editor screen](#) where you can edit the generative music parameters for the Generator.
- **Browse Templates...**
 - Displays the [Templates](#) screen where you can choose a Template to add to the selected Cell.
 - *Note:* You can either replace the Cell contents with this or, where the existing Cell content is generative, *merge* [Pro mode only] a selected Template into the existing Cell content.
- **Add Generator of Type...**
 - Add a Generator of one of the WME Generator types.
- **Copy**

- Copy the Generator.
- **Paste**
 - Paste the Generator.
 - *Note:* First copy the required Generator, then tap an existing Generator and select Paste.
- **Mute**
 - Mute the Generator.
- **Solo**
 - Solo the Generator.
- **Delete**
 - Delete the Generator.
- **Rename**
 - Rename the Generator.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

🎵 ⑧ Generator Network View

For details on all the UI elements in this main view refer to the [Music Mode](#) schematic, which shows this view selected.

For the selected ②⑥ Cell, and ONLY if it contains generative content, the Generator Network View is where you can marry [WME Generator Objects](#) (note "Generators") to MIDI channels, [WAE synth sounds and FX](#). The buttons in the network and associated WAE network all provide quick links to the underlying parameters and editors.

Tip 1: Tap/hold on a Generator and you can drag it up/down to change the Generator order.

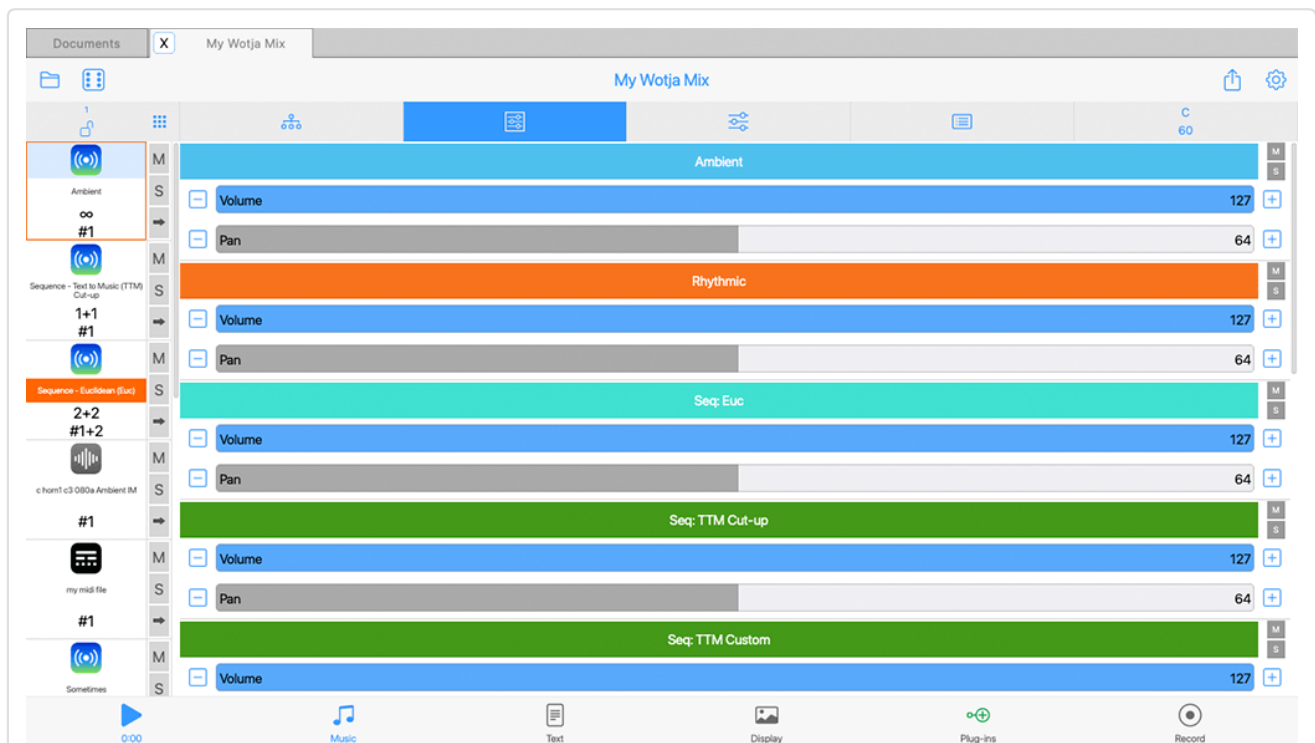
Tip 2: If you drag from a Generator button to a MIDI channel box that will tell the system that the Generator will play through the defined MIDI channel. If a new Generator is added to a piece, the Generator won't be assigned to a specific MIDI channel; if you haven't yet hooked-up a

Generator to a MIDI channel, the WME will decide on a free MIDI channel to hook-up the Generator to when it starts playing.

🎵 9 Cell FX Button

Displays the [Synth & FX editor](#) where you can add/edit **FX Networks for the WHOLE Cell**.

🎵 10 Cell Mixer View



Music Mode: Cell Mixer

(tap image for large)

Tip: To mix tracks against each other use instead the [12 Track Mixer](#).

Shown in the [39 Editor Area](#) (which is to the right of the [26 Cells](#)), the Cell Mixer is where you can easily change the volume and pan levels *within the Cell* and solo/mute each Generator. Double tap a slider for a pop-up menu where you can manually enter a value.

- **Volume Slider (blue)**

- Tap to change the volume for the relevant Generator's MIDI channel.
- If you have multiple Generators on one MIDI channel try changing the Generator's *Velocity* parameters instead

changing the Generator's velocity parameters instead.

- **Pan Slider (grey)**

- Tap to change the pan position for the related Generator's MIDI channel.
- *Note:* You may have multiple Generators using the same MIDI channel.

- **Mute or Solo button**

- Tap to mute or solo the relevant Generator.
- *Note:* These buttons do not at present change color.

🎵 11 Mix Name

The name of the open mix file.

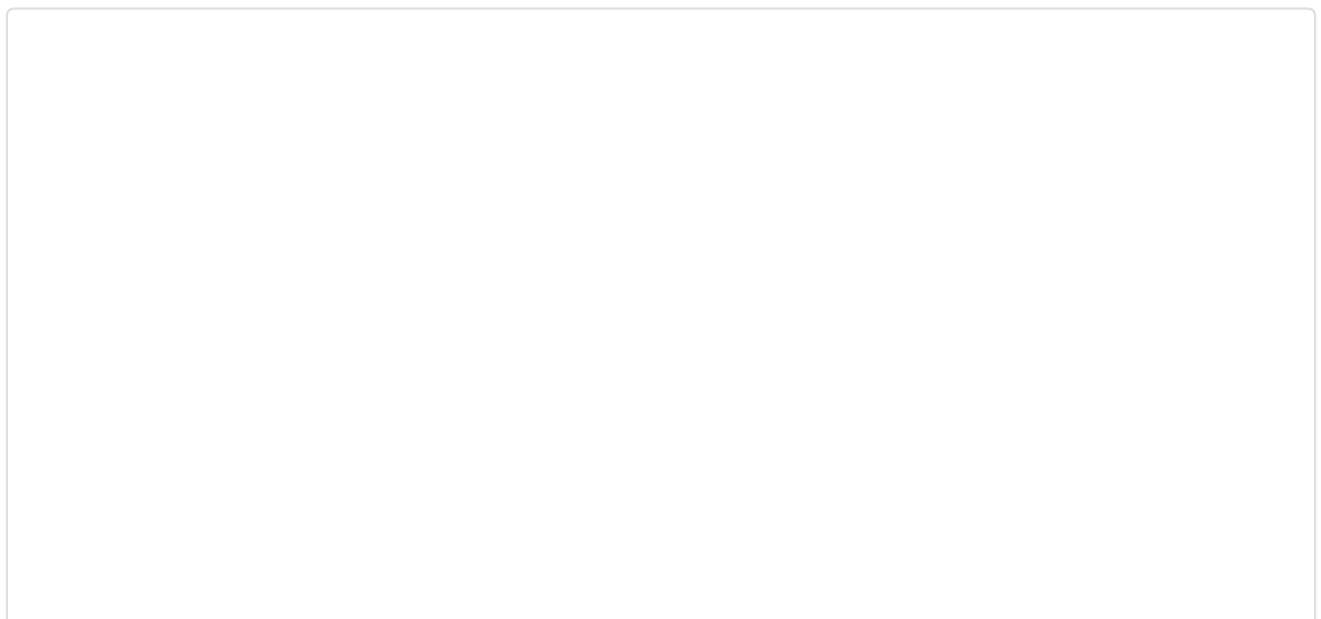
🎵 12 Track FX Button

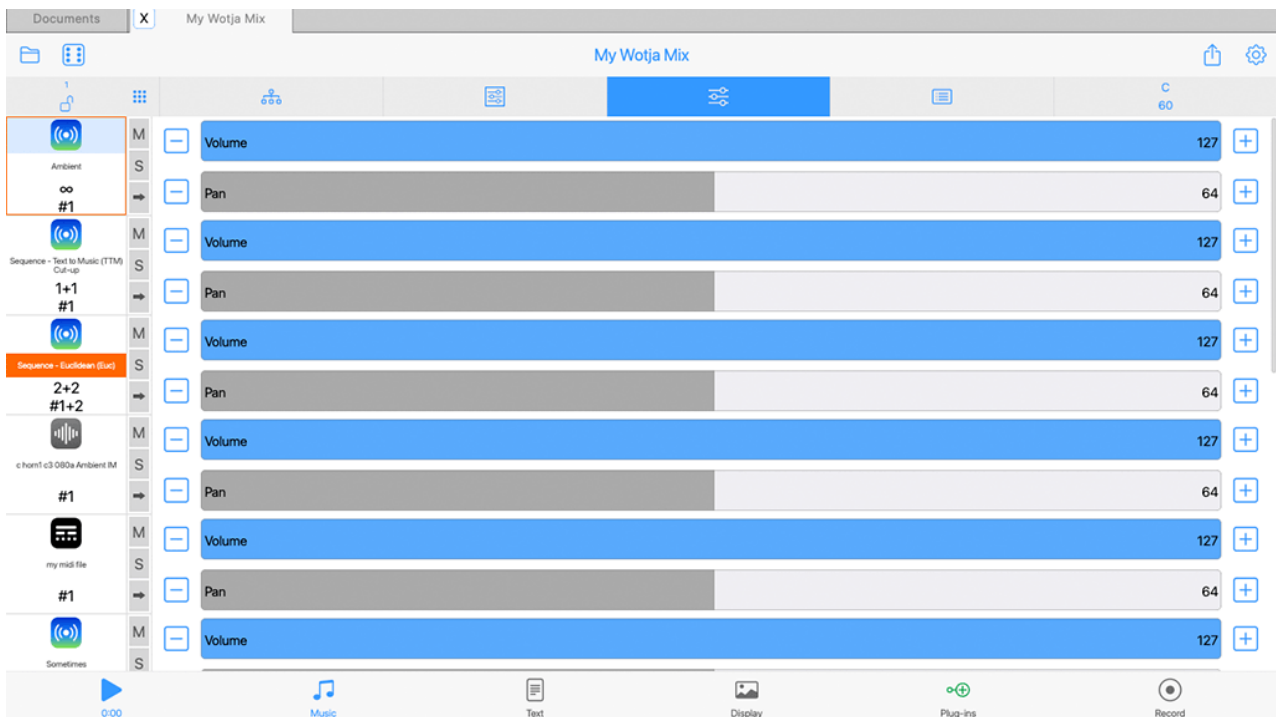
Displays the [Synth & FX editor](#) where you can add/edit **Track FX**.

🎵 13 Mix FX Button

Displays the [Synth & FX editor](#) where you can add/edit **Mix FX**.

🎵 14 Track Mixer View





Music Mode: Track Mixer

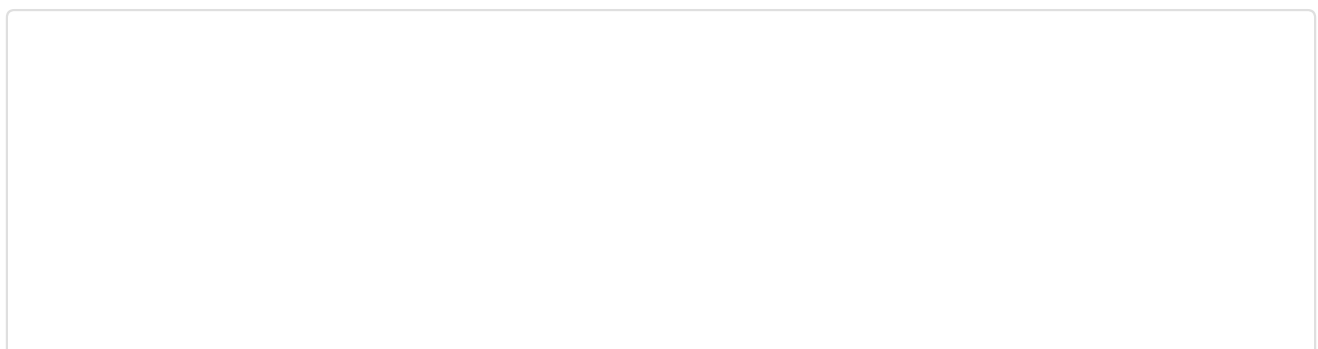
(tap image for large)

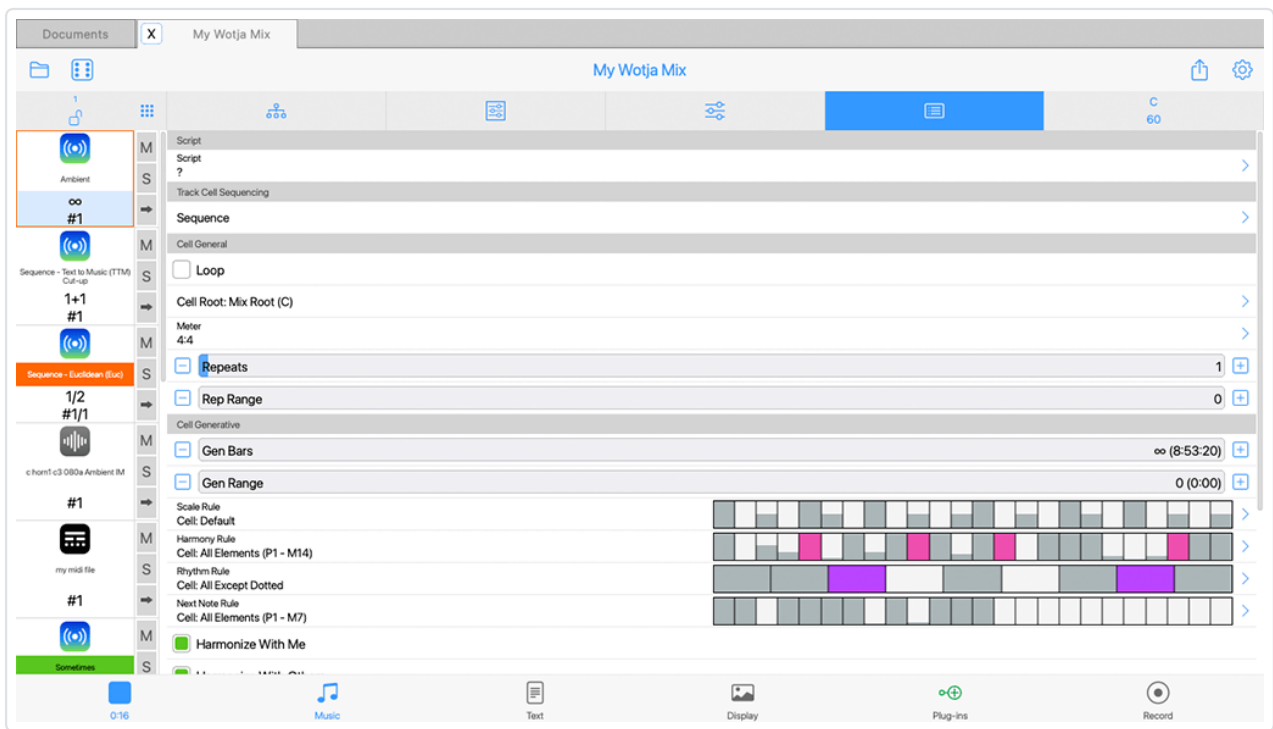
Tip: To mix the internals of a Cell use instead the [8 Cell Mixer](#).

Shown in the [39 Editor Area](#) (which is to the right of the [26 Cells](#)), the Track Mixer is where you can easily change the volume and pan levels of each of the *tracks* used in the mix. Double tap a slider for a pop-up menu where you can manually enter a value.

- **Volume Slider (blue)**
 - Tap to change the volume for the related Track.
- **Pan Slider (grey)**
 - Tap to change the pan position for the related Track.

[15 Cell Properties:](#) > List





Music Mode: Cell Properties (List)

(tap image for large)

See the [Wotja Music Engine \(WME\)](#) section for information on WME parameters.

For each Cell, this is where you set any special properties such as how a Cell will play, as well as the rules used for the content in that Cell.

Tip 1: For general rules that apply to the whole Mix (such as Mix Rules, Tempo, Root, Ramp Up/Down as well as Playlist Duration settings) see the Mix Rules panel.

Tip 2: If you are going to be making your mix or piece available for others to use, you may well wish to include your own copyright statement for each Cell in the mix. Each Generator within a Cell can also have its own copyright statement.

[↑](#) How long does a Cell play for?

IMPORTANT: Cell Duration is ONE bar when the Cell is empty or references Audio/MIDI files, but is the calculated composite value of Generative Bars/Range when using Generative Content.

See also [Track Play Type](#) for details on how to sequence, loop and trigger Cells.

When you create multi-cell mixes it is important to understand how long a Cell will 'play' for, and that depends on two properties:

1. Cell Duration: Governed by the 'Content Length'

- MIDI / Audio and Generative content are different in many ways.
 - MIDI/Audio:
 - The Content Length is a fundamental property of the media itself; it is the time of the MIDI file in seconds, or the duration of the audio file in seconds.
 - If the Content Length is greater than the Cell Duration (which is 1 bar) then the Cell in effect expands its Duration to fit that Content and then pads with silence to the end of *the next* bar.
 - Note: if an audio file is loaded from a [Wotja Pak](#), then Wotja can automatically time-stretch the audio file so that it exactly fits the Cell Duration, even as you change the tempo of the mix (see section below).
 - Generative (WME):
 - **Generative Bars / Range**: The Content Length of Generative (WME) content in a Cell is not fixed and is instead determined by the Generative Bars / Range properties of the Cell. This opens up a range of possibilities, which become clearer to you the more you experiment with Wotja.

2. Cell Repeats: The number of times that the Cell is configured to repeat

- **Cell Repeats / Range**: These parameters can be used irrespective of the media type, be that MIDI/Audio or Generative (WME).

- If a Cell's Cell Repeats / Range parameters have been set so that the composite Repeats value is > 1 , Wotja will play a Cell's Content just once before moving on to the next cell in the track (assuming [Track Play Type](#) has been set to Sequence).
- If the composite Repeats value is >1 it will 'repeat' that Cell the requisite number of times.
- The Repeats Range value is there to provide variation in how often a Cell will Repeat.

Interaction between Cell Duration and Cell Repeats

The Wotja mixing engine treats both Cell Duration and Cell Repeats separately, and for good reason. They mean different things, and have different effects in a multi-cell mix.

- **Use case:**

- I want a 4-bar fixed drum riff, repeated twice.
- Solution: Use MIDI content of 4 bars (assuming you have one), repeated twice ([Cell Repeats](#))

- **Use case:**

- I want a 4-bar generative drum riff, repeated twice.
- Solution: Use any generative drum template that suits, repeated twice ([Cell Repeats](#)); simply set generative duration 4 bars ([Generative Bars](#)).

- **Use case:**

- I want a drum riff that plays one or two bars, repeated twice.
- Solution: MIDI or Audio can't achieve this. The only way is to use generative drum template, repeated twice ([Cell Repeats](#)); set generative duration to 1 bar with range of 1 ([Generative Bars / Range](#)).

Audio/MIDI files within a Cell - what effect does Content Length have on Cell Duration?

Audio/MIDI files have fixed times measured in seconds

(milliseconds/seconds) etc.

Special Case: Audio files loaded from "Audio" Wotja Paks are auto-stretched (tempo matched) to fit the Cell Duration or multiple of that according to how the Pak is configured (pak.xml).

A Cell containing an Audio/MIDI 'file' will start playing it when the Cell starts. After the last Audio sample/MIDI event from the file has been played Wotja will 'pad-out with silence' to the end of the Cell Duration *or the next bar if it overruns*. At this point it will then repeat the Audio/MIDI file if Cell Repeats/Range is >1, or start playing the next Cell.

For example, if the [Cell Meter](#) is set to 4/4 and [Mix Tempo](#) set to 60 BPM then that Cell Duration (one bar) is 4 seconds:

- ***If the Cell's Audio/MIDI file is 3 seconds long and no Cell Repeats:***
 - Wotja will play 3 seconds of Audio/MIDI and 1 second of silence to reach the end of the Cell Duration and then starts playing the next Cell.
- ***If the Cell's Audio/MIDI file is 7 seconds long and no Cell Repeats:***
 - Wotja will play 7 seconds of MIDI and 1 second of silence to reach *the end of the next bar after overrunning the Cell Duration* and then start playing the next Cell.
 - [Audio Paks](#): See Special Case comment above; there is no silent padding added.

Clearly, if you change the Mix Tempo, that will affect the Cell Duration in seconds, and so how much (if any) 'pad-out' silence is used.

Generative (WME) Content within a Cell - what effect does Cell Duration have?

- **When using Generative Content (WME) the Cell**

Duration is the calculated composite value of the Generative Bars / Range parameters of the Cell.

- WME generators continue to compose according to their various properties throughout the Cell Duration meaning, for example, a Sequence Generator can play any number of times within that.
- Any Envelope (e.g. Velocity Envelope) used in the Generative Content spans the Cell Duration and gets 'traversed' accordingly as that Cell plays. This means if Cell Duration is very long it will seem to take a long time to traverse the envelope.
- When the Cell has finished playing (i.e. reached the end Cell Duration) all of the Generators within the Cell stop playing and all envelope positions are reset ready for next time.
- WME scripts can be used in whatever manner you find interesting, e.g. Bar scripts, Stop scripts etc.

[↑](#) Cell Properties List

- **Script**
 - Cell Script
- **Cell General**
 - Root
 - Meter
 - Repeats
 - Repeats Range
- **Cell Generative**
 - Generative Bars
 - Generative Bars Range
 - Scale Rule
 - Harmony Rule
 - Rhythm Rule
 - Next Note Rule
 - Harmonize With Me
 - Harmonize With Others
- **Cell Info**
 - Cell Display Name
 - Template Path
 - Content Duration

- [Content Duration](#)
- [Template Title](#)
- [Template Author](#)
- [Template Notes](#)

[↑](#) Script

- **Cell Script**

- Show the first line of any Cell level script. Tap on it for the [Wotja Script Editor](#).

[↑](#) Cell General

- [↑](#) **Cell Root**

- *Semitone Offset* (Default value - Mix Root): Choose the Root you want to apply to the Cell. Its value is a Semitone offset from the Mix Root.

- [↑](#) **Meter**

- *Various* (Default value - 4:4): Choose the meter you want to apply to the Cell. Each cell can have a different meter.

- [↑](#) **Cell Repeats**

- *0-99* (Default value - 1; 0 Special Case): The minimum base value for the number of times a cell will repeat after it has played through once and to which the range value (below) is added. For a generative template each bar counts as one repeat; for audio or MIDI content this is the length of the content rounded up to the end of a bar).
- This value is the first of a pair of numbers shown in black in the bottom line of text at the bottom of the cell.
- *0* (Special Case): If the value is set to 0 a Cell will be "skipped" and "Skip" is then shown in this area. The Repeat Range value slider value is also then ignored.
- *Note*: If the cell contains generative content and the Generative Bar Min is value is set to ∞ then this setting takes no effect as the cell never repeats!

- [↑](#) **Cell Repeats Range**

- *0-99* (Default value - 0): Sets the range that applies to the above base value

the above base value.

- This value is the second of a pair of numbers shown in black in the bottom line of text at the bottom of the cell.

[↑](#) Cell Generative

- [↑](#) **Gen Bars**

- *0 - 1000* (Default value - ∞): The minimum number of bars for which a cell will play generative content. This value is the first of a pair of numbers shown in the top line of text at the bottom of the cell. The value in brackets next to the Gen Bars value shows what this represents in terms of h:m:s and takes into account the mix tempo.
- *Special Value*: If this value is set far left to ∞ [0] then once play in a Track reaches such a cell the generative content in that cell will continue to play either for as long as the mix plays or until you manually select another cell in that Track to play.

- [↑](#) **Gen Bars Range**

- *0 - 1000* (Default value - 0): A value that is added to the Gen Bars value to define the maximum number of bar for which a cell will play generative content. This value is the second of a pair of numbers shown in blue in the top line of text at the bottom of the cell. If the first value (above) is ∞ then this value is not shown.

- [↑](#) **Scale Rule**

- *Various* (Default value - *Mix: Default*): When the cell is playing any active rule element will flash; the color is that of the Generator type of the playing Generator. To edit or change the Cell Scale Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen.

For information on Scale Rules and included "Standard Rule Values" refer to [Scale Rule Object](#).

- [↑](#) **Harmony Rule**

- *Various* (Default value - Mix: Default): When the cell is playing any active rule element will flash; the color. is that of the Generator type of the playing Generator. To edit or change the Cell Level Harmony Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen.

For information on Harmony Rules and included "Standard Rule Values" refer to [Harmony Rule Object](#).

- [↑](#) **Rhythm Rule**

- *Various* (Default value - ? [Use Random Cell Rule]): When the cell is playing any active rule element will flash; the color. is that of the Generator type of the playing Generator. To edit or change the Cell Rhythm Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen.

For information on Rhythm Rules and included "Standard Rule Values" refer to [Rhythm Rule Object](#).

- [↑](#) **Next Note Rule**

- *Various* (Default value - Mix: Default): When the cell is playing any active rule element will flash; the color. is that of the Generator type of the playing Generator. To edit or change the Cell Next Note Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen.

For information on Next Note Rules and included "Standard Rule Values" refer to [Next Note Rule Object](#).

- [↑](#) **Harmonize with Me**

- *On/Off* (Default value - On): This determines if Wotja needs to take the notes played by **this Cell** into account when composing/playing other Cells.

- [↑](#) **Harmonize with Others**

- *On/Off* (Default value - On): This determines if Wotja needs to take the notes played by **other Cells** into

account when composing/playing notes for this Cell.

[↑](#) Cell Info

- [↑](#) **Cell Display Name**
 - The Cell Display Name is an editable field and lets you name a Cell as you want.
 - By default, it displays the name of the Template (or audio/MIDI file) used in the Cell.
- [↑](#) **Template Path**
 - Displays the path to the Template which includes the Pak zip file that it is in.
- [↑](#) **Content Duration**
 - Displays the play length of the content in the cell, important to know for audio loops.
- [↑](#) **Template Title**
 - Displays the Title of the Template used in the Cell. Editing this does not change the name of the Template shown in the Cell. If you want to create your own custom Template you can edit this so that if you then export the Cell as a Template this field will then be used in that Template.
- [↑](#) **Template Author**
 - Displays the Author of the Template, if it is defined. If you have created your own custom Template you can edit this so that if you then export the Cell as a Template this field will then be used in that Template.
- [↑](#) **Template Notes**
 - Displays any Notes in the Notes field the Template, if defined. See above.

When tapped on, the Store button takes you to the [In-App Store](#) (or to a Store info page in the Plug-in).

🎵 17 Actions Button

Displays the Actions Menu pop-up:

- **Import Wotja from Clipboard (Mix Editor only)**
 - Only shown if you have a Wotja on the clipboard and you will see a message about having to Import a Wotja via the Documents screen (Documents > Add New > Mix (from Clipboard)).
- **Export Mix to Clipboard (Mix Editor only)**
 - Creates the *smallest* Wotja URL (WJURL) from your mix.
- **Export Template to Mix to Clipboard (Template Editor only)**
 - Exports the Template to Clipboard as a Mix.
- **Export Template to Mix File (Template Editor only)**
 - Exports the Template as a Mix File.
- **Export Mix with Image (Mix Editor only)**
 - Creates a Wotja URL (WJURL) from your mix that includes your a background image (if you have selected one).
- **Script Sandbox**
 - Opens the [Script Sandbox](#) window where you can try out scripts.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "Help: In-App (uncheck for Online)".

🎵 18 Selected Cell

The selected Cell has a red border. The Generator Network and Cell Mixer shown in the RHS panel (as relevant) are those for this Cell.

See [26 Cell](#).

🎵 19 Cell Content Name

This is always the name of the Template that was first added to the Cell. The name is not editable.

Tip: If you wish the Cell to show a different name then you could export that Cell as a Template, giving it the name you wish, and then re-load that new Template.



Missing Content (Red Cell): The name and thumbnail area will display red if audio or MIDI content referenced in the cell cannot be found. This can happen, for example, if your mix references a loop on your device which you later delete, or you perhaps load someone's piece which references a loop that is not present on your device (i.e. you have not installed the relevant Pak of content).


(20) **Cell Generator Network Thumbnail**

If the Cell uses a Generator Network (i.e. it is not a Cell containing an Audio sample or MIDI file) then this area shows a thumbnail of the Generator Network.

(21) **Cell Content Type**

This icon shows the type of content in the Cell:

-  **Generative**
 - The Cell contents are based on an underlying editable Wotja Template (`.wotja_tp`; see [Filetypes](#)).
 - Templates include 1 or more [Generators](#).
 - Templates can be added to a Cell from the [Templates List](#) - either from the [\(9\) Documents "Pak" \(Wotja Folder\)](#) folder or from zipped [Template Paks](#).
-  **Audio file**
 - The Cell references an [Audio file](#) in the Wotja folder.
 - Audio files (`.wav`, `.ogg`; see [Filetypes](#)) can be added to a Cell from the [Templates List](#) - either from the [\(9\) Documents "Pak" \(Wotja Folder\)](#) folder or from zipped [Audio Paks](#).

- WAE Sound FX, be that [7](#) Cell FX, [9](#) Track FX or [11](#) Mix FX, can be applied to the sound from the Cell.
-  **MIDI file**
 - The Cell references a [MIDI file](#) in the Wotja folder.
 - MIDI files (.midi; see [Filetypes](#)) can be added to a Cell from the [Templates List](#) - either from the [9](#) Documents "Pak" (Wotja Folder) folder or from zipped [MIDI Paks](#).
 - MIDI files will play ONLY through the WAE General MIDI Wavetable set, and patches cannot be changed.
 - WAE Sound FX, be that [7](#) Cell FX, [9](#) Track FX or [11](#) Mix FX, can be applied to the sound from the Cell.

[22](#) Cell Playing Indicator




When the mix is playing the top band shows the Cell playing status as follows:

- **Green**
 - This Cell is playing.
- **Transparent**
 - This Cell is not playing or has no content in it (equivalent).

[23](#) Cell Play Type

This icon shows how the cell will play and is determined for each Cell in the Track by the [Track Play Type](#) setting.

Values:

-  **Sequence :**
 - When the content in the Track's current Cell is playing it will show this icon at the top right of the cell.
-  **Loop:**
 - When the content in the Track's current Cell is playing it will show this icon at the top right of the cell.
-  **One Shot:**

- When the content in the Track's current Cell is playing it will show this icon at the top right of the cell.
- When the content in the Cell has reached its end this icon will no longer display.

🎵 (24) Track Play Type OTT (One Tap Trigger)

A yellow-coloured band will display at the bottom of every Cell in a Track when the (28) Track Play Type "One Tap Trigger" (OTT) option is toggled on.

🎵 (25) Cell Rules Computed Values

The bottom of a Cell shows the Cell's bar "arrangement" values, i.e. how many bars it will play for.

The first pair of items are the Cell's **Generative Bar** values.

The second pair of items show the Cell's **Cell Repeats** values.

- **Mix Stopped**

- Both pairs of values are shown with syntax $X+Y$ where X is the set minimum value and Y is the set range.

- **Mix Playing**

- Both pairs of values for *the playing cell* are shown with syntax X/Y where X is the calculated minimum and Y is the calculated range value.

- **Infinite**

- The one exception to the above is that if a cell is playing and the Generative Bars value is infinite, an infinite symbol is used in place of both pairs.

🎵 (26) Cell

Cells are at the heart of Wotja as what is in them ("content") determines what Wotja creates in terms of music/audio and also, in some cases, how its sounds (i.e. FX).

Tip: To access the **Cell Actions Menu** below, either right click on the desired Cell or left click on a Cell *you have already selected*.

- **Add Template to Cell:**

- When in the [6](#) **Generator Network View**, tap an empty Cell or its empty [39](#) **Editor Area** (which will display "Tap here to browse Templates") to display the **Templates List** from which you can select and add content to the Cell, be that a generative Template, Audio file or MIDI file (see below).

- **Saved to the Cell:**

- All Template parameter settings (e.g. WME and WAE etc.) and user edits made to them are saved to the Cell. This is so that the mix will work as intended whether or not the underlying Template is accessible in the file system. For more info see [this FAQ](#).

- **Cell display:**

- Can be either: 1 Cell, a Column of Cells or 4 columns of Cells; this is set via the [4](#) **Grid Button** and selecting the relevant "Display" option from the pop-up menu.

- **Selected Cell**

- Tap a Cell to select it ("selected Cell").
- The border of a selected Cell has a red color.

- **Cell Content**

- See [21](#) **Cell Content Type**.

- **Cell Actions Menu**

- Browse Templates...
 - Displays the **Templates** screen where you can choose a Template to add to the selected Cell.
 - *Note:* You can either replace the Cell contents with this or, where the existing Cell content is generative, *merge* [Pro mode only] a selected Template into the existing Cell content.
- Copy Cell
 - Copies the currently selected Cell to the clipboard so it can be pasted to another Cell (this is different from exporting a Cell to the clipboard for an import or merge)

Cell to the clipboard for an import or merge).

- Paste Cell
 - Pastes a Cell that has been copied to the clipboard.
 - Only shown if a Cell have been copied to the clipboard.
- Move Cell from here
 - Tap to be able to move the selected Cell.
- Move Cell to here
 - Moves the contents of a Cell that has been selected with "Move from here".
 - Only shown if "Move from here" has been selected for a Cell.
 - Use with caution as there is no pop-up warning.
- Loop Cell
 - Tap to force a Cell to Loop (i.e. lock/unlock).
 - See the "Loop" setting in [Cell Rules](#).
- Import Cell from Clipboard
 - Tap to import into the currently selected Cell a Cell that has been exported to clipboard. NB: Wotja files cannot be imported to a cell.
- Merge Cell from Clipboard (Pro mode only)
 - Tap to merge into the currently selected Cell a Cell that has been exported to Clipboard. NB: Wotja files cannot be merged to a cell.
- Replace Cell from Clipboard
 - Tap to replace the contents of a Cell with a Cell that has been exported to Clipboard. NB: Wotja files cannot be imported into a cell.
- Export Cell to Clipboard (Pro mode only)
 - Tap to export the contents of a generative cell (i.e. a [.wotja_tp] file/template) to the clipboard.
 - This allows you to merge it into another populated Cell, if desired.
- Export Cell to Template (Pro mode only)
 - Tap to export the contents of a generative Cell (i.e. a [.wotja_tp] file/template) to a Template. This file will then show up in [Templates List](#) > [📄 Documents Pak](#).

- Clear Cell
 - Tap a Cell to clear out the Cell content.
- Reset Cell to Defaults
 - Tap a Cell to delete the Cell content AND reset its Cell Properties to defaults.
- Reset Row to Defaults
 - Tap any Cell in a Row to both delete the content in all Cells in the Track AND reset the Cell Properties of any Cell in the Track (including Track FX) to defaults.
- Reset Column to Defaults
 - Tap any Cell in a Column to both delete the content in all Cells in the Column AND reset the Cell Properties of all Cells in the Column to defaults.
- Keep Cell and Clear ALL Others
 - Tap the Cell you want to keep and delete the contents of all other Cells.
- Keep Cell and Reset ALL Others
 - Tap the Cell you want to keep and both delete the content in all other Cells AND reset the Cell Properties of all Cells to defaults.
- Clear ALL cells
 - Delete the content in ALL Cells.
- Reset ALL cells
 - Delete the content in all Cells AND reset their Cell Properties to defaults.

27 Play/Stop Button

This button is used to play/stop a mix and it is common to all Mix Edit Modes (i.e. [Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Record](#)).

Below the button is display the "Play Time Indicator". It shows time in two different ways:

- **Count Down**

- It will count down from some time if you have a Sleep Timer set (e.g 30 mins if you have a 30 minute Sleep Timer), or from 2 minutes if you are in [Lite mode](#).

- **Count Up**

- It will otherwise count up from 0 so you can see how long the mix has been playing.

🎵 28 Track Play Type Button

For each Track, how any Cell in that Track will play is determined by the settings in this pop-up menu. See also [Cell Play Type](#).

Note: There are two different ways to *trigger a Cell to play or to start/stop it looping*.



1. Method 1 (easiest):

- Turn on the **One Tap Trigger** option below (when on, the bottom of each Cell in the Track is shown with a yellow bar), and then tap the Cell you want to play.

2. Method 2:

- If Loop or One Shot is selected, on mobile device **long tap** (tap/hold) the Cell or desktop right click the Cell and in the pop-up Cell Action menu select Loop Cell/Trigger Play or Unloop Cell/Trigger Stop.

Values:

-  **Sequence** (Default value):
 - When this selected and a mix is started, the first Cell in the Track will play.
 - Once that Cell has finished playing then the next Cell in the Track will start playing.
 - This "Cell Sequencing" behaviour will continue until the mix is stopped or another Cell in the Track has been forced to loop.
 - The [Cell Playing indicator](#) will be shown at the top of the playing Cell.
-  **Loop:**

- When this is selected and a mix is started, no Cell in the Track will play UNTIL a Cell in the Track has been triggered (see above).
- Once a Cell has been triggered, it will start or stop playing at the next (or nearest) bar boundary and the **Cell Playing indicator** will be shown at the top of the playing Cell.
- The Cell will continue to loop until triggered again, or until another Cell in the Track is triggered.
- *Tip:* When using the ② **Randomize Button** only the "Randomize Cell" item will randomize the Cell.
- *Advanced Tip:* When a Column lock is first applied to a Column where some Cells contain Audio/MIDI content, those Cells will play ONCE (if the Cell is not already looping).
- ① **One Shot:**
 - When this selected and a mix is started, no Cell in the Track will play UNTIL a Cell has been triggered (see above).
 - Once a Cell has been triggered it will start playing immediately and the **Cell Playing indicator** will be shown at the top of the Cell.
 - The Cell will continue to play until either A) the Cell content reaches its end (at which point the Cell stops playing); or B) it is triggered again before it reaches that point; or C) until another Cell in the Track is triggered.
- **One Tap Trigger: Off (default) / On :**
 - When this is turned on for a Track, every Cell in that Track will show the ②④ **Track Play Type** "One Tap Trigger" indicator.
 - Simply tap any Cell in that Track to start/stop it playing (depending on Track Play Type set for that Track).
 - *Note:* Loop Cells will start playing at the beginning of a bar boundary; Sequence and Once Shot Cell start playing as soon as the music engine can start playing them.

🎵 ②⑨ **Track Mute Button**

Tap to mute or unmute the related Track.

- **Cyan**
 - Muted.
- **Light grey**
 - Not muted.
- **Dark Cyan**
 - When a track is soloed the M in non-soloed or non-muted buttons shows dark cyan to indicate they are temporarily muted.

🎵 30 Track Solo Button

Tap to solo or unsolo the related Track.

- **Tangerine**
 - Soloed.
- **Light grey**
 - Not soloed.

🎵 31 Music Mode Tab

The Tab that selects [Music Mode](#).

Note 1: When a mix is playing, the label at the bottom of the button changes from "Music" to show "CPU: XX%" where XX provides an indication of how hard the mix is working the CPU of your device. If you are experiencing occasional artefacts then knowing this can be really helpful. For example, the CPU value might spike when a particular Cell plays. You can investigate that particular Cell to see what is using the CPU.

Note 2: Things that have the biggest CPU impact are the WAE [Reverb R2XL](#) and [Pitch Shifter](#) units.

🎵 32 Generator Button

See the [Wotja Music Engine \(WME\)](#) section for information on WME parameters.

Tap on a Generator button to select that Generator. The selected Generator has a red border. If the in-situ [42 Editor Panel](#) is displaying then you will see the parameters for that Generator and can edit them straight away in that panel.

Tip: Double tap the button (and/or right click on desktop) to display a pop-up menu (for menu details see the [5 Generator Menu button](#)).

[33 MIDI Channel Assignment](#)

To assign a MIDI channel to a Generator, tap/hold the Generator button and drag it to a MIDI channel box.

[34 Text Mode Tab](#)

The Tab that selects [Text Mode](#).

[35 MIDI Channel Box](#)

The MIDI channel box is an indicator (it shows the MIDI channel number); it is not a button. However, you can tap/hold a Generator button and drag it to a MIDI channel box.

Note: The Generator "[WME Patch](#)" parameter (see also [42 Editor Panel](#)) defines which MIDI Patch command to send for each MIDI channel. If you are using Wotja to drive any 3rd party MIDI synth/gear it is therefore recommended that all Generators on the same MIDI channel should use the same Patch parameter.

Note: MIDI Channel 10 is reserved for the Drum instrument. Every Generator with a Drum Patch, should generally be attached to MIDI Channel 10.

[36 Generator Synth Button](#)

If the "[WAE for Sounds & FX](#)" toggle is checked in [Settings: General > Audio MIDI+](#), then MIDI events are routed for each channel through a [WAE Synth](#) configuration. Tap on the Synth button for the [Synth & FX editor](#).

Note: If there is no Synth network defined then the WAE will use its built-in MIDI Wavetable synth (using the Patch defined by the Generator's Patch parameter).

🎵 37 Display Mode Tab

The Tab that selects [Display Mode](#).

🎵 38 Generator FX Button

The output from every Synth box can be passed through a custom FX Network. If you want to use an **FX on a Generator**, click the FX button to invoke the [Synth & FX editor](#).

🎵 39 Editor Area

This area to the right of the Cells is where the various Editors display.

🎵 40 Plug-ins Tab

The Tab that selects [Plug-ins Mode](#).

🎵 41 Record Tab

The Tab that selects [Record Mode](#).

🎵 42 Editor Panel (WME)

See the [Wotja Music Engine \(WME\)](#) section for information on WME parameters.

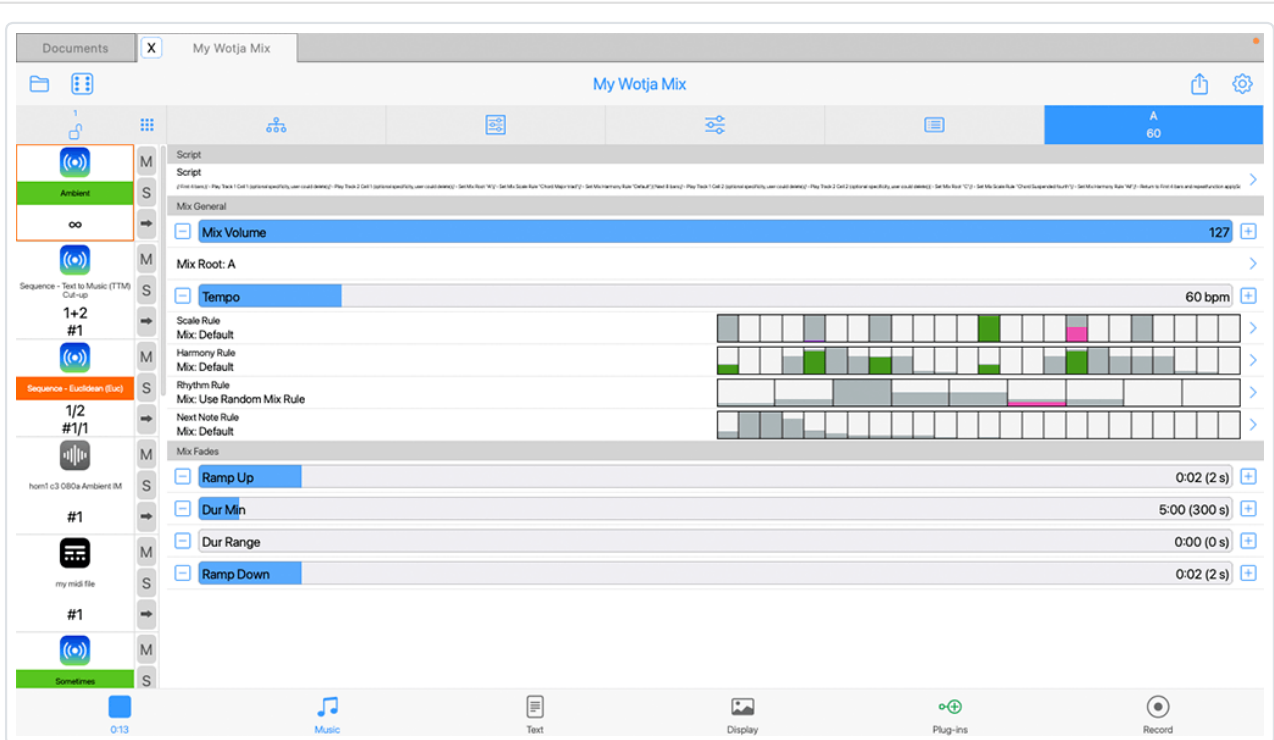
The *in-screen* Generator Main Editor Panel lets you edit generator parameters in-situ without having to use the **full screen Generator Editor**.

Note: Only the *full screen* Generator Editor shows the Undo/Redo buttons and the [Generator Number Selector](#) bar.

How to hide/display the Panel

- Tap the **4** **Grid Button** and select "**Show/Hide Generator Editor Panel**".

🎵 **43** **Mix Properties View: > List**



Music Mode: Mix Properties ([List](#))

(tap image for large)

See the [Wotja Music Engine \(WME\)](#) section for information on WME parameters.

The "Mix Properties" panel is where you can easily set the parameters that define how a Mix will play (Mix Volume, Root, Tempo, Mix Rules and Mix Fades).

The Mix Tempo, Mix Root and Mix Ramp Up/Down settings apply to both a mix and/or that mix in an Album/Playlist.

The Duration/Duration Range are specific to that mix only in an Album/Playlist.

Tip: If you are going to be making your mix or Template available for others to use, you may well wish also to include your own copyright statement for each Generator in the mix as it can also have its own copyright statement.

[↑](#) Mix Properties List

- **Script**
 - Mix Script
- **Mix General**
 - Mix Volume
 - Mix Root
 - Mix Tempo
 - Mix Scale Rule
 - Mix Harmony Rule
 - Mix Rhythm Rule
 - Mix Next Note Rule
- **Mix Fades & Playlists**
 - Ramp Up: Seconds
 - Duration: Seconds
 - Duration Range: Seconds
 - Ramp Down: Seconds

[↑](#) Script

- [↑](#) **Mix Script**
 - Show the first line of any [Mix script](#). Tap on it for the [Wotja Script Editor](#).

[↑](#) Mix General

- [↑](#) **Mix Volume**
 - Sets the overall volume of the mix.
- [↑](#) **Mix Root**
 - Select the root pitch you want to use for your mix (this value is shown on the Mix Properties button).
 - *Note:* When creating an automatic mix or a mix from a template a random root is chosen.
- [↑](#) **Mix Tempo**
 - **BPM** (*Default value - Template Root*): Select the tempo you want to use for your mix (value shown on the Mix Rules button).
- [↑](#) **Mix Scale Rule**
 - **Various** (*Default value - Default*): When the cell is playing any active rule element will flash; the color. is that of the Generator type of the playing Generator. To edit or

Generator type of the playing Generator. To edit or change the Mix Scale Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen. For information on Scale Rules refer to [WME Rule Object](#).

- [↑](#) **Mix Harmony Rule**
 - *Various (Default value - Default)*: When the cell is playing any active rule element will flash; the color is that of the Generator type of the playing Generator. To edit or change the Mix Harmony Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen. For information on Harmony Rules refer to [WME Rule Object](#).
- [↑](#) **Mix Rhythm Rule**
 - *Various (Default value - Default)*: When the cell is playing any active rule element will flash; the color is that of the Generator type of the playing Generator. To edit or change the Mix Rhythm Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen. For information on Rhythm Rules refer to [WME Rule Object](#).
- [↑](#) **Mix Next Note Rule**
 - *Various (Default value - Default)*: When the cell is playing any active rule element will flash; the color is that of the Generator type of the playing Generator. To edit or change the Mix Next Note Rule (which can be overridden at Generator level), tap on it to go to the [Rule Editor](#) screen. For information on Next Note Rules refer to [WME Rule Object](#).

[↑](#) Mix Fades & Playlists

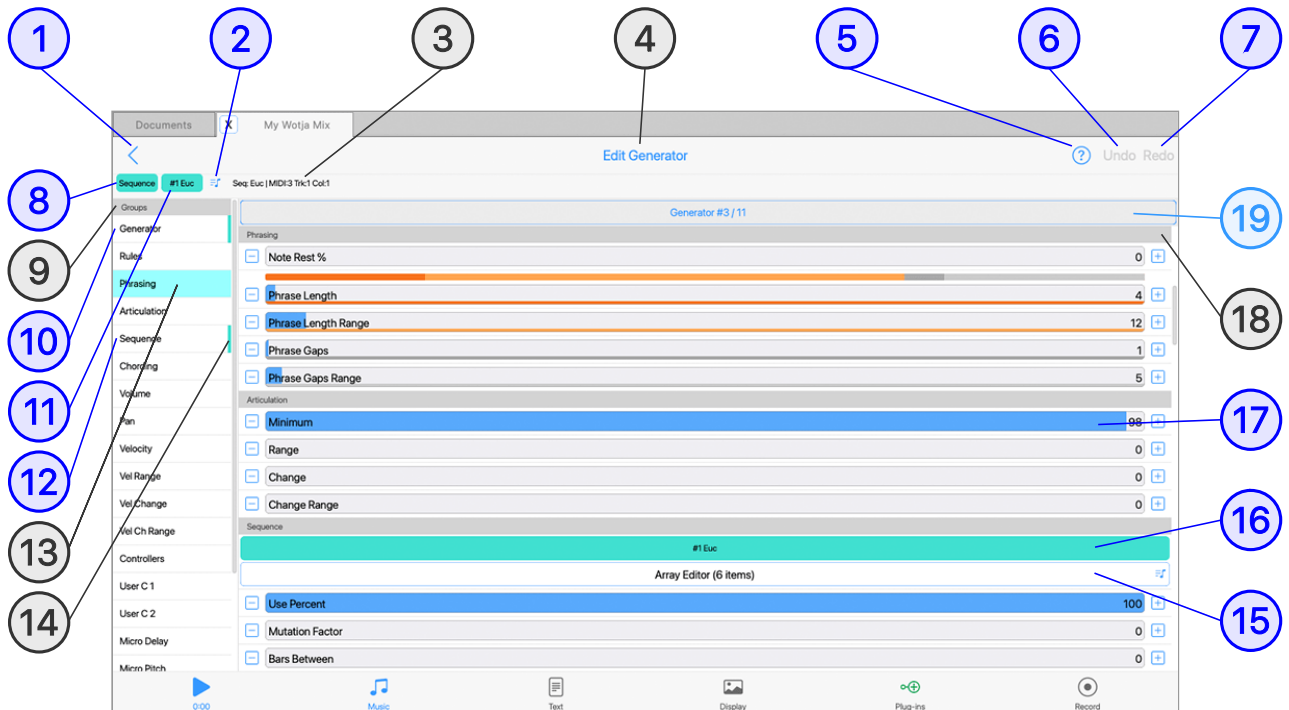
- [↑](#) **Ramp Up: Seconds**
 - *1-20 (Default value - 2)*: This applies when the mix starts to play.
- [↑](#) **Duration: Seconds**
 - *10-7200 (Default value - 300)*: This is how long the mix will play for in an Album/Playlist.

- Double tap for a pop-up menu where you can edit the value via on-screen keyboard.
- [↑](#) **Duration Range: Seconds**
 - **10-7200** (Default value - 0): A range value added to the Duration value above. Double tap for a pop-up menu where you can edit the value via on-screen keyboard.
- [↑](#) **Ramp Down: Seconds**
 - **0-20** (Default value - 2): This applies when the mix stops playing *in an Album/Playlist or Recording*.

44 Settings Button

Takes you to the Wotja [Settings: General](#) screen.

Generator: Main Editor - Wotja Music Engine (WME)



(tap circle for info, hover for tooltip; tap image for large)

Tutorials

- [Edit WME Generator Parameters](#)

WME Generator: Main Editor

- **Wotja Music Engine (WME)**
- **Music Mode** > **Generator Menu Button** > Edit {Selected Generator}
- This **Music Mode** editor lets you edit most of the WME parameter values for each of the Generators in the Cell and provides access to the relevant specialist editor(s) for the remainder. It can be used full screen (as shown above) or in-screen (below).
- **In-Screen Editor:** In Music Mode, tap the **Grid Button** and in the pop-up menu toggle the "Generator Editor Panel" menu item to be "Show Generator Editor Panel" for the **Editor Panel (WME)**.

- **Full Screen Editor:** In the ⑥ [Generator Network View](#) tap the ⑤ [Generator Menu Button](#) (or double tap (Mobile) or right click (Desktop) on a ③② [Generator Button](#)) and from the pop-up menu select "Edit".
-

♪ ① **OK/Back Button**

Tap to accept your changes and exit the Generator Editor

♪ ② **Sequence Item Preset Button**

Tap for a pop-up list of included Sequence Array Presets below. Selecting an item from this list will replace the currently selected Sequence Array Item.

Sequence Array Presets:

- Text to Music (TTM) Custom
- Text to Music (TTM) Cut-up
- Euclidian (Euc)
- Both (B): Random 1/4 notes; 1 bar
- Both (B): Random 1/8 notes; 1 bar
- Both (B): Random 1/16 notes; 1 bar
- Both (B): Random Triplet notes; 1 bar
- Both (B): Random syncopated; 1 bar
- Both (B): Ascending pitch; 1 bar
- Both (B): Descending pitch; 1 bar
- Both (B): Whole Note Rest; 1 bar
- Both (B): White Note; 1 bar
- Fixed (F): 1/4 notes; 1 bar
- Fixed (F): Notes and Rests; 1 bar
- Rhythm (R): 1 bar

♪ (3) **Generator MIDI Ch, Track & Column Details**

For the currently selected Generator, shows:

- Generator Type |
- MIDI Channel: value
- Track Number: value
- Cell Column: value

See also: [Wotja Music Engine \(WME\) Parameters](#).

♪ (4) **Screen Title**

Shows the name of the current screen.

♪ (5) **Help Button**

- This displays the User Guide in a pop-up window.
- Whether this is the in-app or online version of the User Guide depends on the value of Settings > [General](#) > "Help: Use In-App User Guide".

♪ (6) **Undo Button**

Undo the last parameter change you have made.

♪ (7) **Redo Button**

Redo the last parameter change you have made (i.e. perhaps after an Undo).

♪ (8) **Generator Type Group Shortcut**

This selects the Parameter Group for the current Generator Type in the Parameter Groups List below the (9) [Parameter Groups Header](#).

♪ (9) **Parameter Groups Header**

To make it easier to understand what each WME Parameter is for, related Parameters are grouped together into "Groups".

Tap on the Parameter Group in the Parameter Groups List to have the Parameter List scroll to show it at the top.

See also: [Wotja Music Engine \(WME\) Parameters](#).

🎵 ⑩ Parameter Group Selector

Tap a Parameter Group selector to select your desired Parameter Group. This then auto-scrolls the right hand list to the Parameters for that Group.

The first Parameter Group item is the "[Generator Group](#)". The ⑭ [Generator Type Indicator](#) to the right of it always has a color. related to the Generator Type of the selected Generator and it is where you can change key Generator settings such as Generator Type, Generator Name, Pitch, Pitch Range etc.

See also: [Wotja Music Engine \(WME\) Parameters](#).

🎵 ⑪ Array Item Editor Shortcut

This button only displays when the Generator is of Type [Sequence](#). It then shows the Sequence Generator sub-type in use for the currently active Array Item, and its number in the [Array Editor](#) list.

Tap on the button to go directly into the relevant Array Item editor.

Example: In the Schematic this button is displayed and shows "#1 Euc", which means that the first item the Sequence Array is selected for use and it is of type "Euclidian".

🎵 ⑫ Generator Type Specific Group

This group lists the main parameters for the selected Generator Type.

Example: If the Generator Type was Ambient, then tapping on the Group would auto-scroll the right hand parameter list to show the [Ambient](#)

[Generator parameters](#) at the top.

See also: [Wotja Music Engine \(WME\) Parameters](#).

♪ (13) **Selected Parameter Group**

The selected Parameter Group shows with a light blue or dark teal background color, depending on UI Color Scheme (light or dark).

♪ (14) **Generator Type Indicator**

This is a bar that has the color of the selected Generator's [Generator Type](#).

♪ (15) **Array Editor Button**

Shown only when the Generator is of Type [Sequence](#) and it shows the number of items in the Sequence Array (this is likely to be one, unless you have added Array Items). Tap it to launch the [Array Editor](#).

♪ (16) **Array Item Button**

This button only displays when the Generator is of Type [Sequence](#). It then shows the Sequence Generator sub-type in use for the currently active Array Item, and its number in the [Array Editor](#) list.

Tap on the button to go directly into the relevant Array Item editor.

Example: In the Schematic this button is displayed and shows "#1 Euc", which means that the first item the Sequence Array is selected for use and it is of type "Euclidian".

♪ (17) **Parameter Edit Control**

There are a number of different Parameter Edit Controls and these include: sliders, toggles, disclosure buttons.

♪ (18) **Parameter Group Header**

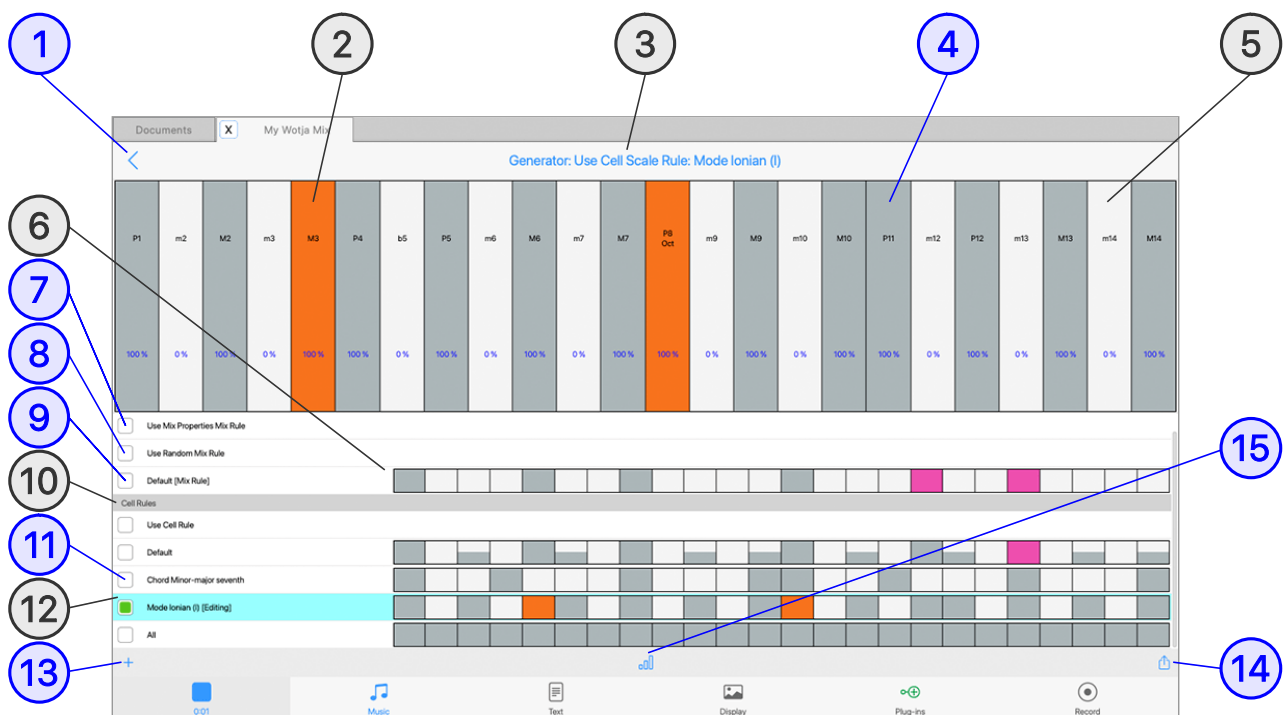
When you select a Parameter Groups item in the left column then the Parameter List in the right column will scroll so that the Parameter Group Header is at the top. Swipe up / down in this panel to scroll up or down.

🎵 19 **Generator Number Selector**

Tap for a pop-up list of all the Generators in the Cell. Select the Generator you want to edit.

See also: [Wotja Music Engine \(WME\) Parameters](#).

Generator: Rule Editor



(tap circle for info, hover for tooltip; tap image for large)

Tutorials

- [Use Included Rules](#)
- [Edit Rule Values](#)

Generator: Rule Editor

- [Music Mode](#) > [Main Editor](#) > [Generator Type Specific Group](#) > Rules > Rule Parameter
- Rule Editors display [Editing] next to the relevant Rule item to make it clear which Rule will be changed by modifications to top element editing panel.
- **IMPORTANT: Rules can be saved in 2 different places - i.e. Mix Rules or Cell Rules:**
- *Tip 1:* If you want to create/use custom Rules for use in Cells *that you export as templates or for use in another mix*, then you should create them as Cell Rules. These are saved to the Cell and get

exported with a Cell.

- *Tip 2:* If you don't want to do the above, but do want to use more than one Rule in a Mix we *strongly suggest* keeping all such Rules one place - i.e. save/use them as *Mix Rules*. Every Generator can use a different Mix Rule if you want!
- **Mix Rules:**
 - Saved at the top level in the Mix itself, see [⑨ Mix Rule Selector](#).
 - Mix Rules are available for selection/use by *one/any/all Generators* in *one/any/all Cells*, either
 - via the "magic" Mix Rule setting "*Use Mix Properties Mix Rule*" (which means "use whatever Rule is selected as the Mix Rule in the Mix Properties Panel"); or
 - via selecting one of the Mix Rules in the relevant Rule Editor.
 - Mix Rules have a unique name (there can be only one Mix Rule called e.g. "MyMixRule"). When the element values for a Mix Rule are changed it instantly affects the composition of any Generator that uses that Rule. To affect all Generators in one go, simply configure every Generator in the Mix to use the same Mix Rule!
 - *Note:* Mix Rules can only be [added](#) when the editor is accessed via the [Mix Properties panel](#).
 - The available values are as follows:
 - *Use Mix Properties Mix Rule:* This is a *magic* rule that means "use whatever Rule is selected as the Mix Rule in the Mix Properties Panel". When creating a new mix most Templates will use this Rule for both Scale and Harmony Rule types - meaning your mix is already pre-configured to take advantage of Mix Rules.
 - The name of the Mix Rules can be changed but use of "?" is disallowed.
 - *Use Random Mix Rule:* If this is selected, then when the Mix starts it allows a Mix Rule to be chosen at random from the list of Mix or Cell Rules, as appropriate.
 - *Other Rules in this list:* Once you have added a Rule (using the Add New button) it can be selected for use by any

Generator in a Mix and it can also be renamed. For a quick way to change their values see the Tip above.

- *Tip:* You can manually edit the Rule elements in any Rule or, for a fast change of those elements, the use the [15 Included Rules Button](#) and select one of the Standard Rule values (e.g. "Chord Major triad"). The Rule element values in the Rule will then be REPLACED with the those of that selected Rule and you will be asked if you wish to rename the Rule.

- **Cell Rules:**

- Saved in the Cell itself, see [11 Cell Rule Selector](#).
- Cell Rules are only available for selection/use by Generators *in that Cell*.
- Cell Rules do not have to have unique names (i.e. 2 different Cells can both have their own completely distinct Rule called e.g. "MyCellRule", but where each such Rule has *different* Rule elements). As Mix Rules are more powerful then in most cases you will likely want to use those instead. You can still use Cell Rules and might wish to do that when you want each Cell to use a variation on a Rule (i.e. 4 Cells in a Track where you want to use e.g. a "Chord Minor triad" Rule and then manually set up different element weightings for each Cell.
 - *Use Cell Rule*(Generator Rule Editor only): If this is selected, then the Generator will use whatever Rule has been selected in the Cell Rule Editor.
 - *Use Random Cell Rule*(Cell Rule Editor only): If this is selected, then when the Mix starts it allows a Cell Rule to be chosen at random from the list of Cell Rules.
 - *Default:* This is just the Default Cell Rule and has no special significance and the name can be edited.
 - *Other Rules in this list:* Once you have added a Rule (using the Add New button) it can be selected for use by any Generator in a Mix and it can also be renamed. For a quick way to change their values see the Tip above.
 - *Tip:* You can manually edit the Rule elements in any Rule or, for a fast change of those elements, the use the [15 Included](#)

Rules Button and select one of the Standard Rule values (e.g. "Chord Major triad"). The Rule element values in the Rule will then be REPLACED with the those of that selected Rule and you will be asked if you wish to rename the Rule.

♪ ① **OK/Back Button**

Tap the OK/Back button to accept your changes and exit the Editor.

♪ ② **Element Playing Indicator**

When a Generator composes a note using the currently selected rule, the rule element that was used flashes with the color. of the Generator type that composed it.

If there are other Generators that also rely on that rule for composition then this color. "flashing" helps to indicate that (in which case, be aware that changing it affect the composition of those other Generators, too).

♪ ③ **Screen Title**

The screen title which shows whether you have accessed the Rule Editor from:

- ***Generator Main Editor***
- ***Cell Properties View***
- ***Mix Properties View***

♪ ④ **Rule Element Selector**

See the [Wotja Music Engine \(WME\)](#) section for information on WME parameters.

The Rule Element Selector lets you change the rule elements. Tap on a rule element to change its value from 0 to 100 (relative probability

weighting). The composition engine accommodates all rule changes in real-time - which can be a lot of fun!

Note that if an element is grey, then it is *not currently being used* for a composed note.

♪ ⑤ **Interval Label**

Show the elements "interval", i.e. m2 (minor second), P4 (fourth), M6 (major sixth) etc.

♪ ⑥ **Mix Rules List**

The scrollable Rule List contains all of the Mix Rules available to select from - simply toggle on the one you want to use.

To add/edit/rename/delete rules see ⑭ [Rule Actions](#).

♪ ⑦ **Use Mix Properties Mix Rule**

This special "magic" Rule allows use of a Mix Properties "[Mix Rule](#)" (the name of this special rule cannot be changed and is always Default).

♪ ⑧ **Use Random Mix Rule**

This special "magic" Rule allows a mix, on starting, to randomly choose/use any [Mix Rule](#) (if any).

♪ ⑨ **Mix Rule Selector**

Lets you choose a [Mix Rule](#) a from the list of Mix Rules. This will always include the "Default" Rule, but may also include others (i.e. if you have added any).

♪ ⑩ **Cell Rules List**

This area houses the list of Cell Rules that are defined (if any) for the Cell.

♪ ⑪ Cell Rule Selector

Lets you choose the [Cell Rule](#) to use from the list of Cell Rules (if any) - simply toggle on the one you want to use.

If you are selecting a Rule for a Generator then you will also see / can select "Use Cell Rule" (meaning use whatever Rule is selected in [Cell Properties](#), e.g. [Cell Scale Rule](#)).

♪ ⑫ Selected Rule

The selected (and active) rule has shows with a light blue background.

♪ ⑬ Add Rule

When you select the Add Rule button you are presented with a pop-up menu that lets you add a new Rule (and whether is shows as "Add New Cell Rule" or "Add New Mix Rule" depends on whether you are in the Generator Editor/Cell Rules View or Mix Rules View).

For the list of included Rules see the following:

- [Scale Rule Object](#)
- [Harmony Rule Object](#)
- [Rhythm Rule Object](#)
- [Next Note Rule Object](#)

♪ ⑭ Rule Actions

When you select the Rule Actions button you are presented with the following pop-up menu:

- **Rename:**
 - Use this to rename your Rule. Note that you are not permitted to rename the [Mix Properties](#) Default rules.
- **Copy Rule:**
 - Use this to copy a Rule so that you can paste it as a new Rule.
- **Paste Rule:**

- Pastes a Rule that has been copied.
- **Delete Rule:**
 - Deletes *the selected Rule*. Note that you are not permitted to delete Default rules.
- **Cut Rule:**
 - Use this to cut a Rule.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

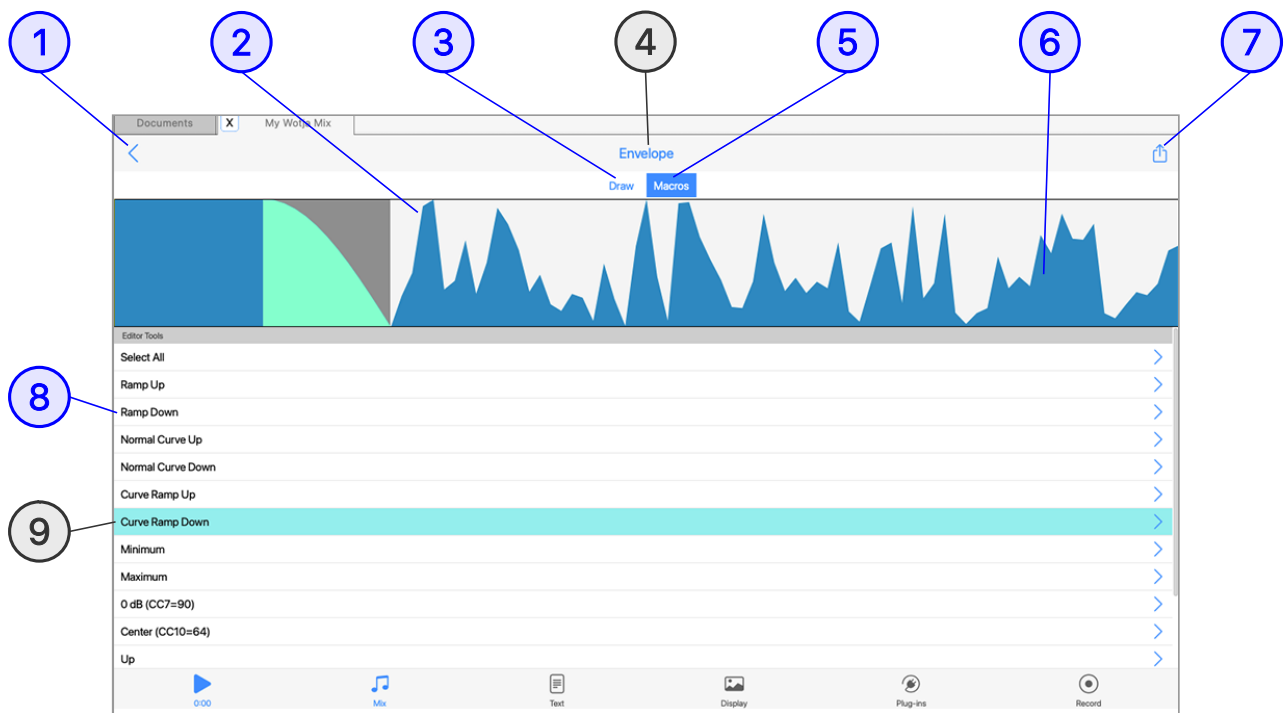
♪ ⑮ Included Rules

When you select the Included Rules button you are presented with pop-up menu that lists all the included "Standard Rule Values". Simply select the one you want to use and the values of that Rule will REPLACE those of the currently selected Rule. You will also see a pop-up asking you if you want to rename the Rule.

For the list of included "Standard Rule Values" see the following:

- [Scale Rule Object](#)
- [Harmony Rule Object](#)
- [Rhythm Rule Object](#)
- [Next Note Rule Object](#)

[↑](#) 🎵 Generator: Envelope Editor



(tap circle for info, hover for tooltip; tap image for large)

Generator: Envelope Editor

- 🎵 [Music Mode](#) > [Main Editor](#) > [12 Generator Type Specific Group](#) > [Enveloped Parameters](#) > Envelope
- Generator Envelopes are supported for the following WME parameters:
 - Volume
 - Pan
 - Velocity
 - Velocity Range
 - Velocity Change
 - Velocity Change Range
- Envelopes work in the same way for all of these. This view is where you edit the Generator Envelopes.
- Each envelope is a collection of up to 100 data points. A piece starts with the value at the left side of the envelope and as it progresses

with the value at the left side of the envelope, and as it progresses, eventually ends up with the value from the far right of the envelope.

♪ ① **OK Button**

Tap the OK button to accept your changes and exit the Editor.

♪ ② **Selected Envelope Area**

Shows an area that has been selected in Macro Mode.

♪ ③ **Draw Mode**

Draw Mode: Select this if you want to draw direct on to the envelope with your finger/mouse to change the values.

♪ ④ **Screen Title**

The screen title.

♪ ⑤ **Macro Mode**

Macro Mode: Select this to use one of the various macro envelope editing tools on a selected area (e.g. random, curve up etc.).

♪ ⑥ **Envelope Area**

The envelope area is active meaning you can draw on it (Draw Mode) or select an area (Macro Mode).

♪ ⑦ **Actions Button**

This displays the pop-up Actions menu with the "Help - User Guide" menu item.

- This displays the User Guide in a pop-up window.
- Whether this is the in-app or online version of the User Guide depends on the value of Settings > [General](#) > ["Help: Use In-App User Guide"](#)

🎵 ⑧ Macro Selector

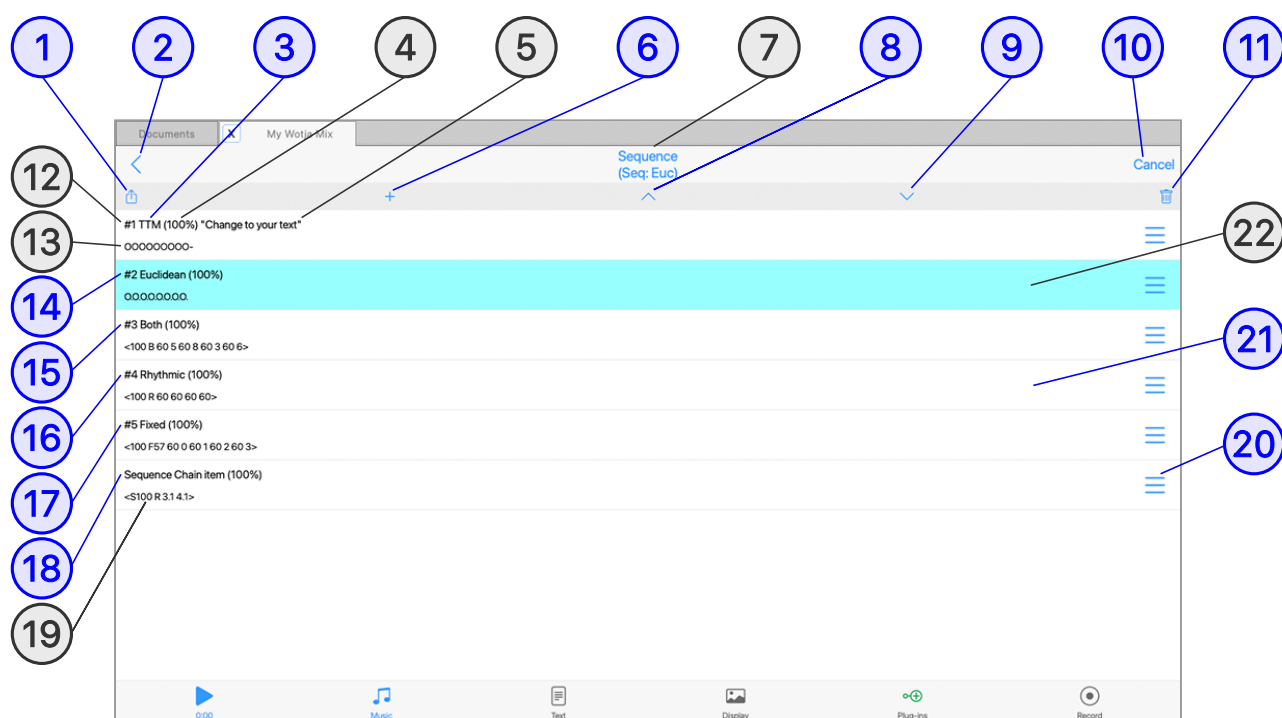
The following Macros can be selected:

- Select All
- Ramp Up
- Ramp Down
- Normal Curve Up
- Normal Curve Down
- Curve Ramp Up
- Curve Ramp Down
- Minimum
- Maximum
- 0 dB (CC7=90)
- Center (CC10=64)
- Up
- Down
- Invert
- Random

🎵 ⑨ Selected Macro

The selected Macro is shown with a light blue background.

📌 Sequence: Array Editor



(tap circle for info, hover for tooltip; tap image for large)

Sequence: Array Editor

- 🎵 Music Mode > Main Editor > 12 Generator Type Specific Group > Sequence Button > Array Editor
- A Sequence Array is in effect a list one or more Sequence Array Items, each containing all the settings needed for use by one of the Sequence Generator sub-types, these being: Text to Music, Euclidian or Pattern (Both, Rhythm, Fixed).
- *Tip:* Note sequences can be used to create hidden structure in a mix. Set up a Sequence Generator with your preferred sub-type and set its volume envelope to be zero, but do not mute it (or it will not count in terms of composition). Then, follow that Sequence Generator with a Generator of type Follow and which has Chords Strategy set to Chordal Harmony. You will never hear the original pattern but it will be used as an invisible skeleton around which to compose! If you do want to hear the pattern, set Follows Strategy to Semitone Shift in the Follow Generator.

♪ ① Array Actions Button

Displays a pop-up menu with the following options:

- **Export Sequence Array to Clipboard**
- **Import Sequence Array from Clipboard**
- **Replace Sequence Array with Preset...**
 - Selecting one of these listed Preset items will *replace* the entire existing Array of Sequence Items:
 - Both (B): Whole note rest; 1 bar
 - Chain (S): #1 once, #2 once
 - Chain (S): #1 twice, #2 twice
 - Chain (S): #1 or #2 twice, then #1 or #2 twice
 - Chain (S): #1 once, #2 until end
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

♪ ② OK/Back Button

Tap the OK button to accept changes you have made.

♪ ③ Array Item - Sequence: Pattern: Text to Music (TTM)

Sequence Array Item of type [Text to Music \(TTM\)](#).

Uses Text-to-Music techniques for melody generation.

♪ ④ Probability Indicator

Displays the weighted probability for the Array Item. This can be between 0 and 100. When a mix starts (and if there is no Sequence Chain defined) then an Array Item is chosen for the Generator according to the Probabilities set for each Array Item.

You can set this for the Array Item via the [⑳ Array Item Menu button](#), or via the Action Menu > "Probability" item in the relevant Array Item Editor.

Example: If there are 3 Array Items each with a Probability of 100, then the chance of any one Item being chosen is $100/(100+100+100)$.

♪ ⑤ TTM Text

If the Generator is of type "Text to Music (TTM)", this shows the (first line) of text used for note generation.

♪ ⑥ Add Sequence Item Button

Tap for a pop-up menu with a list of Sequence Item presets. See also [Pattern Syntax](#).

Tap the item you want and it will add the preset to the bottom of the list (and above any Chain item).

- Text to Music (TTM) Custom
- Text to Music (TTM) Cut-up
- Euclidian (Euc)
- Both (B): Random 1/4 notes; 1 bar
- Both (B): Random 1/8 notes; 1 bar
- Both (B): Random 1/16 notes; 1 bar
- Both (B): Random Triplet notes; 1 bar
- Both (B): Random syncopated; 1 bar
- Both (B): Ascending pitch; 1 bar
- Both (B): Descending pitch; 1 bar
- Both (B): Whole Note Rest; 1 bar
- Both (B): White Note; 1 bar
- Fixed (F): 1/4 notes; 1 bar
- Fixed (F): Notes and Rests; 1 bar
- Rhythm (R): 1 bar

- Chain (S): 2 Sequences
- Chain (S): 3 Sequences
- Chain (S): 4 Sequences

♪ ⑦ **Screen Title**

Displays the name of the screen.

♪ ⑧ **Move Up Button**

Moves the selected Array Item up the Array (List).

♪ ⑨ **Move Down Button**

Moves the selected Array Item down the Array (List).

♪ ⑩ **Cancel Button**

Discard any changes you have made.

♪ ⑪ **Delete Item**

Deletes the selected Array Item.

♪ ⑫ **Array Item Number**

Display the Array Item number e.g. #1.

♪ ⑬ **Note Pattern Representation**

This indicator gives you a visual representation of the generated note sequence.

♪ ⑭ **Array Item - Sequence: Pattern: Euclidian (Euc)**

Tap on this [Euclidian](#) Array Item to launch the [Sequence: Euclidian Editor](#).

Uses the Euclidian technique for melody and beat note sequence generation.

♪ ⑮ **Array Item - Sequence: Pattern: Both (B)**

Tap this [Pattern: Both \(B\)](#) Array Item to launch the relevant [Sequence: Pattern Editor](#).

Uses a [Pattern Syntax](#) technique for note sequence generation. Includes both scale interval and note duration and is used when you want to work with a "melodic" pattern.

♪ ⑯ **Array Item - Sequence: Pattern: Rhythm (R)**

Tap this [Pattern: Rhythm \(R\)](#) Array Item to launch the relevant [Sequence: Pattern Editor](#).

Uses a [Pattern Syntax](#) technique for note sequence generation. Includes note durations only and is used when you want the pitches to be chosen at random from any of those available in the Generator's Scale Rule (according also to Harmony, and Next Note Rules).

♪ ⑰ **Array Item - Sequence: Pattern: Fixed (F)**

Tap this [Pattern: Fixed \(F\)](#) Array Item to launch the relevant [Sequence: Pattern Editor](#).

Uses a [Pattern Syntax](#) technique for note sequence generation. Both the root pitch and note pitches are explicitly defined (i.e. there is no dependency on scale rule) and is used mainly for beat patterns using Channel 10 MIDI.

♪ ⑱ **Array Item - Sequence: Chain (S)**

Tap this Chain (S) Array Item to launch the [Sequence: Chain Editor](#).

Uses a [Sequence Chain Syntax](#) technique to allow random or sequenced selection of Array Items.

♪ ⑱ Sequence - Chain Syntax

This indicator shows the [Sequence Chain Syntax](#) for a Chain Array Item.

♪ ⑳ Array Item Action button

Displays the following pop-up menu:

- **Edit-Graphical**
- **Probability (weighting)**
 - Use this to set the ④ [Probability](#) weighting for the Array Item, with values between 0 - 100.
- **Edit - Text**
- **Export to Clipboard**
- **Import from Clipboard**
- **Sequence Item Presets...**
- **Move Up**
- **Move Down**
- **Delete**

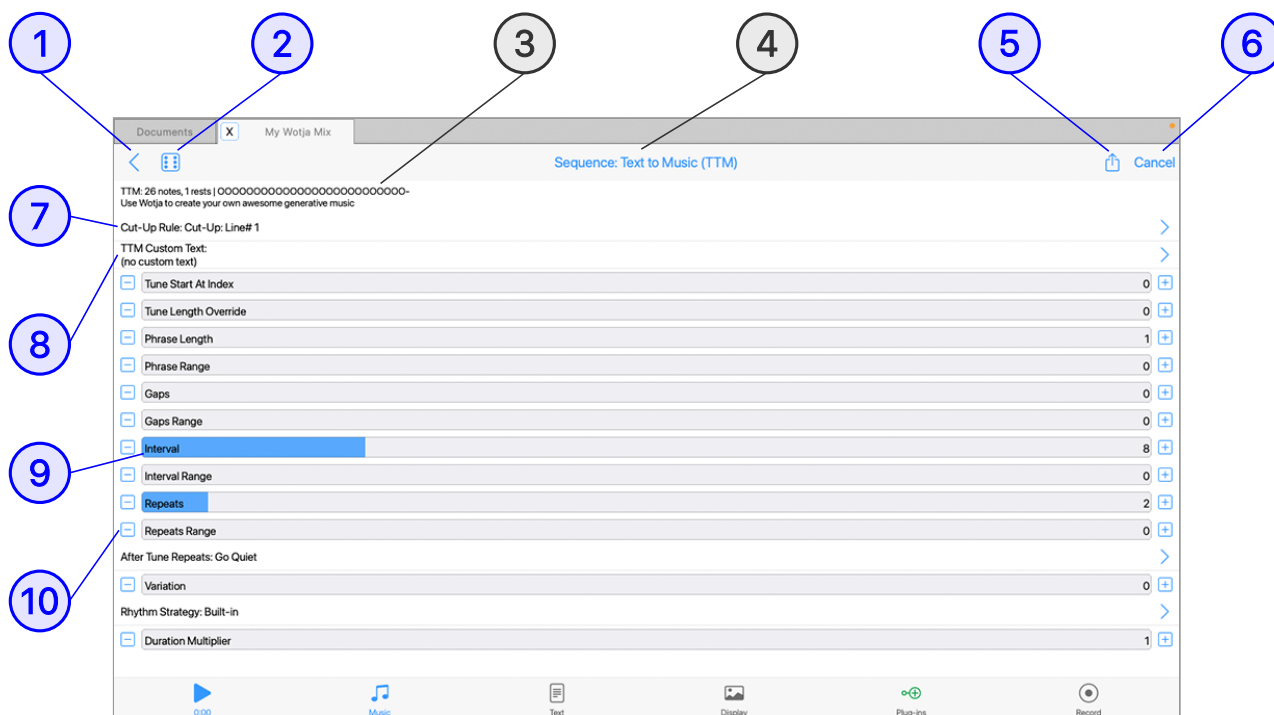
♪ ㉑ Array Item Selector

Tap an Array Item to load the relevant Sequence Item Editor, these being for Text to Music, Euclidian, Pattern (Both, Rhythm, Fixed) or Sequence Chain.

♪ ㉒ Selected Item

The Array Item that is being used by the Generator has a light blue background.

Sequence: TTM Editor



(tap circle for info, hover for tooltip; tap image for large)

Sequence: TTM (Text to Music) Editor

- [🎵 Music Mode](#) > [Main Editor](#) > [12 Generator Type Specific Group](#) > [Generator](#) > [Sequence](#) > [Text to Music \(TTM\)](#)
- This is a special editor for editing parameter values for the Text to Music (TTM) generator sub-type.
- Refer to the [Text to Music \(TTM\)](#) section of the [WME Guide](#) for information on all the TTM parameters and settings.
- To edit Text used by the [7 Cut-Up Rule](#) parameter use the editor in [Text Mode](#).
- To edit Text used by the [8 Custom Text](#) parameter use its own editor below.

🎵 [1 OK/Back Button](#)

Tap the OK button to accept changes you have made.

♪ ② Randomize Button

Depending on what the ⑦ [Cut-Up Rule](#) button option has been set to (as below; see [Cut-up Rule](#) options), tapping this button will randomize the text as follows:

- **Custom**
 - The TTM Custom Text field is randomized according to the setting of the Shuffle Option Button (see ⑧ [Custom Text Editor](#)).
- **Cut-up: Line# = Track#**
 - All lines of the [Text Mode](#) cut-up are randomized (word locks are respected).
- **Cut-up: All Lines**
 - All lines of the [Text Mode](#) cut-up are randomized (word locks are respected).
- **Cut-up: Line# (value)**
 - Only the text of the specified line is randomized in the [Text Mode](#) cut-up (word locks are respected).

♪ ③ Note Sequence & Cut-up Text Graphic

Shows you the number of notes your text generates as well as the Cut-up text that is being used to generate those notes.

♪ ④ Screen Title

Displays the name of this Editor.

♪ ⑤ Actions Button

Displays the following pop-up menu:

- **Probability**
 - You can use this to set the Probability weighting for the TTM Array Item, with values between 0 - 100.
 - See also [Sequence Array Editor](#) > ④ [Probability](#) and [Pattern Syntax \(prob\)](#).
- **Export Sequence Text to Clipboard**

- Allows you to export the Sequence Array Item to the Clipboard.
- **Import Sequence Text from Clipboard**
 - Import a Sequence Array Item from the Clipboard.
- **Edit Sequence Text**
 - Allows you to directly edit the Sequence Array Item text string (for expert use only).
- **Export TTM Melody**
 - Allows you to export the melody in a [Pattern B](#) format.
- **Rule Editor**
 - Provides quick access to the Text Mode [Rules List](#) so that, if you wish, you can select a different cut-up rule to use for your Cut-up.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General > "Help: In-App \(uncheck for Online\)"](#).

♪ ⑥ **Cancel Button**

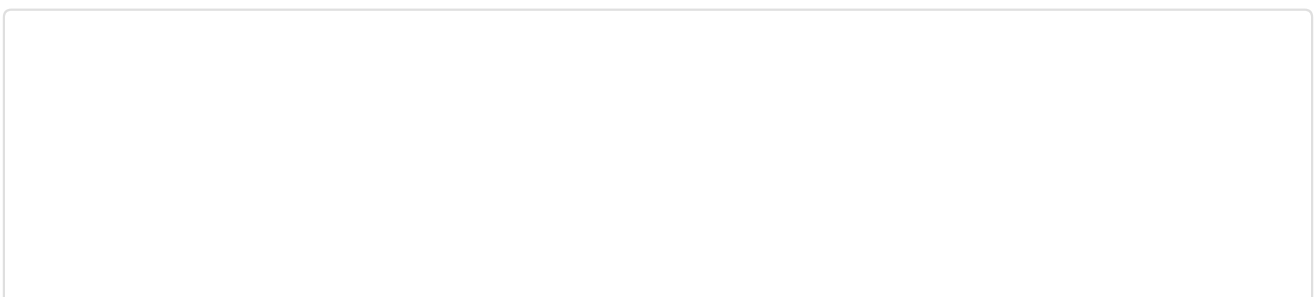
Tap the Cancel button to discard any changes you have made.

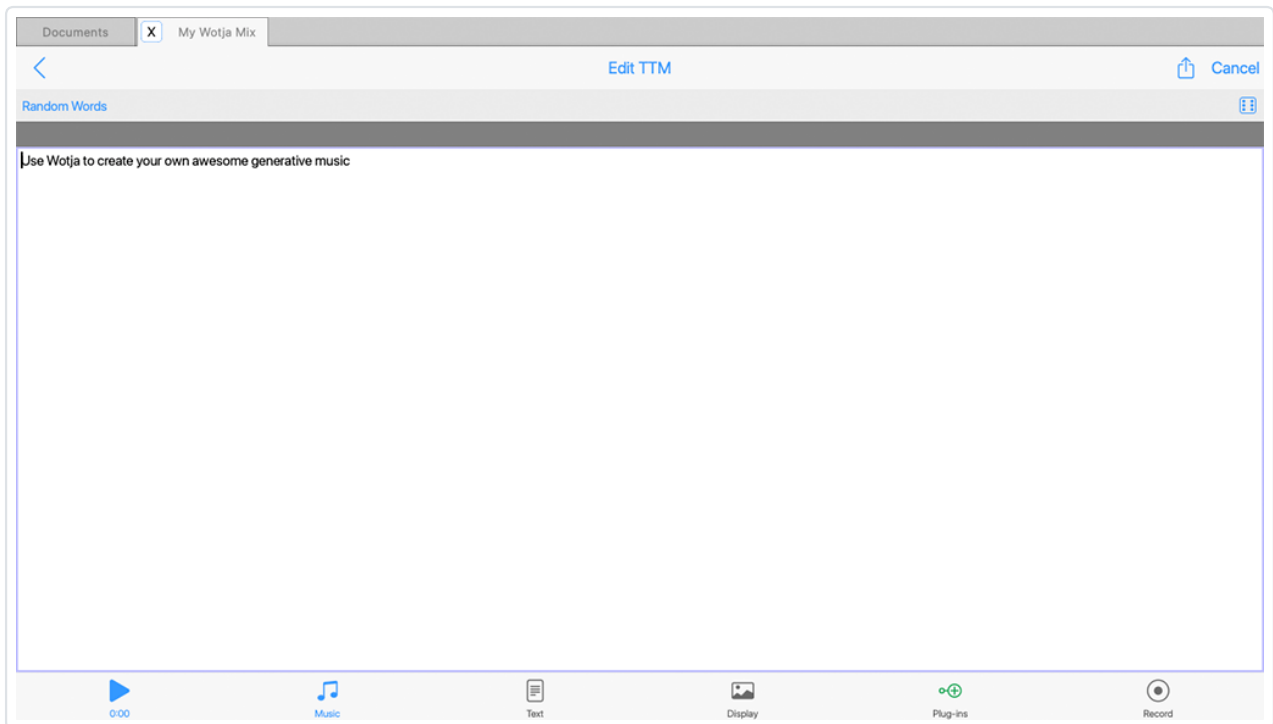
♪ ⑦ **Cut-up Rule Selector**

Tap this button for a pop-up menu showing you the [Cut-up Rule](#) options available.

If you select the "Use Custom Text" option, then you can instead use text you enter via the [⑧ Custom Text Editor](#).

♪ ⑧ **TTM Custom Text Button**





Sequence - Custom Text Editor

(tap image for large)

The TTM Custom Text Button shows below it the Custom Text, if any, that is in this special field. Tap the button for the Custom Text Editor as shown above.

If you set the [⑦ TTM Cut-up Rule](#) parameter to be "Custom Text" then you can use the Custom Text Editor to enter your own custom text for TTM, rather than the [Cut-up Rule](#) line number association to text in [Text Mode](#).

As with all TTM text, it can be in any language and, in general, it takes 2 characters to generate a note.

Menu bar Action button:

- **Clear Text:**
 - Clears the text area.
- **Export TTM Melody:**
 - Exports the Sequence Array Item to the clipboard.
- **Export Text to Clipboard:**
 - Exports the Custom Text to the clipboard.
- **Import Text from Clipboard:**
 - Imports what is on the clipboard into the Custom Text Editor.

Shuffle Option Button (LHS Toolbar Button, setting used by RHS Toolbar ✂ Randomize button):

- **Shuffle Words:**
 - Shuffles existing TTM words in this text area when the RHS Toolbar ✂ Randomize button is tapped.
- **Shuffle Text**
 - Shuffles all characters in existing TTM words in this text area when the RHS Toolbar ✂ Randomize button is tapped.
- **Random Words:**
 - Allows the creation of a simple cut-up derived from words in your word pool. How many words are used is governed by the TTM Min Words and TTM Max Words settings in Randomization Settings.

Randomize Button: Carries out the action set in Shuffle Option Button, above.

Text Area: Tap the screen to enter your TTM text.

🎵 9 Parameter Control

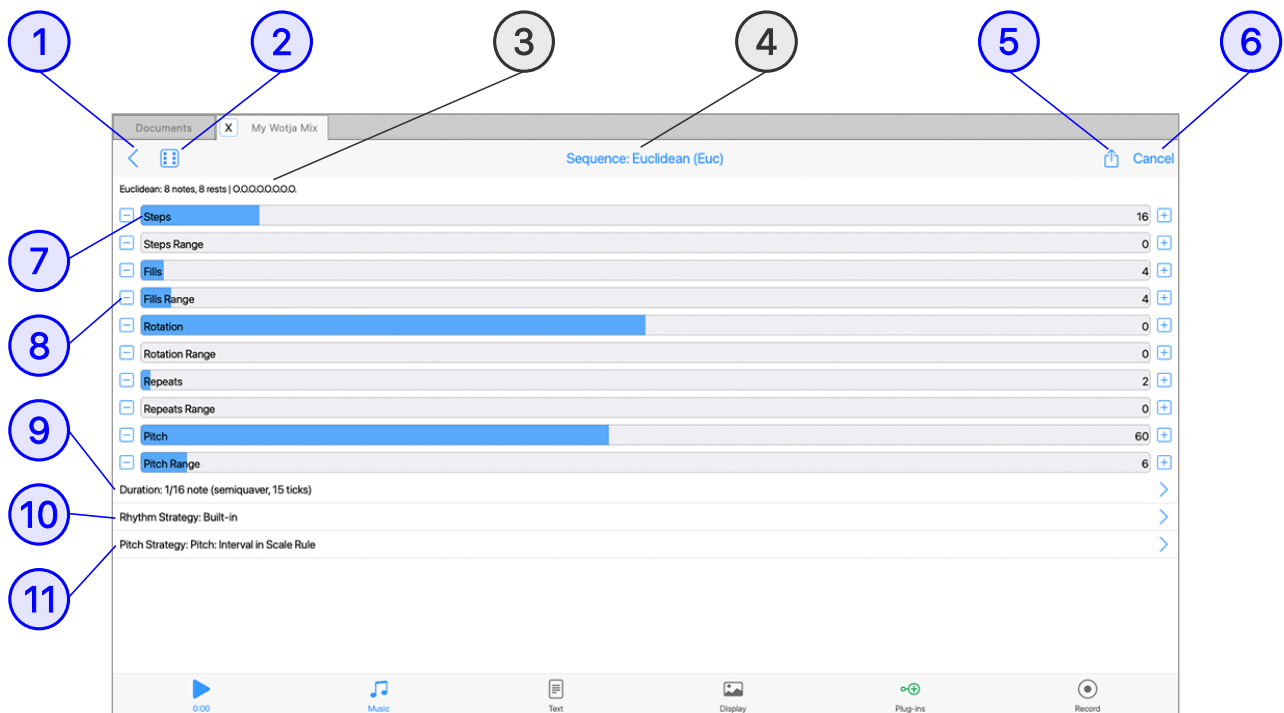
Use the Slider control to adjust the parameter value, or double tap it for a pop-up menu where you can manually enter the value you want or randomize it.

For details on the TTM parameters refer to the [Sequence: Text To Music \(TTM\)](#) section of the [Wotja Music Engine \(WME\) guide](#).

🎵 10 Value Up/Down controls



Tapping a - / + button will decrement / increment the value by one.

Sequence: Euc Editor



(tap circle for info, hover for tooltip; tap image for large)

Sequence: Euclidian (Euc) Editor

-  [Music Mode](#) > [Main Editor](#) >  [Generator Type Specific Group](#) > [Generator](#) > [Sequence](#) > [Euclidian](#)
- This is a special editor for editing parameter values for the Euclidian generator sub-type.
- Refer to the [Euclidian \(Euc\)](#) section of the [WME Guide](#) for information on all the Euclidian parameters and settings.

OK/Back Button

Tap the OK button to accept changes you have made.

Randomize Button

Tap to Randomize settings of Steps, Fills and Rotation (only).

For details on the Euclidian parameters refer to the [Sequence: Euclidian](#) section of the [Wotja Music Engine \(WME\) guide](#).

♪ ③ **Note Sequence Graphic**

Shows a simple representation of the generated note sequence.

♪ ④ **Screen Title**

Displays the name of this Editor.

♪ ⑤ **Action Button**

Displays the following pop-up menu:

- **Probability**
 - You can use this to set the Probability weighting for the Euclidian Array Item, with values between 0 - 100.
 - See also [Sequence Array Editor](#) > ④ [Probability](#) and [Pattern Syntax \(prob\)](#).
- **Export Sequence Text to Clipboard**
 - Allows you to export the Sequence Array Item to the Clipboard.
- **Import Sequence Text from Clipboard**
 - Import a Sequence Array Item from the Clipboard.
- **Edit Sequence Text**
 - Allows you to directly edit the Sequence Array Item text string (for expert use only).
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

♪ ⑥ **Cancel Button**

Tap the Cancel button to discard any changes you have made.

♪ ⑦ **Parameter Control**

Use the Slider control to adjust the parameter value, or double tap it for a pop-up menu where you can manually enter the value you want or randomize it.

For details on the Euclidian parameters refer to the [Sequence: Euclidian](#) section of the [Wotja Music Engine \(WME\) guide](#).

♪ ⑧ **Value Up/Down controls**

Tapping a - / + button will decrement / increment the value by one.

♪ ⑨ **Duration**

Tap this for a pop-up menu with a range of Duration options.

For details on the above refer to the [Duration](#) parameter in the [Sequence: Euclidian](#) section of the [Wotja Music Engine \(WME\) guide](#).

♪ ⑩ **Rhythm Strategy**

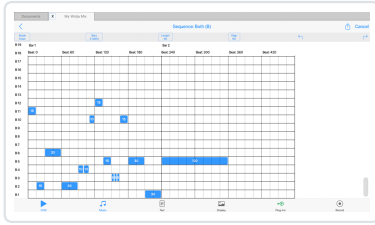
Tap this for a pop-up menu with the following Rhythm Strategy options: "Built-In" and "Use Rhythm Rule".

For details on the above refer to the [Rhythm Strategy](#) parameter in the [Sequence: Euclidian](#) section of the [Wotja Music Engine \(WME\) guide](#).

♪ ⑪ **Pitch Strategy**

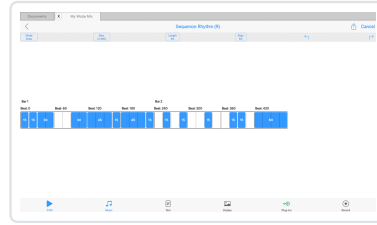
Tap this for a pop-up menu with the following Pitch Strategy options: "Pitch: Fixed MIDI Pitch", "Pitch: Interval in Scale Rule" and "Ignore: Let Wotja Compose Each Note".

For details on the above refer to the [Pitch Strategy](#) parameter in the [Sequence: Euclidian](#) section of the [Wotja Music Engine \(WME\) guide](#).



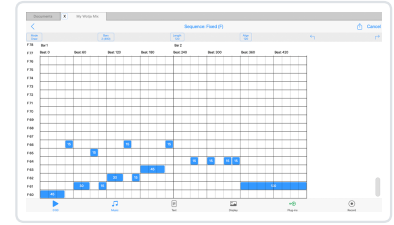
Tap image for large

This is what you see when editing Both (B) patterns.



Tap image for large

This is what you see when editing Rhythm (R) patterns.



Tap image for large

This is what you see when editing Fixed (F) patterns.

🎵 ① OK/Back Button

Tap the OK button to accept changes you have made and return to Pattern List.

🎵 ② Edit Mode Button

There are 3 Edit Modes:

- **Draw:**
 - Tap on the grid to add a note.
- **Edit:**
 - Tap on a note to see/edit the Velocity Scale (default: 100) and Velocity Scale Range (default: 0) for the note.
- **Delete:**
 - Tap on a note to delete it.

🎵 ③ Bars Button

Tap for a pop-up dialog that lets you set how many bars your pattern has from 1 to 50 (Default 1).

🎵 ④ Note Length Button

Tap for the pop-up "Note Length" menu that lets you select the note length you wish new notes to have when you add them (see also

length you wish new notes to have when you add them (see also [Pattern Syntax](#)):

- 1 note (semibreve, 240 ticks)
- 1/2. note (dotted minim, 180 ticks)
- 1/2 note (minim, 120 ticks)
- 1/4 note (crotchet, 60 ticks) [Default]
- 1/8. note (dotted quaver, 45 ticks)
- 1/8 note (quaver, 30 ticks)
- 1/12 note (triplet, 20 ticks)
- 1/16 note (semiquaver, 15 ticks)
- 1/24 note (-, 10 ticks)
- 1/48 note (-, 5 ticks)

🎵 ⑤ **Screen Title**

Displays the name of the screen.

🎵 ⑥ **Note Align Button**

Tap for the pop-up "note quantization" menu that lets you select the "snap to grid" resolution you have when you add a new note (see also [Pattern Syntax](#)):

- 1 note (semibreve, 240 ticks)
- 1/2. note (dotted minim, 180 ticks)
- 1/2 note (minim, 120 ticks)
- 1/4 note (crotchet, 60 ticks) [Default]
- 1/8. note (dotted quaver, 45 ticks)
- 1/8 note (quaver, 30 ticks)
- 1/12 note (triplet, 20 ticks)
- 1/16 note (semiquaver, 15 ticks)
- 1/24 note (-, 10 ticks)
- 1/48 note (-, 5 ticks)

🎵 ⑦ **Undo Button**

Undo Button

Tap to undo the last change you made (only 1 level of undo/redo is supported)

8 Action Button

Tap the button for the following pop-up:

- **Probability**
 - You can use this to set the Probability weighting for the Pattern (Array Item), with values between 0 - 100.
 - See also [Sequence Array Editor](#) > ④ [Probability](#) and [Pattern Syntax \(prob\)](#).
- **Randomize**
 - Tap to randomize the Pattern using the note value currently defined by the Length button.
- **Replace with TTM Melody**
 - Tap to replace the Pattern with the melody that has been created in the Text to Music parameter for the Generator - this requires either that the TTM "Cut-up Rule" is set to Custom and the "TTM Text" parameter includes text OR the "Cut-up Rule" is correctly set to use a line of Cut-up that has text in it. Refer to both the parameters for Generator Type [Text to Music](#) and the [TTM Editor](#), as relevant to you.
- **Create Cut-up & Replace with TTM Melody**
 - This is a powerful way to quickly create a new pattern, but it only applies if you have the "Cut-up Rule" correctly set to use a line of Cut-up (all TTM Templates are set up like that, so have a look at one of those).
- **Export Sequence Text to Clipboard**
 - Exports the current Pattern (as text) to the clipboard.
- **Import Sequence Text from Clipboard**
 - Imports a Pattern that is on the clipboard and replaces the existing Pattern with that.
- **Edit Sequence Text**
 - Go to a simple text editor where you can manually edit the pattern

pattern.

- **Move All Notes Up**
 - Moves all notes up one row.
- **Move All Notes Down**
 - Moves all notes down one row.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

♪ ⑨ **Cancel Button**

Discards changes made since entering the Editor.

♪ ⑩ **Redo Button**

Tap to redo the last change you made (only 1 level of undo/redo is supported)

♪ ⑪ **Grid X-axis**

For Patterns of type Both, Rhythm and Fixed the grid has an X-axis of Bars. Beneath that, each bar is split into Beats (each bar has 240 Beats).

For Patterns of type Sequence the Grid has a different layout and is instead a "Sequence Element" list, see Y-axis below.

♪ ⑫ **Grid Y-axis**

Pattern Type (see also [Pattern Syntax](#)):

- **Both:**
 - The grid has a Y-axis of Scale Rule elements. That is to say, each row corresponds to an element that is available in the Scale Rule used by the Generator. "B1" (where "B" is both "Both") represents the first Scale Rule element that is available, B2 the next and so on (and remember that Scale Rules can have 1 to

12 elements in use per Octave!). What note this plays depends on the Base Pitch set for the Generator and the Pitch Range. The way that Scale Rules can "wrap" means this may or may not correspond to the Root note being used by the Cell or Mix.

- **Rhythm:**

- The grid has a Y-axis of just one row because there is no pitch information in a Rhythm rule - just note durations.

- **Fixed:**

- Similar to "Both" above, but where each row is a defined note pitch (e.g. F60). "F" refers to "Fixed" and the number that follows it is the pitch of the note.

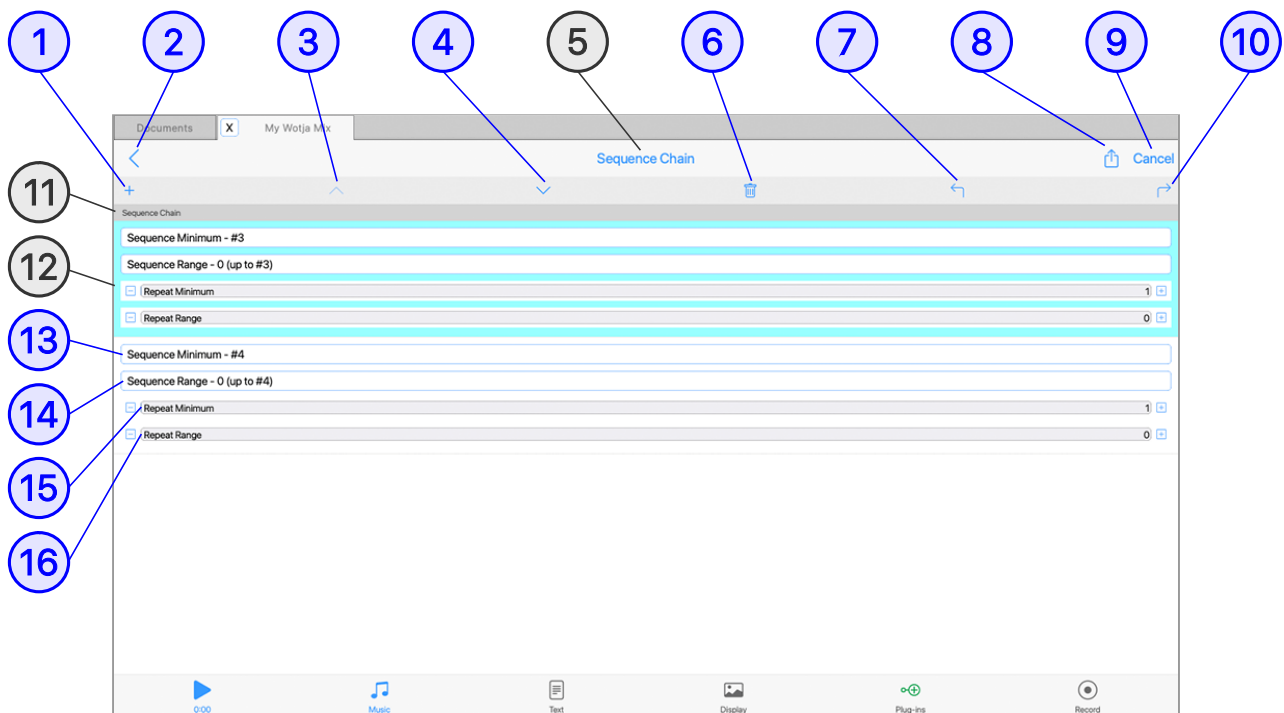
- **Sequence:**

- The Grid has a different layout and is instead a "Sequence Element" list, as follows where each list item has the following parameters:
 - Sequence Minimum: Sets the Pattern List Item number that is used (e.g. item #2).
 - Sequence Range: Sets a range of Pattern List Items that can be used (e.g. 0 means none, 1 would mean also select item #3 etc).
 - Repeat Minimum: Sets how many times you want each select List Item to play.
 - Repeat Range: Sets the range on how many times you want each select List Item to play, where this number is added to the Minimum value.

🎵 13 Grid Note Button

Each note in the pattern is shown as a Note Button. Tap on the button to select it. What you can then do depends on the [Edit Mode Button](#) ②

📄 🎵 Sequence: Chain Editor



(tap circle for info, hover for tooltip; tap image for large)

Sequence: Chain Editor

- [Sequence: Array Editor](#) > ⑮ [Sequence Chain Item](#)
- This is a special editor for editing Sequence Chains.
- Refer to the [Sequence Generator](#) > [Chain Syntax](#) section of the [WME Guide](#) for information on Chain syntax.

🎵 ① **Add Button**

Tap to add a new Chain Item.

🎵 ② **OK/Back Button**

Tap the OK button to accept changes you have made and return to the Sequence Array Editor.

♪ ③ Move Up Button

Tap to move the selected Chain Item up one.

♪ ④ Move Down Button

Tap to move the selected Chain Item down one.

♪ ⑤ Screen Title

Displays the name of the screen.

♪ ⑥ Delete

Tap to delete the selected Chain Item.

♪ ⑦ Undo Button

Tap to undo the last change you made (only 1 level of undo/redo is supported)

♪ ⑧ Action Button

Tap the button for the following pop-up:

- **Probability**
 - You can use this to set the Probability weighting for the Chain Item, with values between 0 - 100.
 - See also [Chain Syntax \(prob\)](#).
- **Export Sequence Chain Text to Clipboard**
 - Exports the Chain (as text) to the clipboard.
- **Import Sequence Chain Text from Clipboard**
 - Imports a Chain that is on the clipboard and replaces the existing Chain.
- **Edit Sequence Text**
 - Go to a simple text editor where you can manually edit the Chain.
- **Help - User Guide**

- Displays the User Guide in a pop-up window.
- Whether this is the in-app or online version depends on the value of [Settings: General > "Help: In-App \(uncheck for Online\)"](#).

♪ ⑨ **Cancel Button**

Discards changes made since entering the Editor.

♪ ⑩ **Redo Button**

Tap to redo the last change you made (only 1 level of undo/redo is supported)

♪ ⑪ **Chain Header**

Shows the Header name, "Sequence Chain".

♪ ⑫ **Selected Chain Item**

The selected Chain item has a light blue background.

♪ ⑬ **Chain Item Number**

This is the number of the Array Item you want to sequence. See [Array Editor > ⑫ Array Item Number](#).

♪ ⑭ **Chain Item Number**

The range in Array Item numbers.

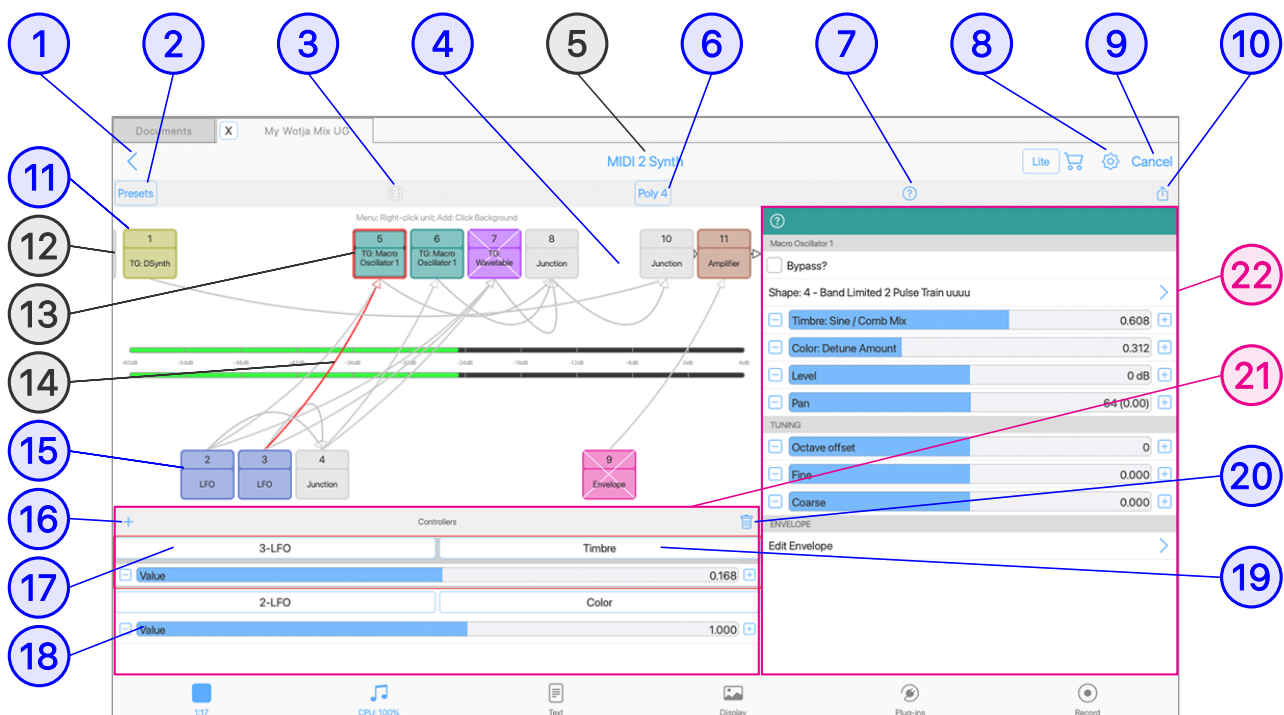
♪ ⑮ **Chain Item Repeat**

The number of times you want the Array Item to repeat.

♪ ⑯ **Chain Item Repeat Range**

The range in number of repeats you want for the Array Item.

↑ SFX Network Editor



(tap circle for info, hover for tooltip; tap image for large)

A WAE Synth & FX Network ('SFX Network'), shown above, is used to generate sound when it is sent MIDI from a [Wotja Music Engine \(WME\)](#) 'Generator'. Refer to [Wotja Audio Engine \(WAE\)](#) section for detailed information on all units and their parameters.

Tutorials

- [Select Synth or FX Preset](#)
- [Edit Synth & FX Networks](#)

Synth & FX Editor

- [Music Mode](#) > [36](#) Generator Synth button or [38](#) FX button or [7](#) Cell FX button or [9](#) Track FX button or [11](#) Mix FX button
- The Synth & FX Editor is used to design / view and edit both Synth Networks or FX Networks ('SFX Network') and is quite easy to use one you understand how it works and how everything fits together.

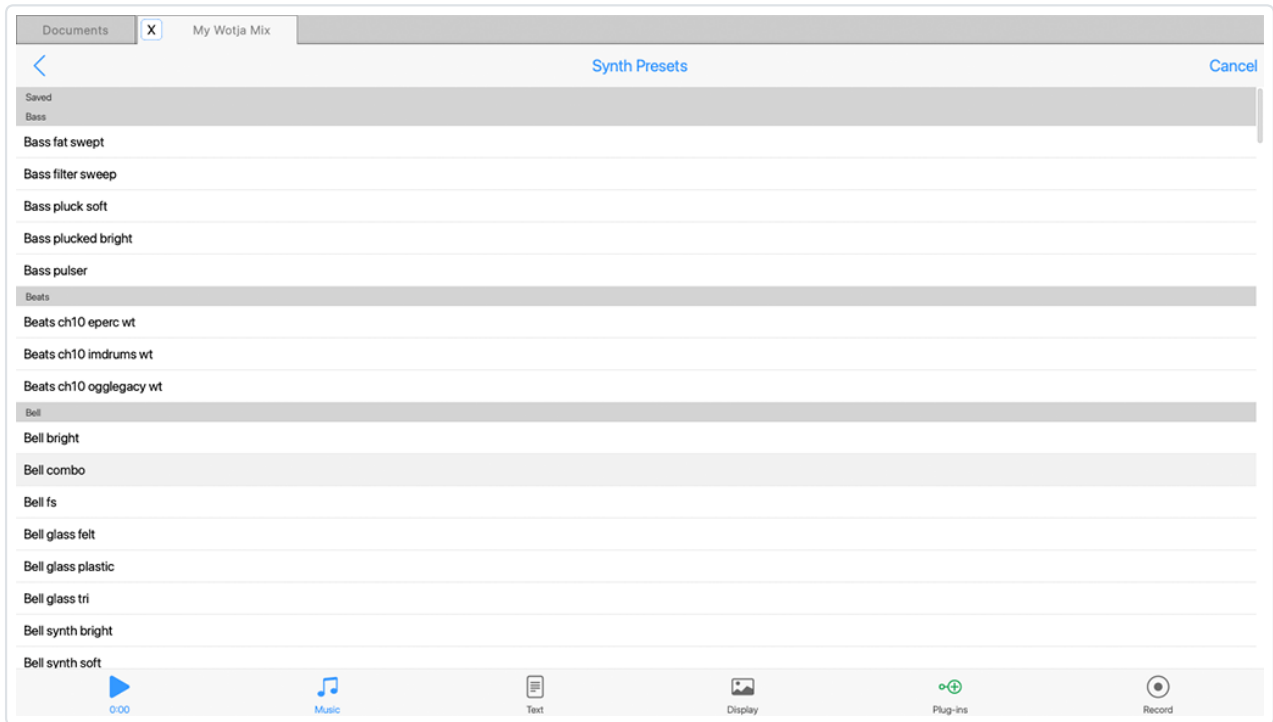
- The ④ **Synth/FX network area** shows a visual representation of the network design, but is also active as you can tap it to add a new unit.
- ⑪ **Audio-rate** units are shown in the top row of the network and ⑮ **Control-rate** units are shown in the bottom row. Units are always numbered from left to right and from 1 upwards; they are automatically renumbered if you ever delete a unit.
- *Tips:*
 - *If there are no units shown then it means there is no Network defined.*
 - The ⑬ **Selected Unit** is highlighted with a red surround.
 - Depending on which button in the **Music Mode** > ⑥ **Generator Network View** you tap to access the editor you will be editing a Synth or FX Network - the ⑤ **Screen Title** tells you what you are editing.
 - Use the top ② **Presets** button for a range of included Synth (.tg) or FX (.fxm) presets (you can even load ones you have saved). What is shown depends on whether you are in Synth or FX network.
 - Synth Units are also called Sound Units or Tone Generators (TG); the terms are used interchangeably.
 - Use the top ③ **Randomize** button to quickly change your Sound or FX Network. Every time you tap the button a Preset is chosen at random ("lucky dip") from ALL available presets (i.e. the built-in ones or ones you have saved). This allows quick experimentation with sounds and FX and is a lot of fun, too!
 - To build a stereo synth network, use a Synth Unit's pan parameter (or even a following Amp unit) to spatially position its sound. You can have as many Synth and FX Units, Controllers and Junctions in your network as you want (device capability permitting).

① **OK/Back Button**

Tap the OK button to accept the preset and return to the Synth or FX

Tap the OK button to accept the preset and return to the Synth & FX Editor.

2 Presets Button








WAE - Synth Presets List

(tap image for large)

The WAE Presets List is launched from the "Presets" button at the top of the Network Editor. Using presets is a very easy way to quickly change the sounds and fx used in a mix. See also [Use of Synth & FX in Schemas](#).

Whether you see the **Synth Presets** (.tg) list or the **FX Presets** (.fxm) list depends on whether you have accessed the WAE Network Editor via a:

- ** Generator Synth button**
- ** FX button**
- ** Cell FX button**
- ** Track FX button**
- ** Mix FX button**

• **Synth Presets/FX Presets setting for the currently selected**

- **Synth Presets/FX Presets setting for the currently selected [Schema](#) screen.**

To preview a preset first make sure you have your mix playing and then just tap on it. If you want to use it tap the top left < **OK** button to exit the list; if you want to discard it then press the top right Cancel button to exit the list.

Any custom presets you have saved can be found in the Saved Files grouping at the top on the left.

You can easily zip up your custom presets into a zip with the following paths being used for sounds and fx for your own folders:

[/sounds/tg-preset-group-name/xxx.tg](#)

[/fx/fx-preset-group-name/xxx.fxm](#)

Tip: The zip file just needs to be placed in the [Wotja Folder](#).

Tip 2: The zip file can be called anything except [wj_tgfxm.zip](#).

Use of Synth & FX Presets in a [Schema](#)

- **Synth Presets:**

- If ANY [Synth Presets](#) have been toggled on in the Schema [WAE Network Presets > Synth Presets](#) list, then one of those that are toggled on will be chosen at random to replace the WAE Sound Network for every [TTM Template](#) (i.e. TTM1 Players or TTM1 Players 2) created in a new auto-mix or Flow, or when a [Cell is randomized](#) and a TTM Template is selected.
- *Note:* If no Synth Presets are selected in the Schema then no such random selection occurs.

- **FX Presets:**

- If ANY [FX Presets](#) have been toggled on in the Schema [WAE Network Presets > FX Presets](#) list, then one of those that are toggled on will be chosen at random to be used for the [11 Mix FX](#) setting for a new auto-mix or Flow.

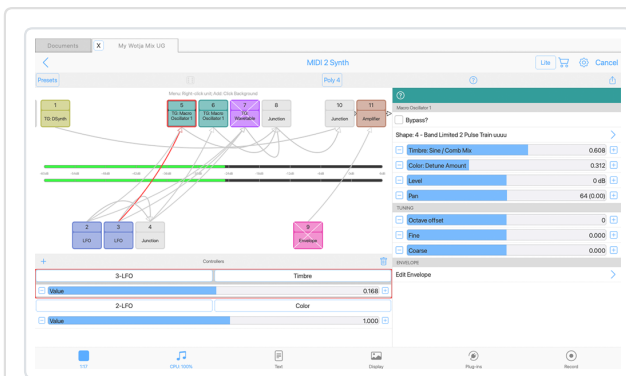
◦ *Note:* If no FX Presets are selected in the Schema then no

- **NOTE:** If no FX Presets are selected in the Schema then no such random selection occurs.

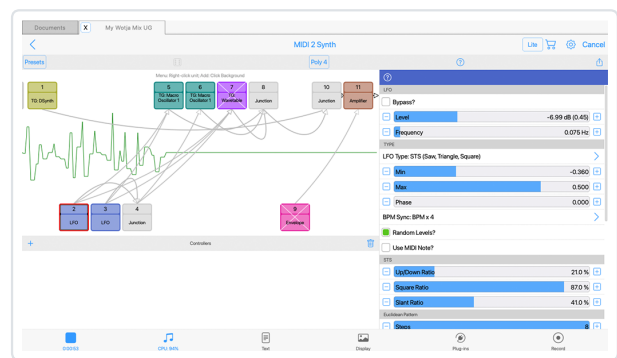
③ Randomize Button

Tapping this button chooses a Synth or FX preset at random ("lucky dip") from ALL available presets (i.e. the built-in ones or ones you have saved). This allows quick experimentation with sounds and FX and is a lot of fun, too!

④ Synth/FX Network Area



Meter: Audio
(tap image for large)



Meter: Oscilloscope
(tap image for large)

An Audio meter or Oscilloscope can be displayed for the selected unit, as shown below, if the "[Synth & FX Editor: Show Meter/Scope](#)" setting is toggled on.

Adding Units

- *If you are designing a Synth Network, then at least one of your units should be a Tone Generator Unit. In the pop-up menu these all have a "Tone:" prefix.*
- *Tap on an empty/blank part in the top half of this network design area to display the "Unit Add" menu below where audio-rate (Tone) units are listed first, then FX and then Control Rate units (Ctrl-):*
 - [Tone: DSynth](#)
 - [Tone: Macro Oscillator 1](#)

- **Tone: Osc**
- **Tone: Particle**
- **Tone: Sample Player**
- **Tone: Wavetable**
- **Amplifier**
- **Chorus**
- **Compressor**
- **Delay**
- **Distortion**
- **Equaliser**
- **Filter**
- **Overdrive**
- **Pitch Shifter**
- **Reverb 1**
- **Reverb 2XL**
- **Junction**
- **Ctrl-Amplifier**
- **Ctrl-Envelope**
- **Ctrl-LFO**
- **Ctrl-Junction**

Selecting/ Editing Units

- *Tap the unit whose settings you want to edit in the **22** Unit Panel, or double tap a Unit button for a pop-up **10** Actions menu (where the first item in it lets you edit the unit full screen; for an example see [Edit Wavetable Full Screen](#)).*
- *Note: The Junction unit does not have an editor as it is just sum the inputs of anything feeding it (so nothing happens when you tap on it).*

Relative Units

DELETING UNITS

- Tap the **⑩ Actions Button** and select either *Delete Unit* (which deletes the currently selected unit) or *Clear Network* (if you want to clear the entire network!).
- Double tap a Unit button for a pop-up menu where you can also do as above.

⑤ Screen Title

The Title will display the MIDI Channel number (for Generator Sounds or FX), Cell, Track or Mix depending on the context, appended by either Synth or FX depending on whether it is a Synth or FX network.

⑥ Polyphony Button

Displayed in Synth networks only. Tap this button to display a pop up list where you select the polyphony level used by the Generator(s) playing through this network. The default value is 4; set this too high, and your computer/device might slow down; set it too low, and you likely won't hear as many notes playing in chords or when notes have long decays (due to note stealing).

⑦ Help Button

- This displays the User Guide in a pop-up window.
- Whether this is the in-app or online version of the User Guide depends on the value of Settings > **General** > "**Help: Use In-App User Guide**".

⑧ Settings Button

Tap this button to go to the **Settings: General** screen.

⑨ Cancel Button

Tap to discard any changes you have made since entering the Synth S

Tap to discard any changes you have made since entering the Synth & FX Editor.

10 Actions Button

Displays the following pop-up Actions menu:

- **Save**
 - As relevant, saves a Synth Network to a file with extension `.wotja_sy` or a FX Network to a file with extension `.wotja_fx` (see [Filetypes](#)). Files are saved to the [Wotja folder](#).
- **Export to Clipboard**
 - Select to export to clipboard your Synth Network or FX Network, depending on what kind you are editing.
- **Import from Clipboard**
 - Select to import from clipboard a Synth Network or FX Network.
- **Edit Unit Full Screen**
 - Select to edit the selected Unit in a full screen editor.
- **Delete Unit**
 - Select to delete the selected Unit.
- **Clear Network**
 - Select to clear the entire Synth or FX Network.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

11 Audio-Rate Unit

For the available Audio-Rate Units (Synth TG) see the [WAE Audio Engine](#).

Audio-rate units (see [Glossary](#)) are units that operate at the [audio output](#) frequency (e.g. 44kHz) - that means **Synth units** (i.e. "**Tone Generators**") and **FX units**.

Double tap a unit for the following "Unit Action" pop-up menu (all pretty

Double tap a unit for the following Unit Action pop-up menu (all pretty self explanatory):

- **Edit Full Screen:**
 - This allows you to edit a unit full screen (for an example see [Edit Wavetable Full Screen](#)).
- **Add Unit Before:**
 - Add a unit before the selected unit (displays the Add Unit pop-up menu).
- **Add Unit After:**
 - Add a unit after the selected unit (displays the Add Unit pop-up menu).
- **Copy:**
 - Copy the selected unit.
- **Paste Before:**
 - Paste a copied unit before the selected unit.
- **Paste After:**
 - Paste a copied unit after the selected unit.
- **Delete Unit:**
 - Delete the selected unit.
- **Clear Network:**
 - Clear the entire network.

12 Audio Signal Path

All units on this line will be audio-rate units.

13 Selected Unit

The currently selected unit has a solid red outline.

14 Connector Line

The connector line shows which Synth or FX units are connected to and being modulated by Control-rate units.

The controller unit selected in the  [Controllers Panel](#) has a red

The controller unit selected in the [\(21\) Controllers Panel](#) has a red connector line.

15 Control-Rate Unit

For the available Control-Rate (Ctrl-rate) Units (Controllers) see the [WAE Audio Engine](#).

Control-rate units (see [Glossary](#)) are units that operate at a much lower frequency than audio-rate units and are used for modulation of parameters, e.g. the LFO and Envelope units.

Double tap a unit for the following "Unit Action" pop-up menu (all pretty self explanatory):

- **Edit Full Screen:**
 - This allows you to edit a unit full screen (for an example see [LFO Full Screen](#)).
- **Add Unit Before:**
 - Add a unit before the selected unit (displays the Add Unit pop-up menu).
- **Add Unit After:**
 - Add a unit after the selected unit (displays the Add Unit pop-up menu).
- **Copy:**
 - Copy the selected unit.
- **Paste Before:**
 - Paste a copied unit before the selected unit.
- **Paste After:**
 - Paste a copied unit after the selected unit.
- **Delete Unit:**
 - Delete the selected unit.
- **Clear Network:**
 - Clear the entire network.

16 Add Controller Button

This button allows you to add a new Controller to pre-existing Audio rate

This button allows you to add a new Controller to preexisting Audio-rate or Control-rate unit. This is how you do it:

1. Select the Unit you want to be modulated (e.g. [Osc Unit](#));
2. Tap on an empty/blank part in the top half of the [④ Synth/FX Network area](#) to display the Unit Add menu and then select a control-rate unit (e.g. [Ctrl-Envelope Unit](#));
3. **Tap the unit you want to be modulated** (i.e. that added in 1 above) and tap the Add Controller button to add a [⑭ Connector](#);
4. For that Connector, you then select the [⑰ Controller Unit Selector](#) to choose the Controller unit that will do the modulation (e.g. [Envelope Unit](#));
5. **Non-Junctions Only:** Tap the [⑲ Controller Parameter Selector](#) for a drop list of parameters (if any) that can be modulated in the Unit selected in step 1 and tap to select one (e.g. [Amplitude](#));
6. Finally, use the [⑱ Controller Scale Value slider](#) to change the Scale Value applied to the modulation (+/-2) before it is passed to the parameter of the Unit selected in step 1. Setting this to 0 means no modulation is applied. For [Junctions](#) the Scale Value is a way to balance how much of the output of each Unit is blended together. Note: If more than one control-rate unit feeds a specific parameter on a target unit, they will get added together automatically (including the appropriate scaling factor).

[⑰ Controller Unit Selector](#)

Displays a pop-up that allows you to choose the Controller unit (from those added/present in the network) that will do the modulation (e.g. [Envelope Unit](#)).

[⑱ Controller Scale Value](#)

This sets the Scale Value applied to the modulation (+/-2) before it is passed to the parameter in the Unit that the controller is connected to. Setting this to 0 means no modulation is applied.

For [Junctions](#) the Scale Value is a way to balance how much of the

For **JUNCTIONS** the Scale value is a way to balance how much of the output of each Unit is blended together. Note: If more than one control-rate unit feeds a specific parameter on a target unit, they will get added together automatically (including the appropriate scaling factor).

19 Controller Parameter Selector

Displays a drop list of parameters (if any) that can be modulated in the Unit that the controller is connected to.

20 Delete Controller Button

Deletes the selected controller unit in the **21 Controllers Panel**.

21 Controllers Panel

IMPORTANT: The Synth & FX Editor does not support dragging to add Controllers; these have to be added via the Controller panel "+" button. This button is greyed *until you select an Audio Rate Unit (e.g. Tone Generator or FX unit) that has a Controller Unit somewhere to the left of it* otherwise no Controller can be added! Also, Controllers can not be added to some units, e.g. Compressor, as they have have no modulateable parameters.

All Units (i.e. both audio-rate and control-rate), except Junction Units (below), have some parameters that can be controlled (modulated) by control-rate Units (LFO, Envelope, Amp). Each Unit you want to control can have as many Connectors (lines) as you like, and these are separately numbered for each Unit. This allows all kinds of fun and clever sound design stuff to be done in the WAE. The Connectors and Controllers are displayed / selected at the bottom of the screen and/or on the bottom left.

You can tell if a Unit (audio-rate or control-rate) has been set up to be modulated by a Controller as you will see a blue or red line attached that is connected to control-rate unit to the left of it.

Junctions (audio-rate or control-rate): These units are colored grey, have no interfaces, and are used only to sum together the outputs of a number of Units of the same audio rate or control rate type, meaning

number of units of the same audio-rate or control-rate type, meaning the units they sum are always on the same line.

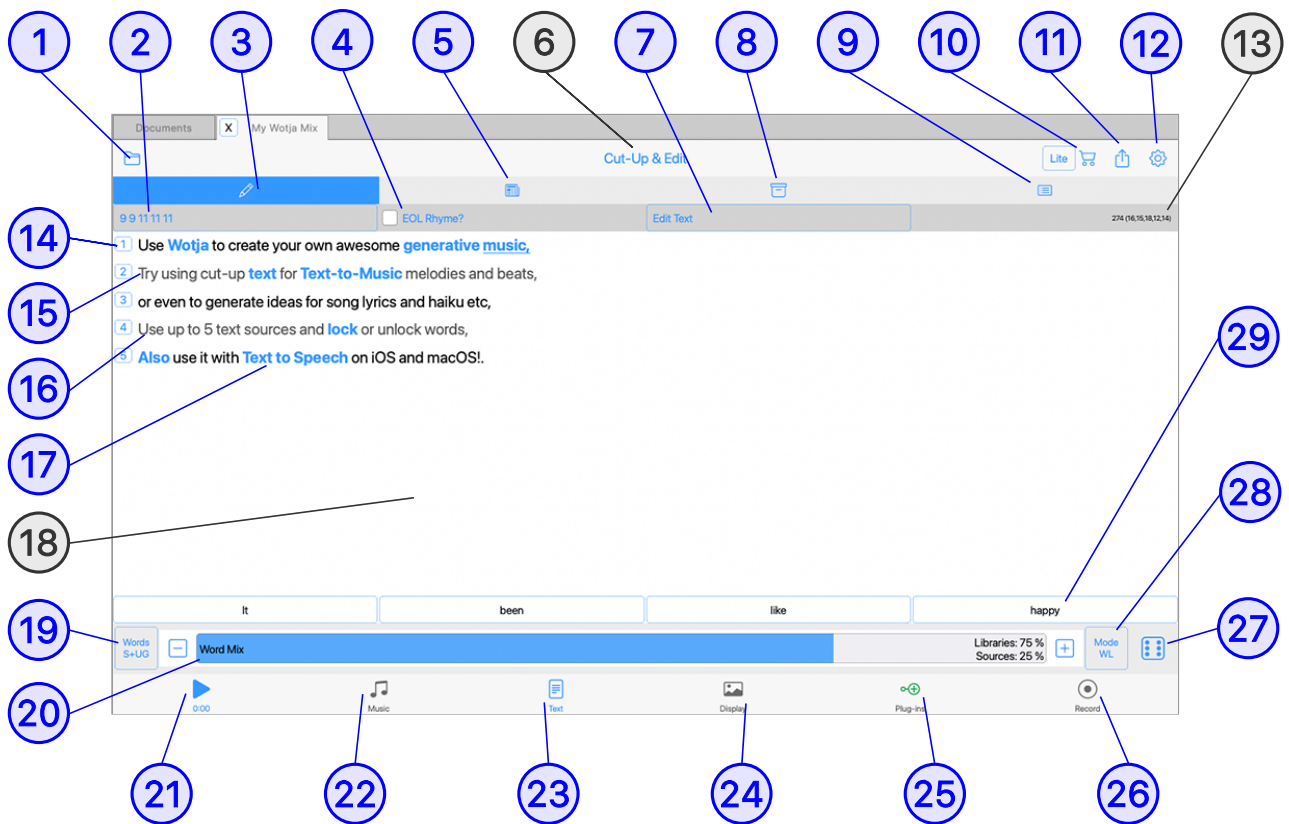
Controller Editing:

See: [⑩ Add Connector](#)

[②② Unit Panel](#)

This is an in-screen editing panel for the selected [WAE Synth](#) or [FX Unit](#) (as relevant). You can also edit the unit full screen by tapping [⑩ Actions Button](#) and selecting "Edit Unit Full Screen".

↑ ✎ Mix: Text Mode



(tap circle for info, hover for tooltip; tap image for large)

Documents > (7) (E) Mix File

Tutorials

- Edit Cut-up Text


Text Mode

- Documents > (7) Mixes Screen > (E) File Button > (23) Text Mode Tab
- Text Mode comprises 4 screens: (3) Cut-up/Edit, (5) Sources, (8) Saved Text and (9) Text Properties.
- It is where you create/edit text used in your mix, whether purely for display purposes, for "Text-to-Music" (TTM) (see the TTM Cut-up Rule) and also Text to Speech (TTS).

- The powerful "cut-up technique" is great for generating ideas for lyrics, poems, haiku etc as it allows you to quickly generate random word associations from a pool of words. This pool can include words from:
 - Up to 5 user entered text fields ("[Sources](#)", saved in the mix file)
 - A user editable word library ("[User Library](#)", saved in Wotja)
 - A user editable general word library ("[General Library](#)", saved in Wotja)
 - A non-editable Wotja library ("[Wotja Library](#)")
- You can lock down ("Lock") any words you want (a locked word will not be changed when you press the [19 Create Cut-up Button](#)) or, for just a selected word, choose one of the alternative cut-up words presented.
- You can use Rules ("Rules") to constrain your cut-up by lines, words and syllables.
- Keep iterating until you find the interesting, inspiring or serendipitous combinations of words you are looking for. Save the the best Cut-ups ("Saved") and then use in real-world lyrics, poems, haikus, tweets etc.
- The [15 Text or created Cut-up](#), [14 Word Locks](#), associated [11 Text Rules](#), [5 Sources](#) and [8 Saved Text](#) are all saved in your Wotja file.
- For your cut-up you get to choose how many lines and how many words per line you want in it and whether you want Wotja to attempt End of Line (EOL) rhyming.
- Tip: The [Schema](#) includes the "[Text for Source #0](#)" field into which you can enter text that you wish to be added to Source #0 whenever an auto-mix or flow is created using that Schema. If you set [Word Mix](#) to 0, then these words are your entire word pool for cut-up. You can use this if you wish to share your Schema and you will know the recipient will experience cut-up as you intend it.
- *Important: We respect copyright and strongly encourage you to do the same. That means if you use Wotja to come up with a lyric you like, make sure that it does not infringe the copyright of any of your source material. Wotja is pretty good at creating random "cut-ups", but it is just a tool for you to use to generate ideas. It is ultimately*

your responsibility to make sure you are not infringing anyone else's copyright.

① Save/Exit Button

Displays the Save Changes Menu pop-up before exiting to the Documents screen. For the menu items see the  Music > ① Save/Exit button.

② Edit Rules Button

Default Rule: Uses value in the currently selected [Schema](#)

Values: Various included; user customized

The Rules Button button displays the Cut-up Rule ("Rule") currently being used to create cut-ups. If it has a name then that will also be shown, otherwise you will see the [Rule Syntax](#) (below).

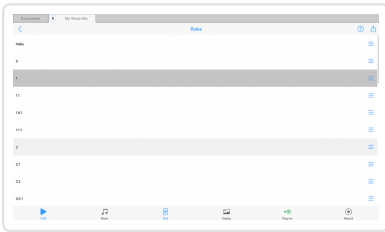
- **Tap on the Rules button to go to the [Rules List](#) (below) where you will see a list of all the Rules available for selection - simply tap on a rule to select it for use.**
- **Tap on a Cog Button in the Rules List to go to the [Rule Editor](#) (below).**
- **To add Rules see "[How to Add/Edit Rules](#)" (below).**

Tip: Rules are stored in a Wotja file. When you create a new Cut-up then the Rules List is populated with the default rules. The cut-up uses only the rule you select and you can delete any of these rules you don't want to be used for cut-up.

Use of "Custom Rule" field in [Schemas](#)

- **Tap on the "Cut-up Rules" RP item and select "Custom Rule" from the drop down Rule List to be shown the [Rule Editor](#) screen where you can enter your rule.**

Rules List



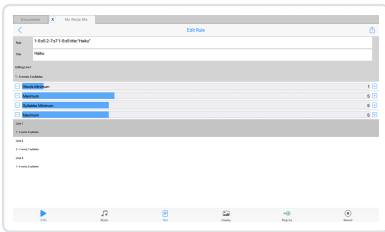
Text Mode: Rules List
(tap image for large)

See also the [Rule Syntax](#).

- ***Tap a Rule to select it.***
- ***Tap the Cog Button to the right of it for the [Rule Editor](#).***
- ***Action Button pop-up menu:***
 - *Add Rule:*
 - Add a new 4 4 4 4 rule to the bottom of the Rules List (see also "[How to Add/Edit Rules](#)" below).
 - *Move Up:*
 - Move the Rule item up.
 - *Move Down:*
 - Move the Rule item down.
 - *Delete:*
 - Delete the Rule item.
 - *Export to Clipboard:*
 - Select to export all rules to the clipboard.
 - *Import from Clipboard:*
 - Select to import rules that are on the clipboard. Wotja ensures there are no duplicates.
 - *Prune Rules:*
 - Remove all rules from the list that are not actually used in this Wotja file.
 - *Use Default Rules:*
 - Replace all the rules in your Wotja file with the default rules (use carefully!).

Rule Editor

See also the [Rule Syntax](#).



Text Mode: Rule Editor
(tap image for large)

- **Rules Field: This is editable.**
- **Title Field: This is editable.**
- **Line Summary: This displays the word and syllable count for the line. Tap the line to expand it so you can use the sliders to change the rule values.**
- **Slider controls:**
 - *Words Minimum*: The minimum number of words in the line of cut-up.
 - *Words Maximum*: The maximum number of words in the line of cut-up.
 - *Syllables Minimum*: The minimum number of syllables in the line of cut-up.
 - *Syllables Maximum*: The maximum number of words in the line of cut-up.
- **Action Button pop-up menu:**
 - *Add*: Add a new line to the Rule.
 - *Move Up*: Move the Rule line item up.
 - *Move Down*: Move the Rule line item down.
 - *Delete*: Delete the Rule line item.

How to Add/Edit Rules

- **Add New Rule (4 4 4 4):**
 - [Rules List](#) > Action Button > Add Rule.
- **Add New Custom Rule:**
 - Tap the *Text Edit Button 5* and in the Text Editor screen type any old text for the kind of rule you want (where any single letter counts as a word, you do not have to type full words), e.g.:
A A A A A
A A

A A A

would be a "5 2 3" rule. On leaving the screen select Yes in the "Change the rule?" pop-up.

- **Add New Custom Rule:**

- Create a Rule in any text editor (e.g. 3 5 6 6), copy it and then from the Action Menu select "Import All from Clipboard".

- **Add New Custom Rule:**

- Create a Rule in any text editor (e.g. 3 5 6 6), copy it and then paste it into the Rule Editor "Rule" field.

- **Edit Rule:**

- Use the [Rule Editor](#).

Cut-up Rule Syntax

A basic Cut-up Rule is very simple - it is just a text string that consists of a series of numbers. Each number stands for the number of words to put in a particular line of the cut-up. For example, the four spaced numbers 3 4 5 6 would represent four lines of cut-up. The first line would have three words, the second would have four words, the third would have five words, and the fourth would have six words.

Line Rule Syntax - Advanced

Tip: Items in [] are optional.

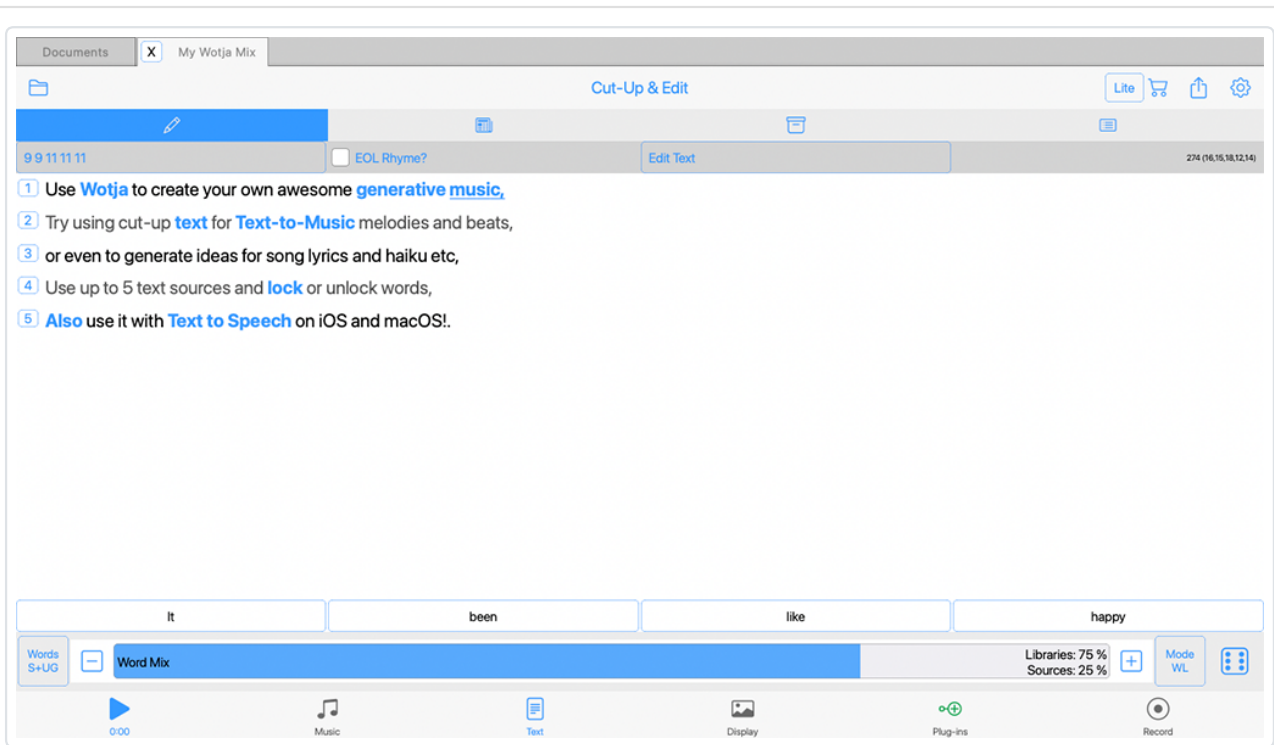
```
LineWordsMin [- LineWordsMax[:SyllablesMin [-SyllablesMax]]]
```

Composite Syntax

```
LineRule1 LineRule2 LineRule1 [title:"Name"]
```

Using the above syntax it is easy to create a Haiku rule with 3 lines of words within a range and a fixed number of syllables of 5,7,5 for those lines. e.g.:

```
1-5:s5 2-7:s7 1-5:s5 title:"Haiku"
```



Text Mode: Cut-up/Edit Screen

(tap image for large)

The Cut-up/Edit screen is shown in the [Text Mode Schematic](#) as it is the main Text Mode screen.

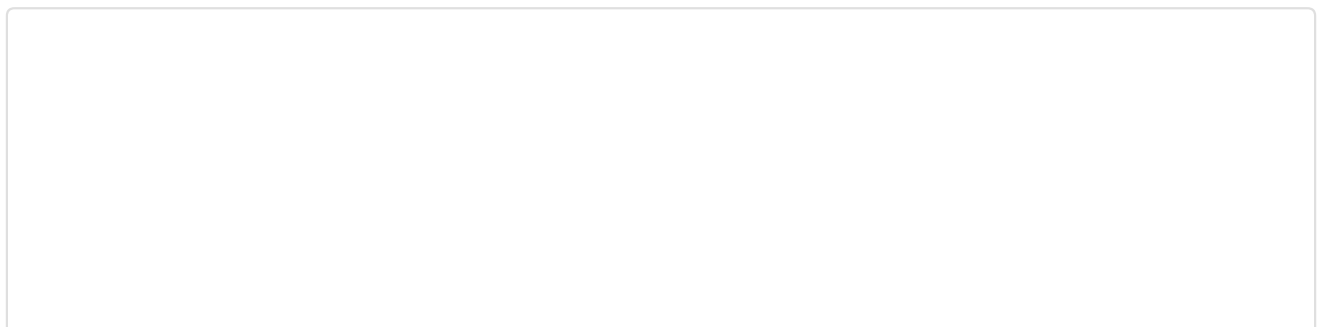
④ EOL Rhyme? Toggle

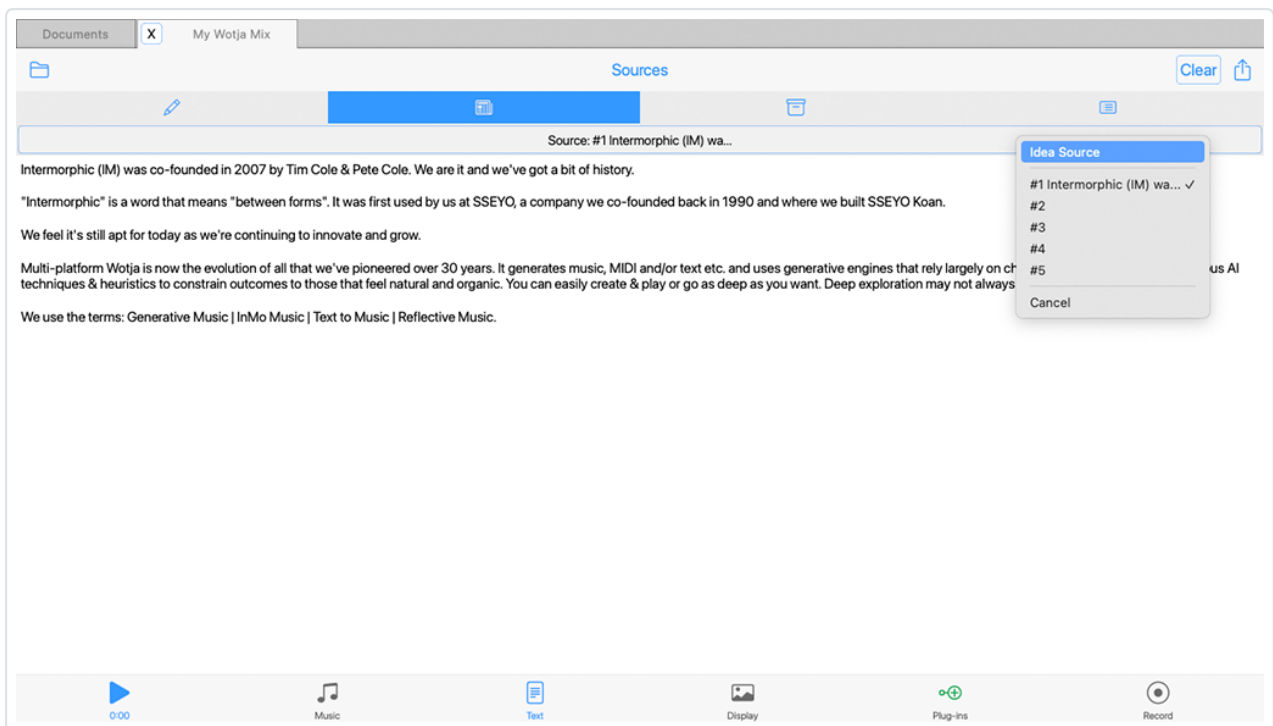
Default Value: Setting in the currently selected [Schema](#)

Values: On/Off

Setting determines whether Wotja, when creating a Cut-up, attempts to rhyme the ends of lines with other lines. For true, random, cut-up, then you would leave this set to EOL - OFF.

⑤ Sources Screen





Text Mode: Sources Screen

(tap image for large)

This is where, for each mix, you input and store all the custom (i.e. non-[Library](#)) text you want to be used as a source in that mix for a Cut-up. The sources are saved in the your Wotja file and you can have up to 5 of them.

To select the Source field, tap the top "Source: #" control for a pop-up menu (shown above).

The *Source* text area is editable and supports plain text only. You can move words around by cutting and pasting, or even edit or manually add in new words.

Tap to clear the text from the currently selected Source.

Actions button menu:

- ***Export Source to Clipboard (Pro mode only):***
 - Exports the currently selected source.
- ***Export all Sources to Clipboard (Pro mode only):***
 - Exports all 5 source fields to the clipboard.
- ***Import Source from Clipboard (Pro mode only):***

- Imports what is on the clipboard to the currently selected
- **Help^{source} - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

Tip 1: The more interesting the source material you use, the more interesting the cut-up suggestions generated. You can think of your favorite source materials like spices or ingredients, and then build up a collection of your favorites to add when you want. You can then add as little or as much as you like!

Tip 2: Why not try using text from some current news item as a Source - that way you can make sure you use words that are current, and some interesting themes can seemingly come out of nothing!

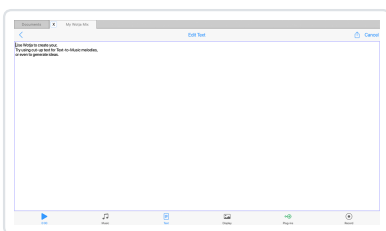
Tip 3: The more words there are in your Sources the more options for cut-ups.

Tip 4: To use the "Sources Only" cut-up mode requires that you have at least one source defined.

⑥ **Screen Title**

Displays the name of the Text Mode Screen you are in.

⑦ **Edit Text Button**



Text Mode: Edit
Screen

Found in the top toolbar, the "Edit Text" button takes you to a full screen text editor where you can manually edit and enter text. This is so you can change a word in a cut-up or add new words or even replaces with your

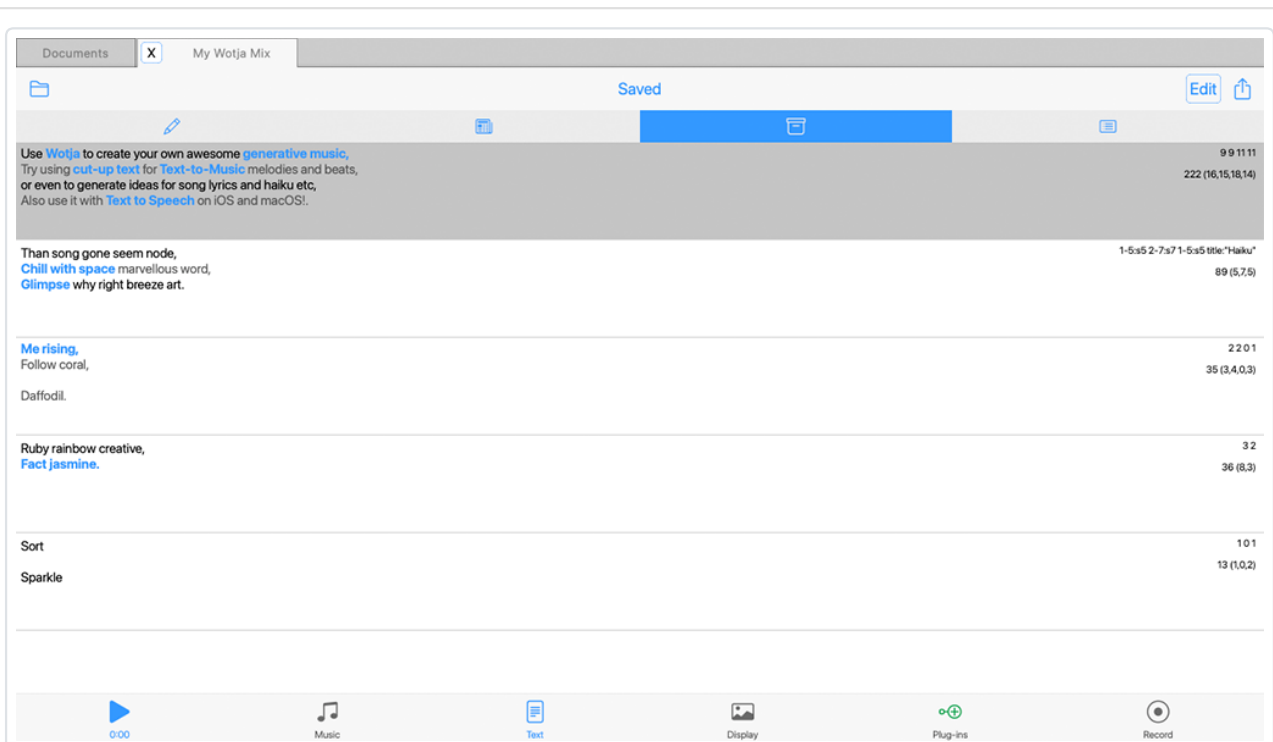
(tap image for large)

own words (in both cases a suitable new matching Rule will be generated).

When you have finished editing your text then press "OK" or "Cancel" to return back to the Text "Edit & Cut-up" screen.

Note: When you have changed the number of words in any line and exit this screen you will be presented with a pop up message of "Change the Rule?". Select "Yes" if you want a new rule to be created to match your words (this is important if you want to use that word arrangement for new cut-ups).

8 Saved Text Screen



Text Mode: Saved Text Screen

(tap image for large)

This is where you can see all the Text or Cut-ups ("Text Items") you have chosen to save. These are saved in your Wotja file.

Tap a Saved Text Item to select it - a grey background indicates the

currently selected item in the list.

Each Saved Text Item includes the text and all text locks that were used. At the top right of the item is displayed the Rule used for the text and a character count showing the total characters and the line characters in brackets after that.

The Edit button copies the selected Saved Text Item to the Cut-up & Edit screen, replacing what is there.

Tip: The [Automatic Text Change > Use Saved Text](#) toggle allows Saved Text Items to be used in a very creative manner in a mix. When the above toggle is on, your mix can sequentially display Saved Text Items according to the various Change settings, instead of randomly generating a cut-up. Any words in your Saved Text Items that are not locked will be randomized just as if it was a cut-up.

The Action button displays the following pop-up menu:

- **Edit:**
 - Copy the selected Saved Text Section to the "Cut-Up & Edit" screen for editing.
- **Move Up/Down:**
 - Use these buttons to change the order of Saved Text Sections.
- **Delete:**
 - Delete the selected Saved Text Section.
- **Saved Text to Clipboard (Pro mode only):**
 - Copies the selected Saved Text Item to the Clipboard.
- **All Saved Text to Clipboard (Pro mode only):**
 - Copies all Saved Text Items to the Clipboard.
- **Append Sections from Clipboard (Pro mode only):**
 - Populate your Saved Text with something you have created in a text editor.
 - Tips: Use a blank line to separate sections; use a `
` if you want a blank line within a section.

Example 1 - two sections

This is section 1

This is first line of section 2

This is last line of section 2

Example 2 - four sections

This is this is section 1

This is section 2

And this last line of section 2

Yeah! - this is section 3

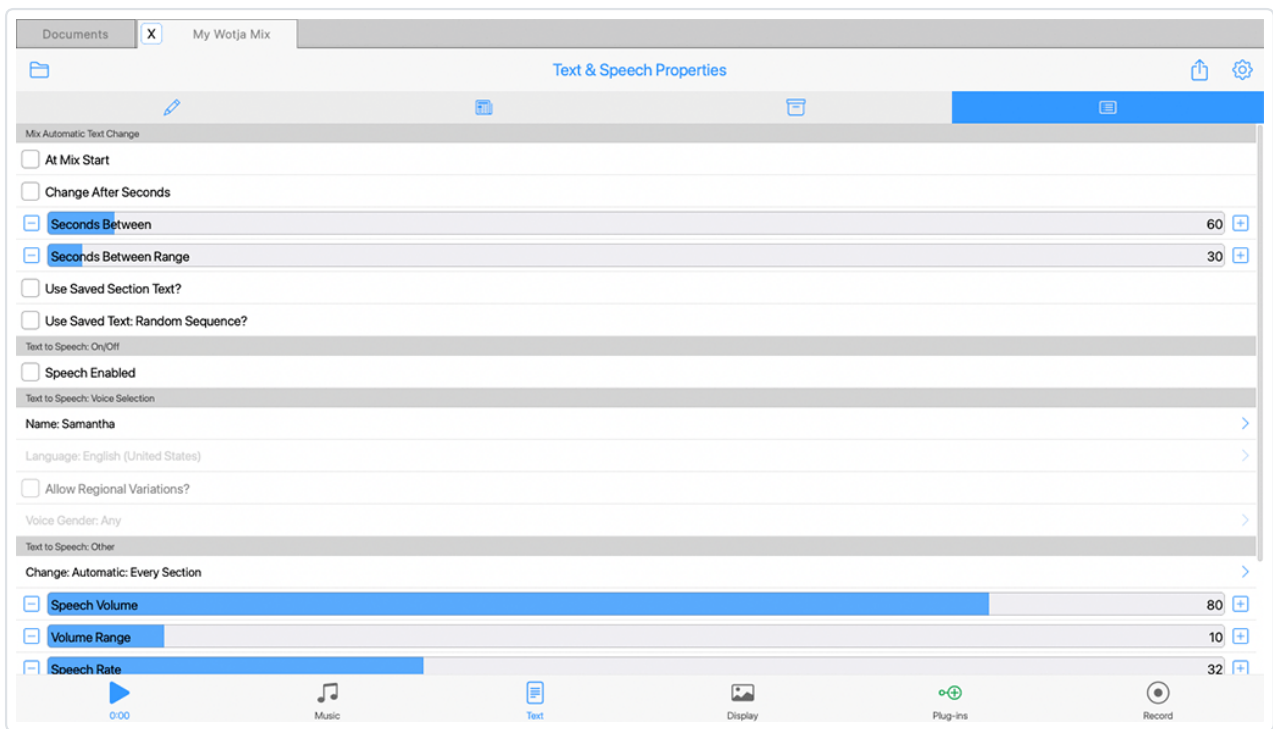
Wow - this is section 4

With two lines

- **Help - User Guide**

- Displays the User Guide in a pop-up window.
- Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

9 **Text Properties Screen**



Text Mode: Text Properties Screen

(tap image for large)

For each mix, this is where you set how you want text to be used by the mix, and [how Text to Speech is used](#).

[↑](#) Text Properties List

- **Mix Automatic Text Change**
 - At Mix Start
 - Change After Seconds
 - Seconds Between
 - Seconds Between Range
 - Use Saved Section Text?
 - Use Saved Text: Random Sequence?
- **Text to Speech: On/Off**
 - Speech Enabled
- **Text to Speech: Voice Selection**
 - Name
 - Language
- **Text to Speech: Other**
 - Change
 - Speech Volume
 - Volume Range
 - Speech Rate
 - Rate Range
 - Speech Pitch
 - Pitch Range
 - Voice Style

- [Allow Regional Variations](#)
- [Voice Gender](#)

[↑](#) Mix Automatic Text Change

- [↑](#) **At Mix Start**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* On/Off
 - This setting allows a new mix cut-up to be created automatically on mix start.
- [↑](#) **Change After Seconds**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* 3-1000
 - This mix setting allows a new mix cut-up to be created automatically after a certain time, specified in the parameters below.
- [↑](#) **Seconds Between**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* 3-1000
 - If the Change After Seconds toggle is on, this determines the minimum time before a new cut-up is generated.
- [↑](#) **Seconds Between Range**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* 3-1000
 - The range in value that can apply to the above time.
- [↑](#) **Use Saved Section Text?**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* On/Off
 - When on, this setting allows your mix to sequentially display [Saved Text](#) sections according to the Change settings above, instead of randomly generating a cut-up.
 - Tip: Any words in your Saved Text sections that are **not** locked will be randomized just as it if was a cut-up.
- [↑](#) **Use Saved Text: Random Sequence?**

- **Default Value:** Uses value in the currently selected [Schema](#)
- **Values:** On/Off
- When on as well as the setting above, this setting allows a Saved Text section to be selected at random, rather than sequentially.

↑ Text to Speech: On/Off

- **↑ Speech Enabled**

- **Text to Speech (TTS):** iOS 13+; macOS 10.14+; tvOS 13+ only
- **Default Value:** Uses value in the currently selected [Schema](#)
- **Values:** On/Off
- This must be toggled on for you to hear TTS, as well as [Use Speech Synthesizer](#) being toggled on in Settings.
- Text to Speech is based around a concept of Speech Voices and Locales.
- **How TTS works:**

- **Speech Voice**

- Every voice has a unique name (e.g. Daniel), and this has a particular sound.
- Every Voice is associated with a specific Locale (e.g. English - US).

- **Locale**

- Every Locale is represented by one or more Voices (e.g. there is more than one English - US voice).
- Every Locale e.g. English - US - might have 1 or more regional variations (e.g. English - GB).

- **Speech Voice Change**

- You define when Wotja chooses which Voice to use moving forwards, by the "Voice Change" property.
- The "Voice Change" (Manual, Automatic etc...) defines *when* a new Voice changes.

- NB if Manual is set, then the last selected voice will be used when mix next re-opened.
- **Speech Voice Selection**
 - You define the Voice to use by a variety of Filters, based around Name, Locale, Locale variations and Gender (requires iOS 14.3+, tvOS 14.3+ and macOS TBA).
 - If you want to, you can force a Wotja Mix to always use a specifically named Voice.
 - Alternatively, you can set the Voice name to be "Random"; in which case, your Voice is selected at random according to whatever Locale you specify (which might in turn be "Random", or could be (say) "English US").
 - If you're selecting a voice at random, for a given locale; you can allow the Voice to be selected from the pool of all regional variations of the locale you've specified; e.g. rather than just English (US), you might allow **all** English regional variations.
 - NB: Every voice is identified by it's name. Every voice is also associated with one locale. Every locale might have zero or more voices associated with it. Where we display the voice name list, we display the locale alongside it (so you can see that (say) Daniel has locale of en-gb); otherwise, it'd be impossible to really understand the operation of the various Locale rules.
 - NB: If Speech Name is set to anything other than "Random", we disable the other Filter cells (locale name, locale regional variations switch and gender)
- **Style**
 - If you set Style to Speak, each **line** of text has rate/volume/pitch applied to it.

- If you set Style to Sing or Speak, the rate/volume/pitch are applied at the Word level.
- **Pitch/Rate/Volume Sliders**
 - **Volume slider:**
 - 0 : quietest speech
 - 50: middle point (neutral)
 - 100: loudest speech
 - Wotja selects a volume between the Volume, and Volume + Volume Range.
 - Wotja applies a further random variation across words, if Style is Speak or Sing.
 - **Rate slider:**
 - 0 : slowest speech
 - 50: middle point (neutral)
 - 100: fastest speech
 - Wotja selects a rate between the Rate, and Rate + Rate Range.
 - **Pitch slider:**
 - 0 : halve the pitch (shift down by up to 1 octave)
 - 50: middle point (neutral pitch)
 - 100: double the pitch (shift up by up to 1 octave)
 - Wotja selects a pitch between the Pitch, and Pitch + Pitch Range.
 - Wotja applies a random variation across words, if Style is Sing.
 - Pitch slider effect is harder to hear when you have the "Sing" option, because the Pitch slider is used as an overall scale to shift in addition to any pitch changes generated by the engine, and unfortunately the internal "pitch" property in iOS/macOS actually only works in a rather narrow range of 2 octaves;

any pitch values outside of this are clamped.

[↑](#) Text to Speech: Voice Selection

- [↑](#) **Voice Name**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* List of values
 - Select the voice you want or set to Random.
 - Note: If on loading a mix a specifically named speech voice isn't found (e.g. macOS voice, not present on your iOS device or vice versa) we use the system voice instead.
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Language**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* List of values
 - Can only be set if Voice Name is set to Random.
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Allow Regional Variations**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* On/Off
 - Can only be set if Voice Name is set to Random.
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Speech Gender**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values:* Any; Male; Female
 - Can only be set if Voice Name is set to Random.
 - Requires iOS 14.3+, tvOS 14.3+ and macOS TBA.
 - Refer to [Text to Speech](#) section above.

[↑](#) Text to Speech: Other

- [↑](#) **Change**
 - *Default Value:* Uses value in the currently selected [Schema](#)

- *Values: Only when Edited; At Mix Start; Every Section; Every Line*
- Refer to [Text to Speech](#) section above.
- [↑](#) **Speech Volume**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: 0-100*
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Volume Range**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: 0-100*
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Speech Rate**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: 0-100*
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Rate Range**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: 0-100*
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Speech Pitch**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: 0-100*
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Pitch Range**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: 0-100*
 - Refer to [Text to Speech](#) section above.
- [↑](#) **Voice Style**
 - *Default Value:* Uses value in the currently selected [Schema](#)
 - *Values: Speak: Fixed volume and pitch; Sing: Volume and pitch changes; Chant: Volume changes*
 - Refer to [Text to Speech](#) section above.

⑩ **Store Button**

Takes you to the [In-App Store](#).

⑪ **Actions Button**

Popup Actions menu:

- **Lock All:**
 - Locks all words in the Text.
- **Unlock All:**
 - Unlocks all words in the Text.
- **Save Text / Save Text (x/y):**
 - *Save Text*: Displayed if your Saved Text list is empty; Select this to save your Text to the Saved Text list.
 - *Save Text (x/y)*: Displayed if you are editing Text (x) from the Saved Text list of (y) items; Select this to replace that Text with your amended Text. Example: Say you have 3 sections of Saved Text and you are editing the second one. The menu item will then display Save Text (2/3).
- **Append New / Append to Saved:**
 - *Append New*: Displayed if there are no Saved Text sections; Select this to save your Text as the first Saved Text section.
 - *Append to Saved*: Shown when you have already some Saved Text sections; Select this to append your Text as a new Text section at the end of the Saved Text list.
- **Export Text to Clipboard (Pro mode only):**
 - Exports the Cut-up to the clipboard (i.e. so you can share it e.g. in a message, email, chat, instant message or other communication etc.).
- **Import Text from Clipboard: Imports a Cut-up from the clipboard.**
 - Any "non-breaking space" is replaced with normal space to prevent very confusing behavior when subsequently toggling word locking.

- All imported/edited words are locked by default
- **Export Mix to Clipboard:**
 - Exports the Mix to the clipboard (without background image).
- **Export Mix with Image:**
 - Exports a Mix from the clipboard with to include any background image.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

12 **Settings Button**

Takes you to the [Settings: General](#) or [Settings: Audio MIDI+](#) screen, depending on what was last used.

13 **Character Count**

Displays the number of characters in your Cut-up (useful to know if you plan on tweeting your Cut-up) and number of syllables in each line.

14 **Text Line Number Button**

A button that shows the line number of the Cut-up (see also [Rule Syntax](#)).

Tap the button to perform a Cut-up *on just that line*. Word locks are respected.

15 **Text Button Unlocked**

An unlocked word (shown) can be replaced whenever a new cut-up is created (e.g. tap the Create Cut-up Button). Tap a word to lock or unlock it.

16 **Text Button Locked**

An locked word (shown) will not be replaced when a new cut-up is created (e.g. tap the Create Cut-up Button). Tap a word to lock or unlock it.

17 Selected Text Button

The selected word is indicated by an underscore.

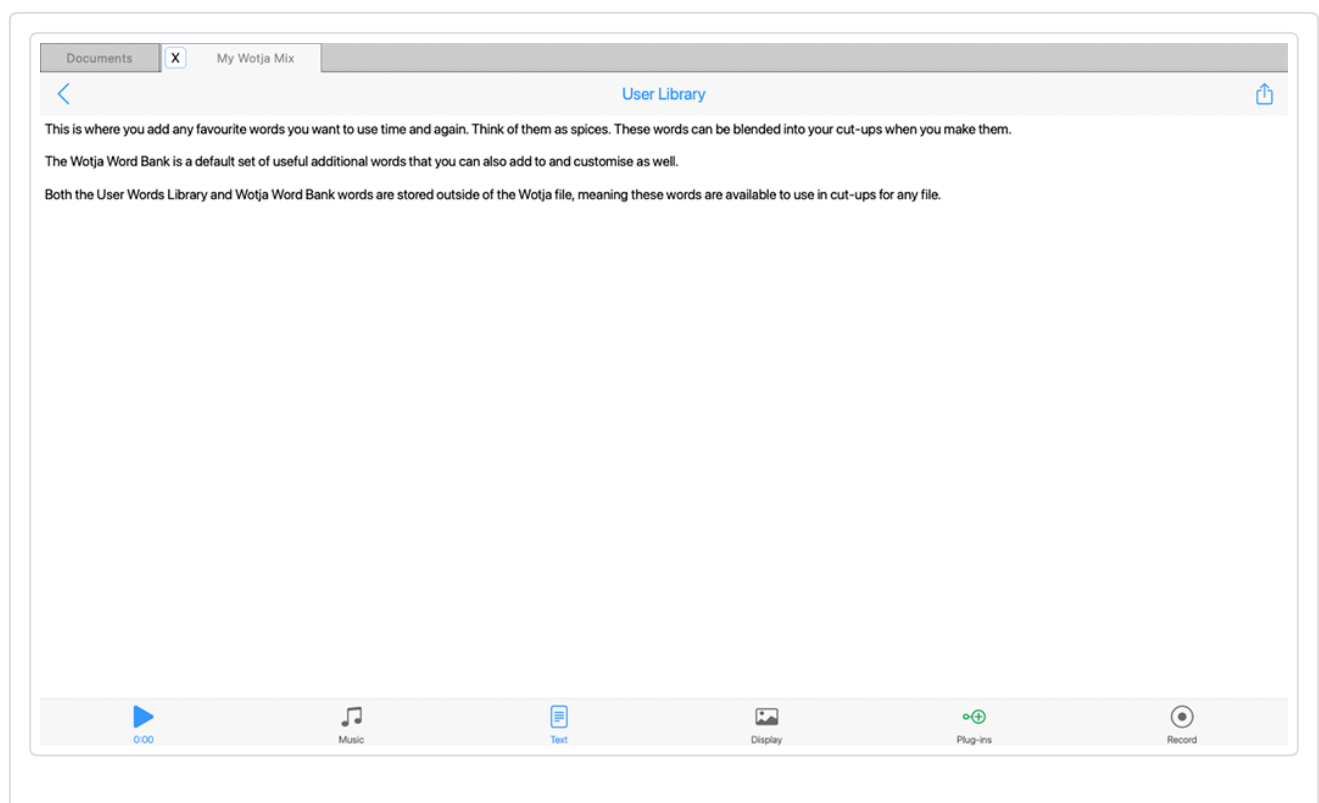
18 Text Area

The text area is where your cut-up (text) is shown.

Lines are alternately colored so that if your Text wraps you can easily see which line the words are in.

Tap a word to lock or unlock it (it shows in blue when locked). When you select a word (locked or unlocked) it also underlines it to show that it is the selected word (e.g. "Text-to-Music" in the screenshot above). To select a word without changing its lock state tap on it and then drag away from it and release. Even though the word does not display an underline, it is now selected.

19 Use Words Button



Text Mode: Use Words Button

(tap image for large)

Tap the "Use Words" Button to select what words you want to be available in the "wordpool" available for selection when creating Cut-ups.

Default Value: Uses value in the currently selected [Schema](#)

Values:

- **Sources + User Library (S+U):**
 - Your wordpool for cut-up includes *Sources* and the *User Library*.
- **Sources + Libraries User & General (S+UG):**
 - Your wordpool for cut-up includes *Sources* as well as the *User Library* and *General Library*.
- **Sources + Libraries User & Wotja (S+UW):**
 - Your wordpool for cut-up includes *Sources* as well as the *User Library* and *Wotja Library*.

Word Libraries

- **User Library:**
 - A user-editable text library that can contain your own favorite words ("spices"). It is stored in Wotja, i.e. not stored in a mix file. To edit it, tap the "Use Words" button and select "Edit User Library".
- **General Library:**
 - A user-editable library of over 650 words included in Wotja. It is stored in Wotja, i.e. not stored in a mix file. To edit it, tap the "Use Words" button and select "Edit General Library".
- **Wotja Library:**
 - A large non-editable library of older stranger words which when used can lead to some interesting results!

Default Value: Uses value in the currently selected [Schema](#)

Values: 0-100 [set manually]

The position of the Word Mix slider determines what proportion of words are selected from your Sources or from the User Library and/or Wotja Word Bank.

Left means use words only from Sources, and right means use words only from your Word Library. Any where in between is a blend!

21 ▶ / ■ **Play/Stop Button**

This button is used to play/stop a mix and it is common to all Mix Edit Modes (i.e. [Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Record](#)).

Below the button is display the "Play Time Indicator". It shows time in two different ways:

- **Count Down**
 - It will count down from some time if you have a Sleep Timer set (e.g 30 mins if you have a 30 minute Sleep Timer), or from 2 minutes if you are in [Lite mode](#).
- **Count Up**
 - It will otherwise count up from 0 so you can see how long the mix has been playing.

22 🎵 **Music Mode Tab**

The Tab that selects [Music Mode](#).

23 📄 **Text Mode Tab**

The Text screens are only available in Text Mode.

24 🖼️ **Display Mode Tab**

The Tab that selects [Display Mode](#).

25 **Plug-ins Mode Tab**

The Tab that selects [Plug-ins Mode](#).

26 **Record Mode Tab**

The Tab that selects [Record Mode](#).

27 **Create Cut-up Button**

Provided you have first added some words to at least one of the Sources text boxes above (or you have some words in your User Library or the Wotja Word Bank toggle is on AND the Library slider is not hard over to the right) then when you click this you'll see a Cut-up appear in the text area. Each time you click this button all non-locked words will be replaced by words selected at random from your word pool and/or Library/Word Bank.

28 **Cut-up Mode Button**

Tap the Cut-up Mode button to choose how your cut-up is created.

- **Word Lock (WL):**
 - In this classic mode, words can be locked, and the non-locked words are changed using the active rule (including syllables), and are sourced from Sources text, User Library and any Word Bank data you might have defined. This mode is very useful for fine-tuning a cut-up.
- **Sources Only (SO):**
 - This new cut-up mode analyses the structure of the Sources text and lets you create cut-up with a more natural feel; in this mode the cut-up is created from Sources ONLY and it uses the active rule (ignoring syllables) but EOL rhyming and word locks are ignored.
- **Edit Text; no Cut-up (ET):**
 - Word locking doesn't apply in this mode so the cut-up button is shown greyed out.
 - The text is treated as just plain text and punctuation is retained.

29 **Text Alternatives Bar**





This is displayed just above the bottom toolbar. If you tap on one of the four alternative words (e.g. "restful" in the screenshot above) then that word will replace the selected word (e.g. "Text-to-Music" in the screenshot above). To refresh the alternative words shown, either tap a blank part of the cut-up area or tap the Create Cut-up button.

↑ Mix: Display Mode



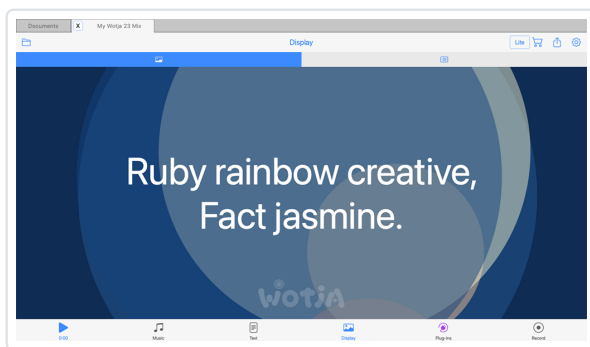
(tap circle for info, hover for tooltip; tap image for large)

Display Mode

- Documents >   >  > 

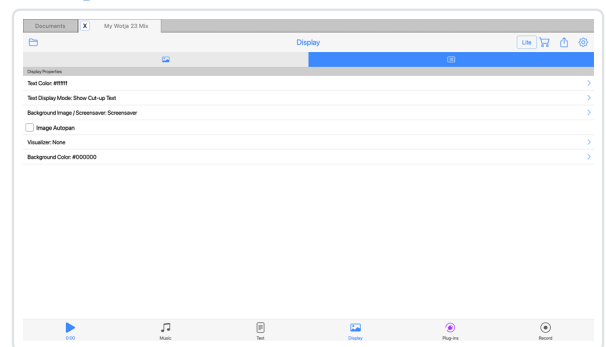
•

Show



Tap image for large

Properties



Tap image for info; Tap here for large

The "Show" segment is where you can see or preview how things will look, and you can also go full screen from the Action menu.

The "Properties" segment is where you set how Wotja displays text and whether the background is a solid color./images/screensaver/visual izer etc.

① **Save/Exit Button**

Displays the Save Changes Menu pop-up before exiting to the [Documents](#) screen. For the menu items see the [🎵 Music](#) > ① [Save/Exit](#) button.

② **Show Button**

Shows the screen with the current Display Property settings.

③ **Screen Title**

Displays the name of the screen. This is "Display" as there is only one screen in Display Mode.

④ **Display Properties Button**

The Display Properties screen is where you can easily set the [Display Properties](#) that define how a Mix will display when played (whether in a Flow, Album, Playlist or Mix).

Tip: If you want to export an imageless (i.e. small) wotja to clipboard for embedding in a webpage, then from the Action menu select "Export Mix to Clipboard".

⑤ **Store Button**

Takes you to the [In-App Store](#).

⑥ **Actions Button**

Popup Action menu:

- **Full Screen [mobile] / Full Window [desktop]**
 - Displays Wotja full screen on your device and the mix (if playing) continues to play. At any time tap the screen to leave full screen display and return to Display mode.
- **Full Screen with Camera Background (iOS/Windows)**
 - *Tip:* See the [Video Feed Tutorial](#) (48 seconds in).
 - Displays your device Camera feed in a Window on top of Wotja (which may restart play on going into this mode).
 - At any time tap the screen to return to Full Screen Display mode.
 - For a composite live generative music and video feed use iOS Control Center / a relevant 3rd party app to screen mirror to a TV.
 - Perfect for use as a big screen audio-visual experience e.g. installations, nature video feeds etc.
- **Full Screen & Restart/Stop (for videos) [mobile] / Full Window & Restart/Stop (for videos) [desktop]**
 - Wotja displays full screen on your device and the mix (if playing) is stopped and then restarted after 2 seconds, making it easier to find a start point in a screen video recording. At any time tap the screen to leave full screen display and return to Display mode. Alternatively, use the Record Seconds or Bars setting to have the mix auto-stop when that value is reached and then have Wotja wait 2 seconds before returning to Display mode.
 - macOS Desktop version: The Wotja window title bar is hidden and a content area sized to e.g. 640x480 pixels is positioned top left of the screen below the App title bar. The available content area sizes are the same as those listed in the [Titlebar](#) > [Window](#) menu.
- **Export Mix to Clipboard**
 - Exports the Mix to the clipboard (without background image).
- **Export Mix with Image**
 - Exports a Mix from the clipboard with to include any background image

image.

- **Help & More**

- Takes you to the relevant section of the User Guide.

-  **7**  **Settings Button**

Takes you to the Wotja [Settings: General](#) screen.

-  **8** **Screen Background**

This displays either a solid color., a screensaver or a background image depending on what has been selected in the [Background Image/Screensaver](#) properties.

-  **9** **Screen Text Area**

The text area can display either Cut-up, TTM text or no text at all. See the settings in the [Text Display Mode](#) property.

-  **10** **Wotja Watermark**

This is where the Watermark displays if the Settings > General > Show Watermark toggle is on.

-  **11**  **Play/Stop Button**

This button is used to play/stop a mix and it is common to all Mix Edit Modes (i.e. [Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Record](#)).

Below the button is display the "Play Time Indicator". It shows time in two different ways:

- **Count Down**

- It will count down from some time if you have a Sleep Timer set (e.g 30 mins if you have a 30 minute Sleep Timer), or from 2 minutes if you are in [Lite mode](#).

- **Count Up**

- It will otherwise count up from 0 so you can see how long the mix has been playing.

12 **Music Mode Tab**

The Tab that selects [Music Mode](#).

13 **Text Mode Tab**

The Tab that selects [Text Mode](#).

14 **Display Mode Tab**

The Display Mode is accessed via this Tab Bar button.

15 **Plug-ins Mode Tab**



The Tab that selects [Plug-ins Mode](#).

16 **Record Mode Tab**

The Tab that selects [Record Mode](#).

Display Properties

- [Text Color](#)
- [Text Display Mode](#)
- [Background Image/Screensaver](#)
- [Image Autopan](#)
- [Visualizer](#)
- [Background Color](#)

-  **Text Color**
 - *Default Value:* White/black as set by the palette selected in the currently selected [Schema](#)
 - *Values:* Any *RGB/HSB* [set manually]
 - Selecting the menu item displays a pop-up color wheel where you can set the text color. (RGB or HSB).
-  **Text Display Mode**
 - *Default Value:* Uses value in the currently selected

Schema

- **Values:**
 - *Show Cut-Up Text*
 - If there is any Cut-up Text used in the mix then show it on screen. This text is also used in the icon thumbnail in the Documents screen.
 - *Show TTM Text*
 - If there is any TTM Text used in the mix then show it on screen. This text is also used in the icon thumbnail in the Documents screen.
 - *Hide All (Use Cut-up Text for Speech)*
 - Hide all text but still use Cut-up for Text to Speech.
 - *Hide All (Use TTM Text for Speech)*
 - Hide all text but still use TTM Text for Text to Speech.
- [↑](#) **Background Image/Screensaver**
 - The ordering below reflects that of the graphics layer stacking order (i.e. the order in which graphic elements are composited), the top most graphics layer setting (i.e. text settings) being at the top of the list and the bottom graphics layer (i.e. background color) being at the bottom.
 - *Important:* It may be a bit confusing, but *for now* there one data field for the "background image" and it can contain either a bitmap image (e.g. photo), the settings for a screensaver or a SVG (with/without transparency). If you select one it replaces the data for whatever was previously being used. Likewise, if you use Clear (below) you remove whatever data is in that field.
 - [↑](#) **Browse Images**
 - **Values:** *User selected* [set manually]
 - Select a bitmap image or SVG using Finder/Explorer/Files.
 - See the [Tutorials](#) and the Included Album Calm or Relax for an example of use of an SVG with

Relax for an example of use of an SVG with

transparency.

- [↑](#) **Select SVG (iOS only)**

- *Values: User selected* [set manually]
- Select an SVG from any that are available in the Wotja iCloud Folder and use that as the background image for your mix.
- SVG images can include transparency/opacity in which case a Visualizer and/or Background color below it can also be seen.
- See the [Tutorials](#) and the Included Album Calm or Relax for an example of use of an SVG with transparency.

- [↑](#) **Select Palette**

- *Default Value:* Uses value in the currently selected [Schema](#); see also Random Screensaver below
- *Values: Included palettes (below); Random (only in RP; means select a palette at random)*
- The Screensaver Palette determines the colors available for use by the screensaver which can be seen in [Flow Mode](#), [Play Screen](#) and Full Screen. It can also be seen in [Display Mode](#), but in that you can use the [Background images/screensaver menu item](#) to override it either with an image or clear it so you can instead use a background color.
- Palettes have an opacity setting of about 25% which allows the lower layer background color to also have an affect.
- When creating an auto mix or creating mixes for an auto box the values of the Screensaver Palette are used for the mix file's auto-generated thumbnail (unless you have chosen an image or background color, see [Browse Images and SVG](#) above).
- There are 35 palettes included, see below:



Awesome listen	lighttext	
Been painting	lighttext	
Black gold	lighttext	
Bold space	lighttext	
Breathe slow	lighttext	
Citrus zest	darktext	
Comforting cotton	darktext	
Deck chair	lighttext	
Deep thought	lighttext	
Drifting upbeat	lighttext	
Flow Go	lighttext	
Flutter words	lighttext	
From imagination	lighttext	
Hedge row	lighttext	
Ideal discover	lighttext	
Incredible relation	lighttext	
Inventing decision	lighttext	
Lilt dimension	darktext	
Look light	darktext	
Love heart	lighttext	
Mono chrome	lighttext	
Noodle safe	lighttext	
Ocean travel	lighttext	
Pastel healing	lighttext	
Pebble vision	lighttext	
Rainbow 12 (1-6)	lighttext	
Rainbow 12 (7-12)	lighttext	
Rainbow 6 cool	lighttext	
Rainbow 6 warm	lighttext	

Random hand	lighttext	
Reflecting time	lighttext	
Sun flower	lighttext	
Teal leaves	lighttext	
That filter	lighttext	
Value union	lighttext	
Vibrant feeling	lighttext	
Wander happiness	lighttext	
Why incredible	lighttext	
Winter scene	lighttext	
Wood finish	lighttext	

- [↑](#) **Random Screensaver**

- **Default Value:** Uses value in the currently selected [Schema](#)
- **Values:** *None/Blobs/Geometric* [style]
- For an example of the screensaver see the [Video Feed Tutorial](#).
- Important: If you select this menu option, be aware this it replaces replaces whatever "background image" is currently in use, be that a screensaver, bitmap image or SVG, and it will use the "style" as set in the Schema.

- [↑](#) **Clear**

- Removes any image, screensaver or visualizer data associated with the mix (but not the palette data).

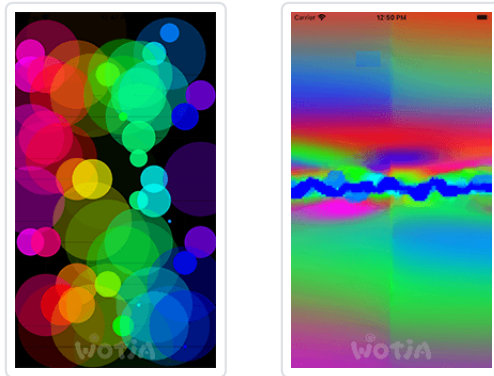
- [↑](#) **Image Autopan**

- **Values:** *Enabled/Disabled* [set manually]
- If one has been added to the mix, this allows auto-panning of any background *bitmap image*.

- [↑](#) **Visualizer**

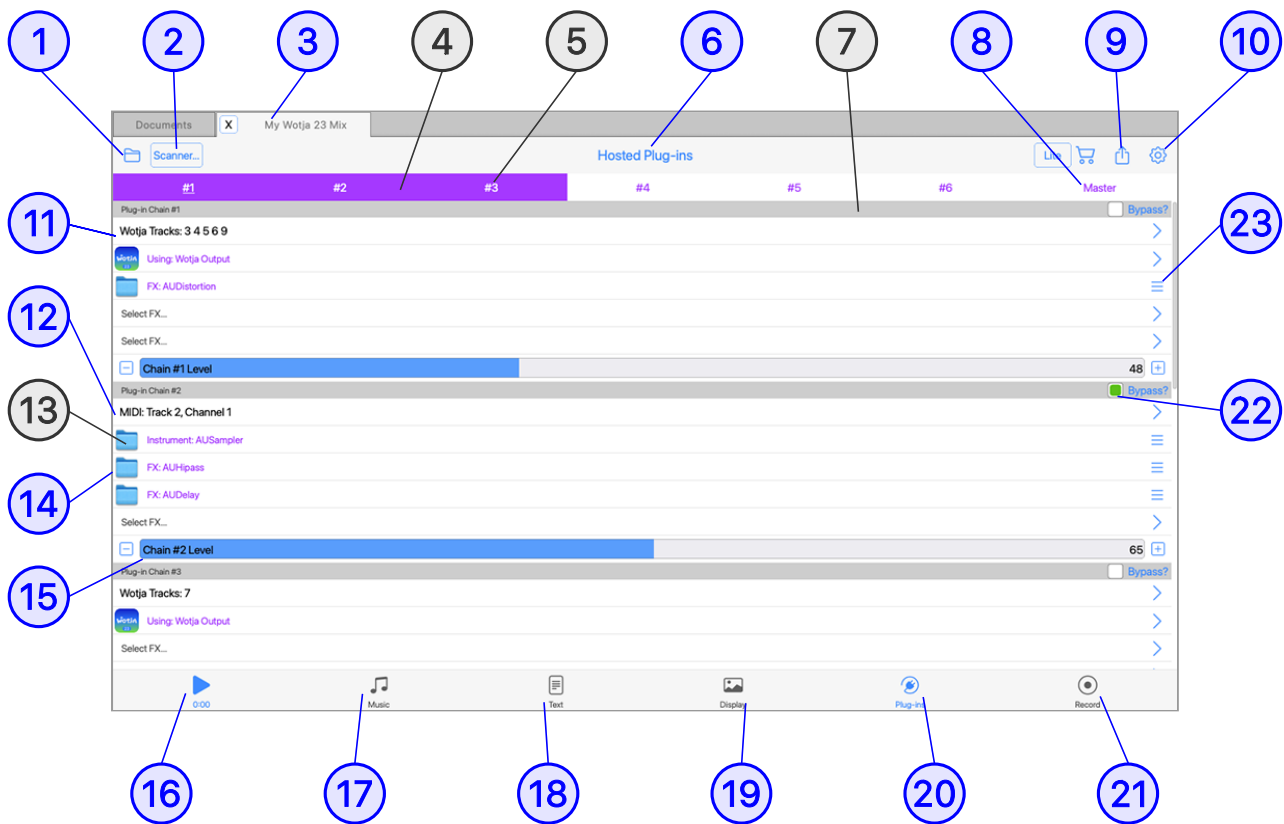
- **Default Value:** Uses value in the currently selected [Schema](#)
- **Values:** *None: Lattice: Vortex*

◦ *values: NONE, Lattice, Vortex*



- The visualizers use the palette defined above.
- They are "music sensitive" in that notes generated by the WME do affect them, but not in a direct linear (note-by-note) fashion.
- For an example of the Lattice visualizer see the [Video Feed Tutorial](#).
- [↑](#) **Background Color**
 - *Default Value:* Black
 - *Values:* Any RGB or HSB value [set manually]
 - Selecting this menu item displays a pop-up color wheel where you can set the text color. (RGB or HSB).

↑ ⚙️ Mix: Plug-ins (Hosting)



(tap circle for info, hover for tooltip; tap image for large)

Hosted Plug-ins

- Documents > 📁 (7) Mixes Screen > (E) File Button > (20) Plug-ins Mode Tab
- The Wotja App [but not Plug-in] supports Plug-in Hosting (iOS, macOS, Windows variants).
- Plug-ins are "external" to the main Wotja App and can be in AUv3 [AKA 'AU3'] format (iOS 14+, macOS 10.15+) or VST3 format (Windows 10/11) - see [Requirements](#).
- 5 "Chains" of Plug-in Instruments / FX are supported and each Chain has 4 "Slots".
- The first "Slot" in a Chain is for the "Instrument" Plug-in, be this the "Wotja Output" 'Instrument', or a 3rd party Instrument Plug-in. The other 3 slots are for FX Plug-ins.

- By default, the "Wotja Output" 'Instrument' uses output from the Mix FX (i.e. for ALL Wotja Tracks). Use the Wotja Track Filter to specify only those tracks that you want to process in the Chain. This can also be used in conjunction with the MIDI Event Filter below.
- The Instrument Plug-in you select gets its MIDI data from all MIDI data delivered by all Wotja tracks. Use the MIDI Event Filter to filter what MIDI is to be used, e.g. only MIDI channel 2 from e.g. only Wotja Track 4.
- The 6th Chain is an optional "Master FX Chain", where you can have zero, 1 or more FX that are applied the summed output of all Instrument chains.
- If you have 2 or more Chains set-up, then simply adjust the relative outputs from the two chains using the Sliders at the bottom of the chain - they're all added together.
- Plug-ins are applied as a 'post process' to all the other work that Wotja does, so your Mix still stands alone and works even without those Plug-ins present
- Recordings made via the Recording tab also capture the output from Plug-ins (i.e. the Recording should be what you hear).
- Mixes that reference Plug-ins should play as expected in albums and playlists - provided of course that the relevant Plug-in is available to Wotja on your device!

Usage

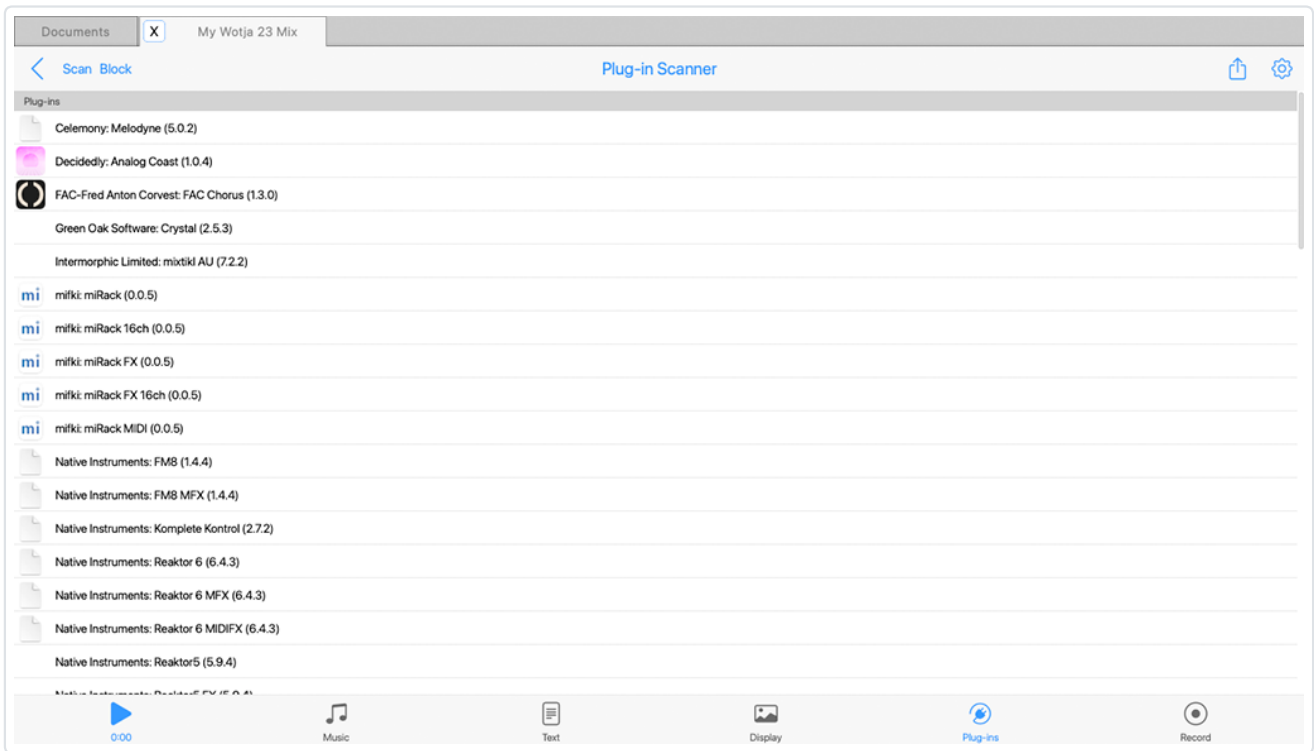
- [How do I use 3rd Party Plug-ins in Wotja?](#)

① **Save/Exit Button**

Displays the Save Changes Menu pop-up before exiting to the [Documents](#) screen. For the menu items see the [🎵 Music](#) > [① Save/Exit](#) button.

② **Plug-in Scanner Button**

Tap this at any time to show the Plug-in scanner screen, below:

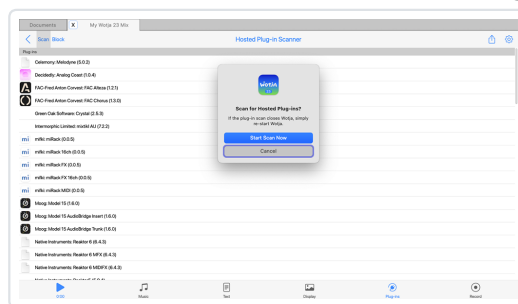


Plug-in Scanner Screen

Tip: The "Blocked plug-ins" list is shown in red at the bottom of the above list.

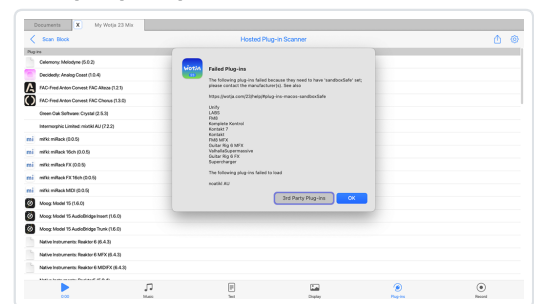
(tap image for large)

- < **Back Button**
 - Tap to return to where you came from.
- **Scan Button**
 - Tap for the "Scan for Hosted Plug-ins?" pop-up.



Plug-in Scanner "Scan for Hosted Plug-ins?" pop-up

(tap image for large)



macOS: Failed Validation (Sandbox Safe) pop-up

(tap image for large)

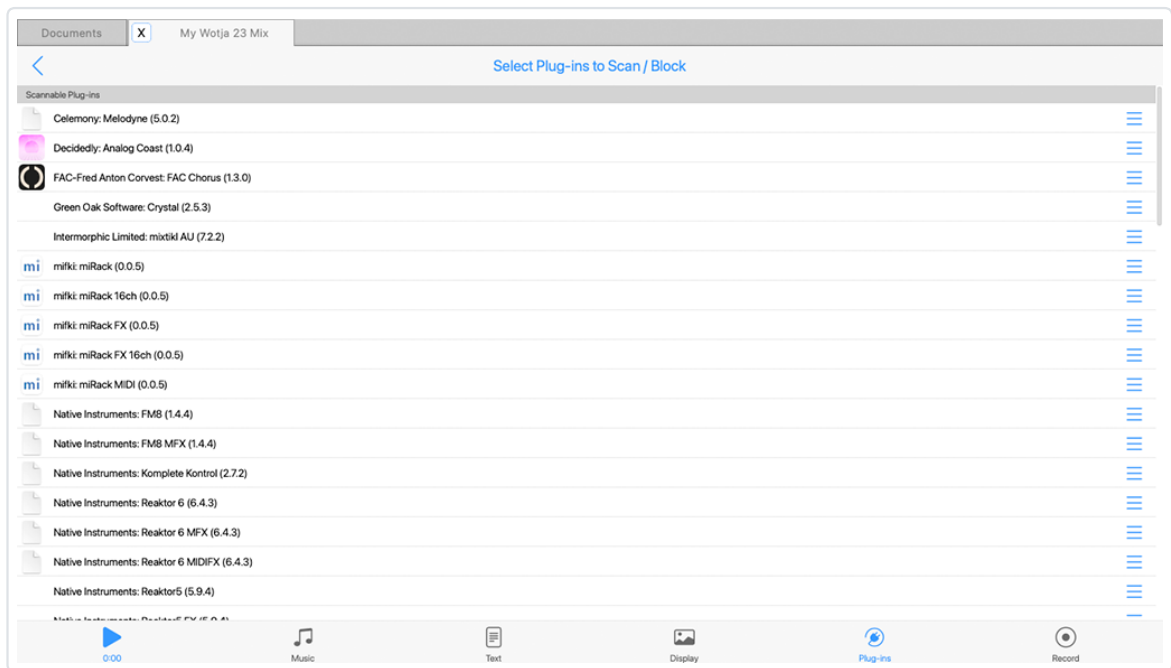
- When the scan is underway the Plug-in Scanner "Screen Title" area changes to show which Plug-in is currently being scanned.

- When completed you will see the list of available Plug-ins, alphabetically sorted on manufacturer name, and below that (shown in red) a "Blocked Plug-ins" list of any Plug-ins that have failed validation or that you have Blocked using the Block button below.
- *macOS*: A pop-up menu (see above image) lists any Plug-ins that have failed because they are not "Sandbox Safe". To notify a Plug-in developer of this issue, use your mouse to select the name of the failed Plug-in and copy it to the Clipboard. Then, for next steps, see this FAQ: [What is a "Sandbox Safe" Audio Unit Plug-in on macOS?](#).

- **Block Button**

- Tap for the "Select Plug-ins to Scan / Block" Screen.

○





Select Plug-ins to Scan / Block Screen

Tip: The "Blocked plug-ins" list is shown in red at the bottom of the above list.

(tap image for large)

- Plug-ins that fail to scan are put in the Block list automatically; this will happen even if Wotja crashes while scanning.
- If a Plug-in crashes a little bit later we cannot catch this automatically. If this happens, you need to block what you think is the crashing plug-in manually:

- Restart Wotja, move the plug-in to the "Block" list, and try another scan.
 - Repeat until you've found the problem plug-in.
- To manually block a Plug-in, tap its right side ≡ Actions button and select "Block Plug-in".
- To unblock a Plug-in, in the "Blocked Plug-ins" section at the bottom (blocked Plug-ins are shown in red) tap its right side ≡ Actions button and select "Unblock Plug-in".
- Blocked Plug-ins are not scanned.
-  **Actions Menu Button**
 - Re-Scan Plug-ins.
 - Reset Blocked Plug-ins list, and Re-scan.
-  **Settings**
 - Tap to go to [Settings: General](#) screen.
- **Plug-in List**
 - **Plug-ins**
 - This shows the names of all the Plug-ins that have been scanned and passed validation.
 - These are the Plug-ins available for you to use in Wotja.
 - **Blocked Plug-ins**
 - Shown below the above, this displays in red the names of any Plug-ins that have failed validation and that are thus not available to use, or that you Blocked using the Block button above.
 - *macOS note:* The pop-up [Failed Sandbox Safe](#) message above shows only after completing a scan, and then lists only those Plug-ins that are not marked as Sandbox Safe (and which cannot thus be used in Wotja).

③ **File Tab Button**

Only shown in Desktop version, File tab buttons allow for a number of files to be open at the same time.

④ **Plug-in Chain Active Indicator**

This indicator displays green for any "Chain" that uses one more Plug-ins.

⑤ **Plug-in Chain Selector**

Tap any Chain selector to scroll that Chain to the top and underline that Chain number.

⑥ **Screen Title**

Displays the name of the screen.

⑦ **Plug-in Chain Header**

Shows the Chain number, i.e. "Plug-in Chain #1" or "Plug-in Chain #2".

⑧ **Master Plug-in Chain**

Chain #6 is a Master FX chain. It allows you to apply, as relevant, AUv3/VST3 FX to the summed outputs of all the other Chains you have set up.

It can use zero, 1 or more FX Plug-ins.

⑨ **Actions Button**

- ***Re-Scan Plug-ins***
- ***Reset Blocked Plug-ins list, and Re-scan***

⑩ **Settings Button**

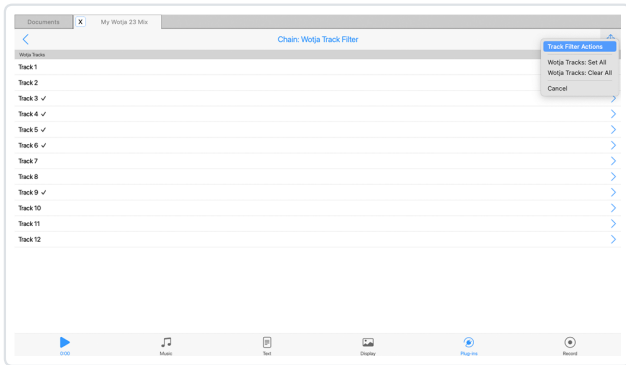
Takes you to the [Settings: General](#) or [Settings: Audio MIDI+](#) screen, depending on what was last used.

⑪ **Chain: Wotja Track Filter Control**

The "Chain: Wotja Track Filter" allows you to select only certain Wotja Tracks for use with the Plug-in Chain.

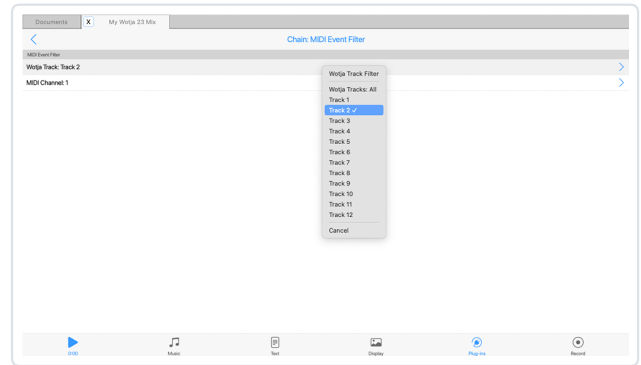
It displays slightly differently depending on whether the Instrument in the Chain is "Wotja Output" (A) or a 3rd Party Plug-in (B).

Use the Action menu in the Wotja Track Filter to easily select/deselect all.



Chain: Wotja Track Filter (A)

(tap image for large)



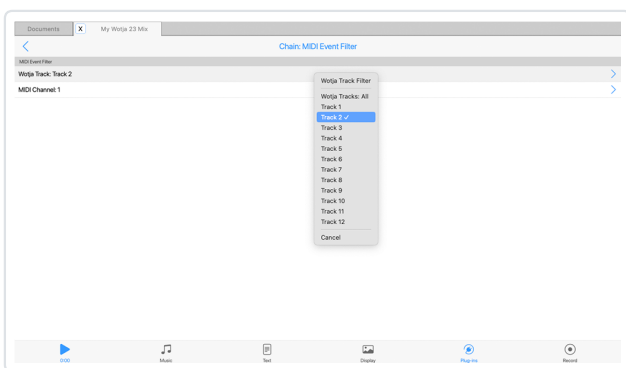
Chain: Wotja Track Filter (B)

(tap image for large)

12 Chain: MIDI Event Filter Control

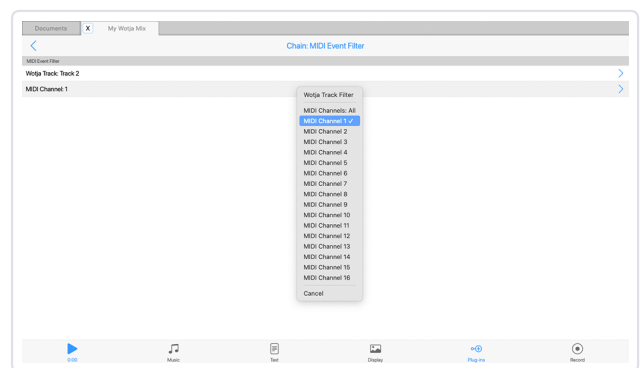
The "Chain: MIDI Event Filter" will only show if you have selected a 3rd Party Instrument Plug-in (it does not show if the Instrument is "Wotja Output").

It allows you filter the MIDI going from Wotja to your 3rd Party Instrument Plug-in by both Wotja Track and/or by MIDI Channel.



MIDI: Wotja Track Filter

(tap image for large)



MIDI: MIDI Channel Filter

(tap image for large)

13 Plug-in Icon

Shows the icon for the Plug-in (where it is available to Wotja).

14 Chain Slot Selector

There are FOUR Chain Slots and tapping the Selector displays the following pop-up menu (only displays if the chain is empty, otherwise tap the Chain Item Menu button:

- **Browse Plug-ins**
 - Shows the Available Plug-ins list - you must have first scanned for Plug-ins! See the [Plug-in Scanner](#) button.
 - **FIRST Chain Slot:** Select either
 - "Wotja 23 WAE Built-in" > Wotja Output to use audio from the Wotja Audio Engine.
 - A 3rd Party Instrument Plug-in.
 - **OTHER THREE Chain Slots:** Choose any 3rd party FX Plug-in from the Plug-in list.
- **Export Slot (Pro)**
 - Lets you export the slot settings to the Clipboard, perhaps to import into another slot.
- **Import Slot (Pro)**
 - Lets you import into the slot any slot settings on the clipboard.
- **Third Party Plug-ins**
 - Takes you to the [Fan Favorite Plug-ins page](#) on our website.

15 Chain Volume Level Control

Adjust this for each Chain to set the desired output volume for each Chain.

16 ▶ / ■ Play/Stop Button

This button is used to play/stop a mix and it is common to all Mix Edit Modes (i.e. [Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Record](#)).

Below the button is display the "Play Time Indicator". It shows time in two different ways:

- **Count Down**

- It will count down from some time if you have a Sleep Timer set (e.g 30 mins if you have a 30 minute Sleep Timer), or from 2 minutes if you are in [Lite mode](#).

- **Count Up**

- It will otherwise count up from 0 so you can see how long the mix has been playing.

17 **Music Mode Tab**

The Tab that selects [Music Mode](#).

18 **Text Mode Tab**

The Text screens are only available in Text Mode.

19 **Display Mode Tab**

The Tab that selects [Display Mode](#).

20 **Plug-ins Mode Tab**

The Tab that selects [Plug-ins Mode](#).

21 **Record Mode Tab**

The Tab that selects [Record Mode](#).

22 **Chain Bypass Toggle**

Allows you to quickly toggle on/off the output from a Chain. This lets you isolate a Chain so you can focus on each one in turn.

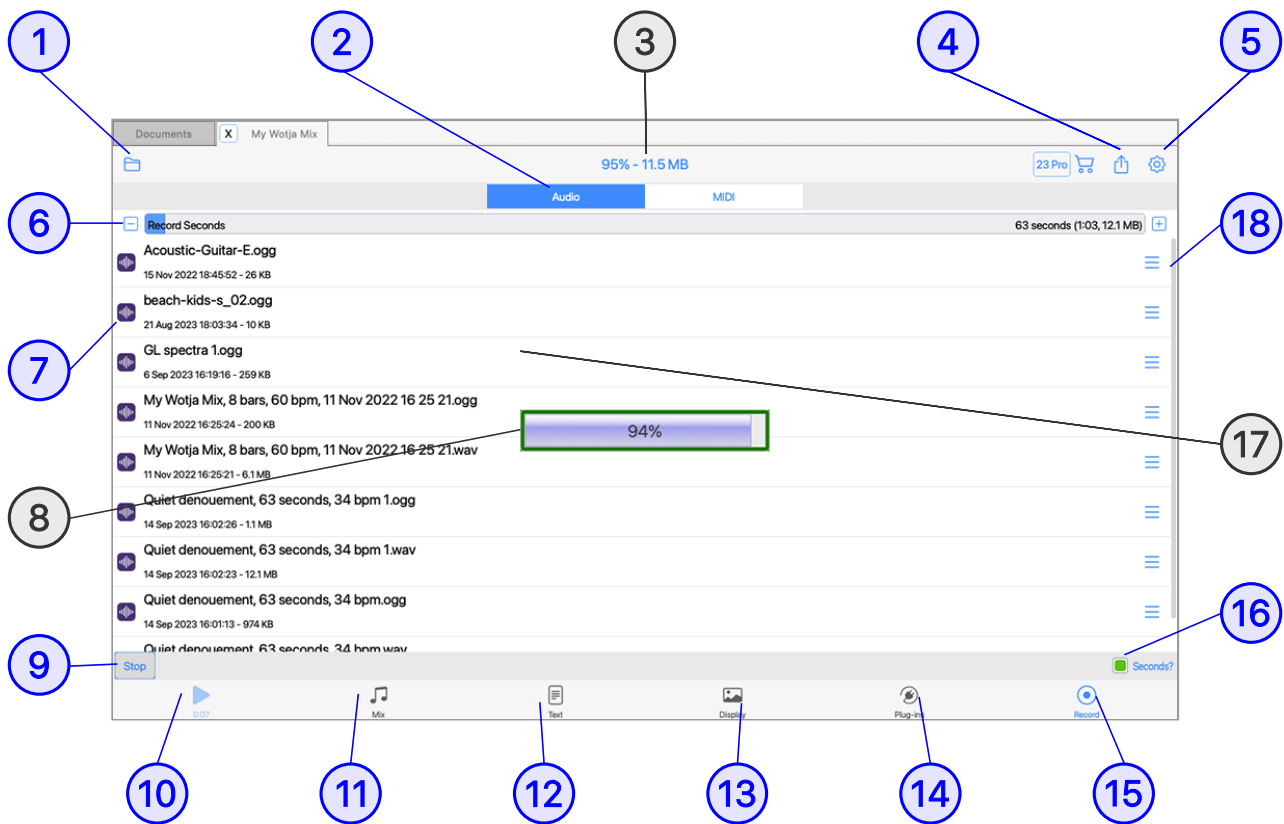
IMPORTANT: If ALL chains are bypassed then you will not hear anything coming from Wotja.

23 **Chain Slot Menu**

Shows the relevant pop-up menu for each Chain Slot.

- **Show**
 - Shows the Plug-in UI (this can be embedded or in a window dependent on this System Setting:).
- **Bypass?**
 - The Chain "Audio" Bypass can be toggled on or off.
- **Delete**
 - Delete the Plug-in from the Slot.
- **Replace (Delete and Browse)**
 - Replace the Plug-in in the slot with another one.
- **Export Slot (Pro)**
 - Lets you export the slot settings to the Clipboard, perhaps to import into another slot.
- **Import Slot (Pro)**
 - Lets you import into the slot any slot settings on the clipboard.
- **Third Party Plug-ins**
 - Takes you to the [Fan Favorite Plug-ins page](#) on our website.

↑ ● Mix: Record Mode



(tap circle for info, hover for tooltip; tap image for large)

Documents > (7) (E) Mix File > Mix Edit Modes > (15) Record Tab

Tutorials

- Make a Recording
- Delete a Recording
- Preview a Recording

Record Mode

- Documents > (7) Mixes Screen > (E) File Button > (15) Record Mode Tab
- Although not strictly an "Editing Mode" as there is no actual editing that goes on in it, this screen is where you can create [Pro mode required] and preview **WAV** and **MIDI** "mixdown" recordings (selected via the (2) Recording Format Selector).

- *Tip:* Recordings are all saved to the "[Wotja Folder](#)", the location of which depends on the OS and/or whether [iCloud](#) is enabled for Wotja.
- *MIDI Recording Tip:* To specify grouping by MIDI Track, or MIDI Channel, see [Settings: General > Audio MIDI+ > MIDI File Track Grouping](#).
- **Notes:**
 - Recordings you make are saved to the Wotja iCloud folder or Wotja folder depending on the "Use iCloud" setting (iOS > Settings > Wotja > Use iCloud).
 - Mixdown recordings are not live recordings and they are made as fast as your device allows. To be made they require sufficient device memory to be available.
 - When a recording is made it is held in memory before Wotja flushes it to the file system.
 - Bytes per second = $48000 \times 2 \times 2 = 192,000$. 100 bars of 4:4 at 60 bpm is 400 seconds of recording (just over 6 minutes). In terms of bytes this is $192000 \times 400 = 77$ MB. At 30 bpm, that is 154 MB.
 - For every 100 MB recording, you need to have space in the file system. 10 recordings will be 1 GB.
 - If you're using iCloud, e.g. 10 files totaling 1 GB, remember that those files are synced with the cloud.
 - *MIDI File Type:* MIDI file recordings are saved as Type 1 files. The "MIDI File Track Grouping" option in Settings determines how MIDI is saved. Basically, it allows you to group MIDI File recordings into Tracks by Wotja Track or by MIDI Channel (default) and where each MIDI File Track is labeled by Wotja Track Number or MIDI Channel Number as appropriate.
 - *Ramp in/out:* For audio/video recordings you can set the music Ramp in and Ramp down times (from 0 - 20 seconds) in the Mix section of the [Cell & Mix Rules panel](#).
 - *Sharing recordings:* Use the following apps to locate and then export/share a mixdown recording:

- iOS: iCloud enabled - Use the [Apple Files app](#) (See also [this FAQ](#))
- iOS: iCloud not enabled - From the Wotja Mixdown & Recordings screen > Actions button > Open With... and try sharing via the options presented there; alternatively use [App File Sharing](#) (See also [this FAQ](#))
- macOS: Finder
- Windows: Explorer
- Android: Files app (or other File Manager app); Once you have selected the file(s) you want to export/share (e.g. recordings), use the Share Menu in the Files app to do what you want (alternatively use USB to copy files off your device)

Usage

- *Select your desired recording format:* [② Recording Format Selector](#).
- *Start the mixdown:* Tap the [⑨ Record Button](#) in the bottom toolbar.
- *Recording progress:* The [③ Title Bar](#) will show the recording progress (e.g. 7% - 3.34 Mb) and in the middle of the screen a pop-up [⑧ Recording Progress Indicator](#) will display whilst the recording is being made (e.g 7%).
- *Recording complete:* The popup will disappear and you will see your recording show up in the [⑫ Recordings List](#) (if you are using iCloud it might take some time depending on how long your recording is).
- [⑦](#) Preview recording: Audio/MIDI recording: Tap the [Recording Item](#) you want to play/stop, or use the [⑬ Recording Action Button](#) and select Open With.

① **Exit/Save Button**

Displays the Save Changes Menu pop-up before exiting to the [Documents](#) screen. For the menu items see the [🎵 Music](#) > [① Save/Exit](#) button.

② **Recording Format Selector**

Select the mixdown recording format: **WAV** or **MIDI**.

The supported mixdown recording formats are:

- **WAV**
 - 48Khz/44Khz (hardware dependent) Stereo WAV file
- **MIDI**
 - Type 1 MIDI file

③ **Screen Title / Recording Progress**

When a recording is being made the screen title (normally "Record") will change to indicate the progress of the mixdown.

④ **Actions Button**

- **Refresh**
 - When you are using iCloud it can take time for a recording to sync with it. Select this menu item to update the recordings list.
- **Help - User Guide**
 - Displays the User Guide in a pop-up window.
 - Whether this is the in-app or online version depends on the value of [Settings: General](#) > "[Help: In-App \(uncheck for Online\)](#)".

⑤ **Settings Button**

Takes you to the [Settings: General](#) or [Settings: Audio MIDI+](#) screen, depending on what was last used.

⑥ **Recording Time**

Dependent on the setting of the [⑪ Record Units Toggle](#), you use this slider control to set the number of bars or seconds you want to record (up to 100 bars or 600 seconds maximum by default, but extendable via the Max Bars/Max Settings slider control in the mix segment of [Settings: General](#)).

Tip: To change the bars value either tap the "-" or "+" buttons, drag

your finger along the slider or double tap it for a pop up to manually enter a value.

⑦ Recorded Item

An icon indicates its file type (Audio or MIDI).

To the right of that is shown the file name and below that the date stamp of the recording and its file size.

Tap an audio or MIDI recording to preview it/stop it being previewed. When it is previewing the item selector will have an orange colour.

When previewing MIDI recordings these play only with a default GM MIDI Wavetable; MIDI is also sent out at the same time.

Note: When a recording is being made, or previewed, any playing mix will stop playing.

⑧ Recording Progress Indicator

Shows the % progress of the mixdown recording, e.g. 94% done.

⑨ Record Button (Pro mode only)

Tap this to start a recording. Once a recording is being made it changes to "Stop". You can press that to stop the recording being made.

As the recording is being made you will see the recording progress is displayed at the top of the screen instead of the screen title.

Note: MIDI is not sent out when MIDI recordings are being made.

⑩ ▶ / ■ Play/Stop Button

This button is used to play/stop a mix and it is common to all Mix Edit Modes (i.e. [Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Record](#)).

Below the button is display the "Play Time Indicator". It shows time in

two different ways:

- **Count Down**
 - It will count down from some time if you have a Sleep Timer set (e.g 30 mins if you have a 30 minute Sleep Timer), or from 2 minutes if you are in [Lite mode](#).
- **Count Up**
 - It will otherwise count up from 0 so you can see how long the mix has been playing.

① 11  **Music Mode Tab**

The Tab that selects [Music Mode](#).

① 12 **Text Mode Tab**

The Text screens are only available in Text Mode.

① 13  **Display Mode Tab**

The Tab that selects [Display Mode](#).

① 14  **Plug-ins Mode Tab**

The Tab that selects [Plug-ins Mode](#).

① 15  **Record Mode Tab**

The Tab that selects [Record Mode](#).

① 16 **Recording Units Toggle**

Choose between Seconds (toggle is on) or Bars (toggle is off).

① 17 **Recordings List**

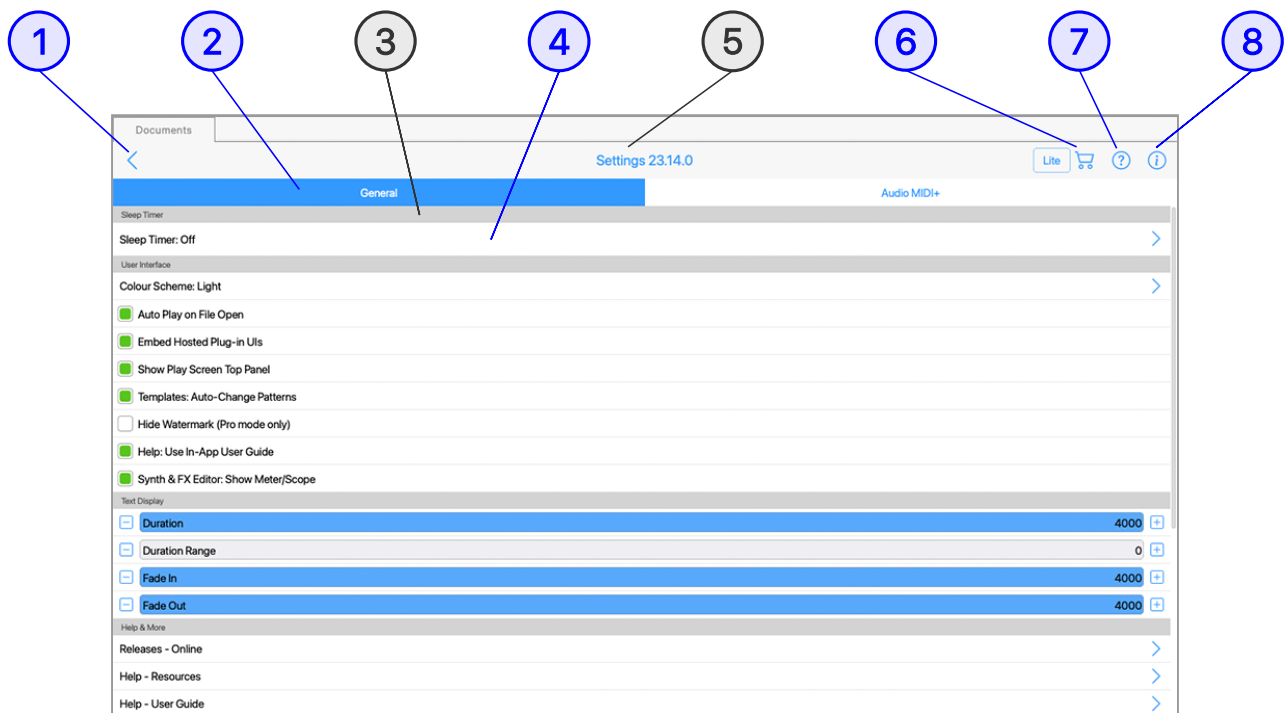
Displays the list of mixdown recordings you have made.

① 18 **Recording Manage Button**

Tap this button shown to the right of the recording to present a pop-up action sheet with the following options:

- **Show in Finder (macOS only)/Show in Explorer (Windows only)**
 - Opens a window with the file selected.
- **Open With... (iOS only)**
 - Opens an action sheet where you can choose how to export/share your recording to e.g. to iCloud Drive, Facebook, Dropbox etc. depending on what you have installed. See also [this FAQ](#).
- **Delete**
 - Delete the file.
- **Rename...**
 - Rename the file.
- **Export to Ogg... (WAV file only)**
 - Displays a pop-up dialog where you confirm if you wish to export an OGG version of the WAV file.
- **Cancel**
 - Exit the pop-up menu.

[↑](#) ⚙ Settings: General: **Items**



(tap circle for info, hover for tooltip; tap image for large)

[Documents](#) > ⚙ Settings > General (Settings button is found in many screens)

See: Settings: General: Items

System Settings are *not* saved to mixes and each configures a different aspect of the Wotja System.

Tutorials

- [Change Desktop Audio Output](#)
- [Set a Sleep Timer](#)
- [Set a Mix FX Override](#)

⚙ ① < **Back Button**

Tap to return to whatever screen you *originally entered Settings from* (e.g. Documents, or Music/Text/Display/Plug-ins/Recordings etc.).

② **Screen Selector**

Lets you select one of the 2 Settings screens: [General](#) or [Audio MIDI+](#).

③ **Group Header**

Related Settings are grouped together. The Group Header shows the name of the group.

④ **Setting**

There a number of different settings, see the [General Items](#) list below.

⑤ **Screen Title & Version Number**

Displays the name of the screen and the [version number](#) for this version of the software.

⑥ **Store Button**

When tapped on, the Store button takes you to the [In-App Store](#) (or to a Store info page in the Plug-in).

⑦ **Help Button**

- This displays the User Guide in a pop-up window.
- Whether this is the in-app or online version of the User Guide depends on the value of Settings > [General](#) > "[Help: Use In-App User Guide](#)".

⑧ **Info Button**

The Info button shows the About Wotja screen.

At the top you will see the Wotja version *and build number*.

Below that are details about Wotja which are also on the Wotja webpage [here](#).

At the bottom of the screen is a button which takes you to the [Wotja releases](#) webpage.

[↑](#) Settings: General: Items

- **Timer**
 - Sleep Timer
- **UI**
 - Color Scheme
 - Auto Play on File Open
 - Embedded Host Plug-in UIs
 - Show Play Screen Top Panel
 - Templates: Auto-change Patterns
 - Hide Watermark
 - Help: In-App (uncheck for Online Help)
 - Synth & FX Editor: Show Meter/Scope
- **Text**
 - Duration
 - Duration Range
 - Fade In
 - Fade Out
- **Help & More**
 - Web links for Releases, Guide, About etc.
- **Reset**
 - Reset Settings
 - Reset IAP Settings

[↑](#) Timer

- [↑](#) **Sleep Timer**
 - *Off; 12 mins to 8 hours* (Default value - Off)
 - The sleep timer can take values from 12 minutes to 8 hours. Use it to set how long you want to Wotja to play before fading out over the last few seconds of play time. Wotja will stop playing and restart whenever you change the value of the Sleep Timer, with the new Sleep Timer setting then being operational.
 - When the Sleep Timer is operational the Play button in

Music Mode will show the time counting down to show how long the mix has left to play.

- If you are running in **Lite mode** then Wotja will always stop playing after the relevant Lite mode Auto-Timeout, whatever the value of the timer.
- If the Sleep Timer is off then it means there is no sleep timer active. The only timer that might then be in operation is the auto-timeout in Lite mode.

[↑](#) User Interface

- [↑](#) **Color Scheme**

- *Light/Dark* (Default value - Light)
- Lets you choose whether you want the app to use a Light or Dark scheme to suit your preference. Select the Light or Dark option to change theme - it is that simple!
- This User Guide uses the Light scheme.

- [↑](#) **Auto Play on File Open**

- *Enabled/Disabled* (Default value - Enabled)
- When enabled, this setting means that when you open any file (or select a Flow) it will:
 - Start to play
 - Note: If Wotja Mix Mode was last closed in **Display Mode** then if a mix is opened it will play full screen.
- *Tip*: Disable the toggle if you do not want Wotja to go Full Screen when opening a file (it won't then autoplay though).

- [↑](#) **Embedded Host Plug-in UIs**

- *On/Off* (Default value - Apple: On; Windows: Off)
- Note: In Wotja for Windows, the embedded option is *experimental*.
- When set to "On", the Plug-in UI is shown in the Plug-in Hosting screen window. If the Plug-in has been created to have a resizable UI (i.e. responsive design), then it should resize nicely to fit in this window.

- When set to "Off", the Plug-in UI is shown in its own window, this being of particular use in desktop versions or if you are having problems with the embedded option.
- [↑](#) **Show Play Screen Top Panel**
 - *Enabled/Disabled* (Default value - Enabled)
 - This setting determines whether the top toolbar background panel in Play Screen mode in the Flow/Box/Album Player is visible or hidden.
 - *Note:* If you are in Full Screen display (see the Action menu in each mode) then whatever the setting of this toggle the toolbar is hidden.
- [↑](#) **Templates: Auto-change Patterns**
 - *Enabled/Disabled* (Default value - Enabled)
 - This is a very important setting and unless you have a specific requirement we strongly recommend that you leave it enabled. When enabled it means that when creating an auto-mix or adding a Template to a mix all B/F (melodic) patterns in use by a Generator Type "Pattern" are randomized, AND, all other patterns that might be in the Template are set to <100 B 240 1>. This is a default pattern and it is a way of clearing out any "junk DNA" patterns that might be in the Template and that you might end up using inadvertently. If you disable this toggle then no melodic patterns are randomized and no other patterns are overwritten when creating an auto-mix or adding a Template to a mix - it is for a very specialist use case where you are using your own patterns.
- [↑](#) **Hide Watermark [Pro mode only]**
 - *Enabled/Disabled* (Default value - Enabled)
 - When enabled the stylish Wotja watermark will be overlaid at the bottom of the [Display mode](#) screen or an Full Screen mode. Disable it to prevent the watermark from displaying.
- [↑](#) **Help: In-App (uncheck for Online Help)**
 - *Enabled/Disabled* (Default value - Enabled)

- *Enabled/Disabled* (Default value - Enabled)

- Enabled: In-app versions of documentation are used when "Help - Resources" or "Help - Guide" are selected from the Actions menu.
- Disabled: Online documentation is used instead - use our website [Translate](#) option to see them in your own language.
- [↑](#) **Synth & FX Editor: Show Meter/Scope**
 - *Enabled/Disabled* (Default value - Enabled)
 - To make sound design easier the [Synth & FX Editor](#) has two visual displays ("inspectors"), these being a meter for audio-rate units/junctions and an oscilloscope for control-rate units/junctions; Show or hide these inspectors with this toggle.

[↑](#) Text Display

- [↑](#) **Duration**
 - *0-4000ms* (Default value - 4000)
 - Sets how long (milliseconds) text will display for in the Display screen and in fullscreen in the Playlist player.
- [↑](#) **Duration Range**
 - *0-4000ms* (Default value - 0)
 - Sets the range (milliseconds) that can be applied to Duration.
- [↑](#) **Fade In**
 - *0-4000ms* (Default value - 4000)
 - Sets how long (milliseconds) it takes for text to fade in.
- [↑](#) **Fade Out**
 - *0-4000ms* (Default value - 4000)
 - Sets how long (milliseconds) it takes for text to fade out.

[↑](#) Help & More

- [↑](#) **Releases**
 - Takes you to the [Wotja releases](#) webpage.

[↑](#) **Help & Documentation**

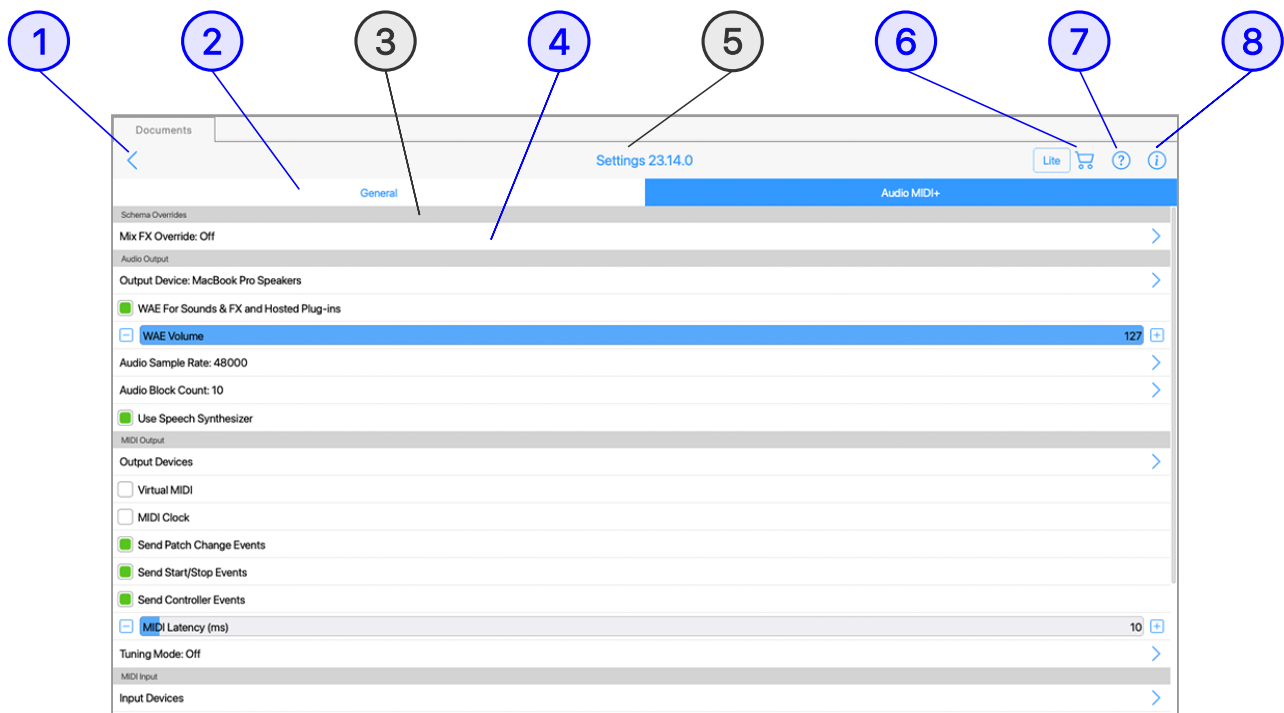
- [↑ Help & Documentation](#)
 - Web link to this User Guide.
- [↑ Video Tutorials](#)
 - Web link to our [video tutorials on Youtube](#).
- [↑ Demo Files...](#)
 - Takes you to [this weblink](#) on the [wotja.com](#) website.
- [↑ Give us Feedback](#)
 - Web link to our [contact form](#).
- [↑ Privacy Policy](#)
 - Web link to our [Privacy Policy](#).
- [↑ Website Terms of Service](#)
 - Web link to our [Terms of Service](#).
- [↑ End User License Agreement](#)
 - Web link to our [EULA](#).
- [↑ About](#)
 - A web link to the [About Wotja](#) info.
- [↑ Cancel \(iOS/ Android\)](#)
 - Cancel the pop-up menu.

[↑ Reset](#)

- [↑ Reset Settings](#)
 - Resets all Wotja settings, including the scanned Plug-in list, back to defaults.
- [↑ Reset IAP Settings](#)
 - ****WARNING: THIS ITEM IS FOR SPECIAL SUPPORT PURPOSES ONLY****: It allows [One Time Buy \(OTB\)](#), [Subscription \(SUB\)](#) and [30 Day Unlock \(30U\)](#) IAPs to be reset and for Wotja to then revert to [Lite mode](#) operation.
 - ****30U IAPs CANNOT BE RESTORED****: If you rely on a [30 Day Unlock \(30U\)](#) to unlock [Pro mode](#) and you use this 'Reset IAP Settings' menu option then *you will need to **PURCHASE A 30U IAP AGAIN***.

- **RESTORING OTB and SUB IAPs:** One Time Buy (OTB) & Subscription (SUB) IAPs *can* be restored using the Wotja In-App Store > [Restore button](#), but you will need to be online and signed into the relevant App Store with your User ID.

[↑](#) ⚙ Settings: Audio MIDI+ : Items



(tap circle for info, hover for tooltip; tap image for large)

[Documents](#) > ⚙ Settings > Audio MIDI+ (Settings button is found in many screens)

See: [Settings: Audio MIDI+: Items](#)

System Settings are *not* saved to mixes and each configures a different aspect of the Wotja System.

Tutorials

- [Change Desktop Audio Output](#)
- [Set a Sleep Timer](#)
- [Set a Mix FX Override](#)

⚙ [1](#) < **Back Button**

Tap to return to whatever screen you *originally entered Settings from* (e.g. Documents, or Music/Text/Display/Plug-ins/Recordings etc.).

② **Screen Selector**

Lets you select one of the 2 Settings screens: [General](#) or [Audio MIDI+](#).

③ **Group Header**

Related Settings are grouped together. The Group Header shows the name of the group.

④ **Setting**

There a number of different settings, see the [General Items](#) list below.

⑤ **Screen Title & Version Number**

Displays the name of the screen and the [version number](#) for this version of the software.

⑥ **Store Button**

When tapped on, the Store button takes you to the [In-App Store](#) (or to a Store info page in the Plug-in).

⑦ **Help Button**

- This displays the User Guide in a pop-up window.
- Whether this is the in-app or online version of the User Guide depends on the value of Settings > [General](#) > "[Help: Use In-App User Guide](#)".

⑧ **Info Button**

The Info button shows the About Wotja screen. These details are also on the Wotja webpage [here](#).

The About screen has a button at the bottom which lets you visit a page on our website to check what the latest version is.

[↑](#) Settings: Audio MIDI+: Items

- **Schema Overrides**
 - Mix FX Override
- **Audio Output**
 - Output Device
 - WAE for Sounds & FX
 - WAE Volume
 - Audio Processing:
Process in Background
 - Audio Sample Rate
 - Audio Block Size
 - Audio Block Count
 - Speech Synthesizer
- **MIDI Output**
 - Output Devices
 - Virtual MIDI
 - MIDI Clock
 - Send Patch Change
Events
 - Send Start/Stop Events
 - Send Controller Events
 - MIDI Latency
 - Tuning Mode
- **MIDI Input**
 - Input Devices
 - MIDI Transport Control
 - External Clock Sync
- **Ableton Link (iOS)**
 - Ableton Link
- **Recording**
 - Max Recording Seconds
 - Max Recording Bars
 - MIDI File Track Grouping
 - Video Recording Size

[↑](#) Schema Overrides

- [↑](#) **Mix FX Override**
 - *On/Schema/Custom* (Default value - Off)
 - The Mix FX Override setting allows you to *override* the Mix FX that is applied in a Schema (i.e. when playing Flows or when creating auto-mixes/boxes).

- It provides a quick and very easy way to use the kind of Mix FX YOU want for any Flow or a new auto-mix.
- The preset options are from the [included FX Presets](#) and are as follows:
 - *Off*
 - *(CPU-) Mix FX - Combi Chorus Delay Reverb*
 - *Ambience - Big reverb hard edge (R1)*
 - *Ambience - Big reverb chorus input pan (R1)*
 - *(CPU+) Ambience - Big reverb space (R2XL)* [for device with faster CPU]
 - *(CPU++) Ambience - Shimmer dual (R2XL)* [for device with even faster CPU]
 - *Custom...* (Pro mode only)
 - When selected it takes you to the [FX Presets screen](#) where you can select ANY included FX preset or ANY saved FX preset (i.e. one of your own).
 - *Tip:* To create an FX preset simply open any mix, tap on any FX button (e.g. [Cell FX Button](#)), edit the FX network in the [SFX Editor](#) and then save it via the [Actions 'Save' menu item](#).
 - *Tip:* If you want no Mix FX to be applied at all (perhaps you want instead to apply 3rd party FX in a DAW or AUv3 Host), select the "App" > "- Amp default" FX preset.

[↑](#) Audio Output

- [↑](#) **Output Device**
 - **Desktop App Setting (macOS/Windows; not in AUv3 Plug-in):** Select the Output audio device to be targeted by Wotja's internal sound generator (the [WAE Synth](#)) from the list of available detected options e.g. 'Built-In Output' on macOS and 'Speakers' / 'Primary Sound Driver' for Windows.

- Wotja allows dynamic change of the audio output device with no Wotja restart required (but it can take a few seconds for it to be applied). See macOS note below, and also [this FAQ](#).
 - *Note 1 (macOS):* If your Mac is outputting to an AirPlay device and you change it to another one you may need to restart Wotja for it to be able to see this new device.
- [↑](#) **WAE for Sounds & FX**
 - *On/Off (Default value - On)*
 - **IMPORTANT: This *must* be ON to use Wotja as a Plug-in Host.**
 - Enables [WAE sounds](#), which all Generators use as this is the sound generator for Wotja. Turn this to off when you want to play through an external synth(s) and you do not want to hear the WAE sounds as well. **NOTE:** When this is set to OFF you will not hear anything from Wotja unless you have a MIDI device connected (and you will hear sounds through that instead).
 - **Inter-App Audio / Audiobus (iOS only; on by default):** For Wotja to work correctly with an Inter-App Audio/Audiobus enabled app (i.e. without artefacts) then:
 1. The Wotja Audio Sample Rate **MUST** have the same value as the Sample Rate in those apps.
 2. The Audio Block Size **MUST** have the same value as the Buffer Size (samples) / Latency Control (frames) in those apps [different apps refer to the same thing in different ways]. We recommend that this value is 1024.
 3. **If you getting noises/glitches/buzzing etc. see [this video](#).**
- [↑](#) **WAE Volume**
 - *0-127 (Default value - 100)*
 - Global volume control over all sound generated by the WAE.

- Useful if want tracks to send MIDI but not to hear them, or hear them at a lower volume.
- [↑](#) **Audio Processing: Process in Background (iOS only; experimental)**
 - *On/Off (Default value - On)*
 - This experimental option is normally turned on (i.e. the checkbox is marked as checked/set).
 - If you have audio clicking on iOS / AUv3 under Logic, you might want to try clearing the checkbox to see if it resolves the problem. If you do, and it does (or not), please get in touch and let us know!
- [↑](#) **Audio Sample Rate**
 - *Note: Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.*
 - *48 kHz or 44 kHz (Default values - auto selected depending on device capabilities [iOS, macOS, Windows]; 22Khz [Android])*
 - iOS: If you experience noise with Wotja in AudioBus, consider changing the sample rate between 48000 and 44100 Hz. If, after changing sample rate, you get occasional audio break-up, consider experimenting with the Audio Latency value, below.
 - Wotja allows dynamic change of the audio output device with no Wotja restart required (but it can take a few seconds for it to be applied). See also [this FAQ](#).
- [↑](#) **Audio Block Size (iOS, Android)**
 - *Note: Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.*
 - *256-2048 samples (Default values - 1024 samples [iOS]; 2048 [Android])*
 - This setting is of particular use if you are using Wotja on an older device or are using it routed via Audiobus or Inter-App Audio - higher values minimize audio artifacts which also depend on device power and mix/sound/fx complexity. Used in conjunction with Audio Block Count.

- If you are using Wotja to drive external MIDI synths you may need to tweak the values both here and for MIDI Latency. Example: You're driving an external synth via MIDI and want to sync the audio output of that with audio output from Wotja (i.e. via the [WAE sounds](#)). Try setting the Audio Block Size and Audio Block Count to be as low as you are happy with. Then, change the MIDI Latency until the output from 3rd party synth is in sync. Many dependencies are outside control of Wotja, however.
- Wotja allows dynamic change of the audio output device with no Wotja restart required (but it can take a few seconds for it to be applied). See also [this FAQ](#).
- [↑](#) **Audio Block Count**
 - *Note:* Wotja App and Wotja Plug-in settings can be set independently.
 - *3-40 blocks (Default values - 10 [iOS]; 10 [Android])*
 - This setting is of particular use if you are using Wotja with more complex content and/or on an older device and/or you are using it routed via AUM, Audiobus or Inter-App Audio. Higher values minimize audio artifacts which also depend on device power and mix/sound/fx complexity. Is the number of Audio Blocks of a size determined in [Audio Block Size](#) setting.
 - If you are using Wotja to drive external MIDI synths you may need to tweak the values both here and for MIDI Latency. Example: You're driving an external synth via MIDI and want to sync the audio output of that with audio output from Wotja (i.e. via the [WAE sounds](#)). Try setting the Audio Block Size and Audio Block Count to be as low as you are happy with. Then, change the MIDI Latency until the output from 3rd party synth is in sync. Many dependencies are outside control of Wotja, however.
 - Wotja allows dynamic change of the audio output device with no Wotja restart required (but it can take a few seconds for it to be applied). See also [this FAQ](#).
- [↑](#) **Speech Synthesizer (iOS, macOS)**

- *On/Off* (Default value - On)
- To hear [Text to Speech](#) (TTS) this setting must be set to "On".
- Turn it off if you never want to hear TTS.

[↑](#) MIDI Output

- [↑](#) **Output Devices**

- *User Selected* (Default value - None)
- Wotja will send-out MIDI events to whichever device you have selected in the MIDI Output Device List of detected outputs.
- Note that in Lite mode Wotja will send/receive MIDI only on Channel 1; if you want to send/receive on multiple MIDI channels then you will need to get the Pro version of Wotja (see [Wotja Downloads](#)).
- *MIDI routing on iOS*
 - On iOS this is via [Core MIDI](#). Apps that are [Core MIDI enabled](#) can take advantage of this.
 - The entry you will see will be "Network Session 1" (this is how iOS [CoreMIDI] refers to the name of the network MIDI device) or, if using Logic Pro, "Logic Pro Virtual In" (and in which case it seems you *MUST* select that).
- *MIDI routing on a Mac*
 - On macOS MIDI Output/routing is via [Core MIDI Framework](#). Apps that are Core MIDI enabled can take advantage of this. Refer to Apple's information, e.g.: "[Set up audio devices on iMac \(Mid 2014\) and later](#)", "[Audio Midi Setup: Set up your MIDI devices](#)" and "[Audio MIDI Setup: How to test for MIDI function](#)". See also Apple's knowledge base article on [Combine multiple audio interfaces by creating an Aggregate Device](#)
 - Depending on how your Mac is set up you will likely see list entries like 'IAC Driver Bus 1', 'IAC Driver Bus

2' and 'Network Session on Mac' but note that if using Logic Pro you will see "Logic Pro Virtual In" (and in which case it seems you *MUST* select that).

- *MIDI routing on Windows*

- We have found that [loopMIDI](#) is an easy to use virtual loopback MIDI cable. If you cannot seem to get MIDI Out working with your laptop Windows MIDI drivers, then give this a try!
- Once you have installed it you may well need to restart Wotja and/or your DAW. Then, in Wotja > Settings > Mix tab select [MIDI Out](#) > Devices and ensure that loopMIDI is selected.
- If you need a Network MIDI driver for Windows you might also wish to check out [rptMIDI](#).
- See also the [rptMIDI tutorial](#).

- *MIDI routing on Android device*

- On Android devices we refer to Wotja MIDI Out as an experimental feature because we require it to be supported in the OS AND by the device manufacturer, but this is not always the case. We expect that most devices running Android 8+ *should* support MIDI Out in the OS, but some devices using Android 6+ may also support MIDI Out (e.g. some Samsung / Google devices). There seems to be no public list of such MIDI enabled Android devices but you can at least check that it works on your device in the free version of Wotja.
- When it is supported it will let you control *external* MIDI devices via a suitable USB MIDI Interface (e.g. [Roland UM-One mk2](#)). If you just want to make MIDI file recordings on Android, [see this FAQ](#).
- Getting it working:
 - **BEFORE** loading Wotja, plug into your Android device your USB MIDI Interface (e.g. Roland UM-One mk2; we know this works as we have tried it); you will likely also need a Micro USB Male to

USB Female OTG Adapter cable to be able do that.

- Load the Wotja app, go into Wotja [Settings: General](#), find the [MIDI Output](#) section and tap the "Output Devices" selector.
 - In the MIDI Output Devices screen that then displays, you should see your MIDI Interface in the MIDI Output Device List (e.g. Roland UM-ONE).
 - Tap the checkbox to the left to select it (you will see the checkbox show a green dot).
 - Create or load a Wotja mix and start it playing; you should see your MIDI Interface show that it is receiving MIDI notes.
 - You should then be all set!
- [↑](#) **Virtual MIDI (iOS/macOS only)**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in for iOS as it does not support Virtual MIDI.
 - *On/Off (Default value - Off)*
 - When enabled, causes Wotja to present a number of Virtual MIDI ports - one Omni (all channels) and 16 per-channel virtual MIDI ports - and Wotja sends MIDI events as Virtual MIDI ports over Core MIDI.
 - [↑](#) **MIDI Clock**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.
 - *On/Off (Default value - Off)*
 - When enabled, tells Wotja to send-out MIDI Clock events over Core MIDI / Omni channel.
 - *Important:* The iOS version can emit MIDI clock but it doesn't support MIDI transport controls.
 - [↑](#) **Send Patch Change Events**
 - *On/Off (Default value - On)*

- When enabled, tells Wotja to send-out MIDI Patch Change Events. Turn this off if you want ONLY MIDI Note Event information to be sent.
- [↑](#) **Send Start/Stop Events**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.
 - *On/Off (Default value - On)*
 - When enabled, tells Wotja to send-out Start/Stop Events. Turn this off if you do not want them sent.
- [↑](#) **Send Controller Events**
 - *On/Off (Default value - On)*
 - When enabled, tells Wotja to send-out MIDI Controller Events. Turn this off if you do not want them sent.
- [↑](#) **MIDI Latency**
 - *0-500ms (Default value - 0ms)*
 - Sets Latency (milliseconds) to apply to MIDI events sent-out to Core MIDI / Virtual MIDI by Wotja. Use to help remove jitter if using e.g. Network MIDI.
- [↑](#) **Tuning Mode**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in.
 - *Off / C4 (60) / A4 (69) (Default value - Off)*
 - Useful option for tuning external analog synths - causes all notes sent-out by Wotja to be "forced" to the specified pitch, which is either C4 (60) and A4 (69).
 - *Important:* This setting is ALWAYS turned off when you restart Wotja.

[↑](#) MIDI Input

- [↑](#) **Input Devices**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.
 - *User Selected (Default value - None)*
 - Notes: MIDI Input is only used by [Listening Generators](#).

- Tap the MIDI Input Devices button to go to the MIDI Input Devices screen where you will see toggles for all MIDI Input Devices detected by Wotja.
- *Network Session (iOS/macOS)*
 - Used for detecting MIDI sent via a network (e.g. from a Mac or iOS device over WiFi).
- *IAC Driver Bus (macOS) / loopMIDI port (Windows)*
 - Used for detecting MIDI routed via OS system level capabilities.
- *Wotja + Tracks/Channels (iOS/macOS)*
 - These allow Wotja to detect MIDI it sends out over Virtual MIDI (see below). As it is a kind of MIDI feedback it is for specialist use and unlikely you will need to use it.
- *App / MIDI Device + Channels*
 - All 3rd party MIDI emitting Apps or MIDI devices that Wotja detects (e.g. Thumbjam, MIDIKeys apps, Roland UM-ONE MIDI Interface etc.) will be shown here; toggle on the ones you want Wotja to receive MIDI input from.
 - Note: Each of the apps have created virtual MIDI ports named after themselves (e.g. Thumbjam, MIDIKeys etc.). You'll only get their output (sent on those ports) into Wotja, if you enable those input ports. For Wotja to see these ports, however, you need to first load the app you want to generate MIDI, e.g. MIDIKeys or Thumbjam and then load Wotja.
 - Tip: When MIDI input triggers notes in Wotja then, as the audio will be playing in Wotja via the [WAE](#), in Settings make sure "WAE for Sounds & FX" is toggled on, and you set the Audio Latency to be some low value. If that is set to 850ms (the default) then your notes will take about 1 second to play!
- [↑](#) **MIDI Transport Control**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.

- *On/Off* (Default value - Off)
- Wotja's MIDI Input Transport Control / External Clock Sync features allow it to be able to sync to e.g. a DAW:
 - **Sequencer**
 - Configure your sequencer (e.g. Reaper/Logic, or whatever) to send Transport commands (MMC) and/or MIDI clock to a specific MIDI port
 - Note for iOS: You can route via Network MIDI
 - Make sure your piece in the sequencer is long enough; sequencers will stop sending clock events when they reach the end of their content, and they'll also automatically emit a stop event.
 - **Wotja**
 - Activate the MIDI input port/device that you have configured your sequencer to send Transport (MMC)/Clock to (in the previous step)
 - Set tick for MIDI Transport Control
 - Set tick for External Clock Sync
 - Open a Wotja mix, press Play
 - Wotja will say "MIDI: Wait" under the play/stop button rather than elapsed time, and won't (immediately) show tempo
 - Start your sequencer playing (e.g. Reaper/Logic):
 - Wotja will now start playing
 - The Elapsed time will now display/update
 - The calculated tempo (from the sequencer's MIDI clock) will display (rather than the internal Wotja tempo)
- NOTE: There is an outstanding issue that can be revealed if you sync to the incoming MIDI clock using a different tempo.
- [↑](#) **External Clock Sync**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in as that uses the settings of the AUv3 Host.

- *On/Off* (Default value - Off)
- See [MIDI Transport Control](#) above as the details are the same.

[↑](#) Ableton Link (iOS)

- **Note: Setting not available in the Wotja AUv3 Plug-in.**
- **Input Devices** [↑](#)
 - *User Selected* (Default value - None)
 - Support for Ableton Link is currently experimental but it should work in Wotja just like it does in other iOS app. If you find any issues then please get in touch via our [Contact Form](#) and send us detailed instructions on how to reproduce them.
 - Note 1: Ableton link tempo does NOT work with Wotja boxes, albums or playlists.
 - Note 2: Wotja works accurately with Integer tempos, but does not support fractional tempos.
 - **Steps:**
 - Ableton Link: Toggle on to turn it on
 - In-app notifications: Toggle on to be notified when apps join or leave
 - Sync Start/Stop: Toggle on to send and listen to Start/Stop commands
 - Connected Apps: Shows how many apps are connected

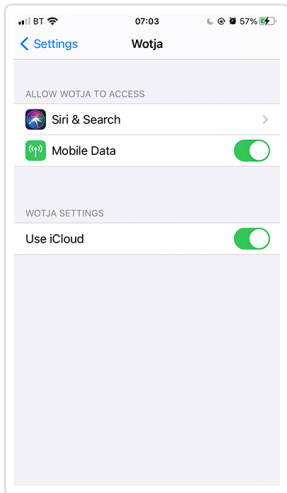
[↑](#) Recording

- [↑](#) **Max Recording Seconds**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in; use the recording facilities of the AUv3 Host.
 - *4-3600s* (Default value - 3000s)
 - This setting lets you increase how long you can record for in [Record Mode](#).

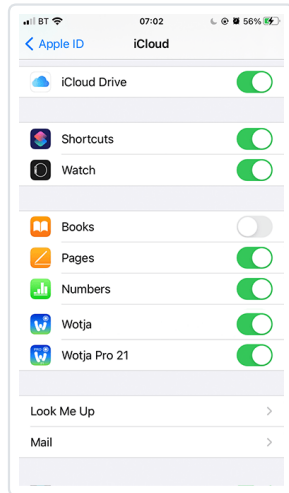
- **IMPORTANT:** Use with care as recordings are large and your device must have sufficient free memory available. If you try to change this value take note of the pop up message warning before you change it. Also be aware that these the recordings are stored in iCloud (if you are using that), so that could hit your bandwidth.
- [↑](#) **Max Recording Bars**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in; use the recording facilities of the AUv3 Host.
 - *4-3600s (Default value - 100 bars)*
 - This setting lets you increase the number of bars you can use to make mixdown recordings in the [Record Mode](#).
 - **IMPORTANT:** Use with care as recordings are large and your device must have sufficient free memory available. If you try to change this value take note of the pop up message warning before you change it. Also be aware that these the recordings are stored in iCloud (if you are using that), so that could hit your bandwidth.
- [↑](#) **MIDI File Track Grouping**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in which sends MIDI in Omni mode.
 - *MIDI Channel/Wotja Track (Default value - "by MIDI Channel")*
 - This option determines how MIDI is saved in a MIDI file recording and allows you to have Wotja's MIDI output summed either by Wotja MIDI Channel (default) or by Wotja Track.
 - Each MIDI track in the MIDI file recording is labeled either by MIDI Channel Number or by Wotja Track Number, as appropriate.
 - Use setting "by Wotja Track" if you want the MIDI sent from all generators in Cell 1 summed to MIDI track 1 in the MIDI file and the MIDI sent from all generators in Cell 2 summed to MIDI track 2 in the MIDI file.

- Use setting "by MIDI Channel" if instead you want the MIDI sent on MIDI channel 1 in Cell 1 and the MIDI sent on MIDI channel 1 in Cell 2 to be summed to MIDI track 1 in the MIDI file.
- Example: Wotja can have multiple Cells playing at the same time and all generating MIDI. Cell 1 could have say 9 generators each sending MIDI to a different MIDI channel (e.g. 1 to 9) and the same might be the case for Cell 2.
- [↑](#) **Video Recording Size (iOS/macOS)**
 - *Note:* Setting not available in the Wotja AUv3 Plug-in.
 - *640x480, 960x540, 1280x720, 1920x1080 (Default value - 640x480)*
 - This setting lets you set the size of the video you wish to record. The larger the size, the longer the recording will take to make.
 - *Tip:* Recordings featuring a background image do take a **long time** to create.

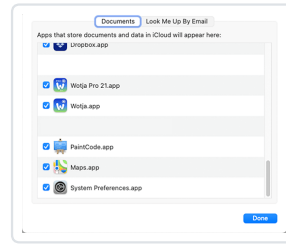
↑ iCloud



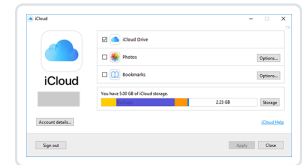
Wotja Use
iCloud (iOS)
(tap image for
large)



Use iCloud
Drive (iOS)
(tap image for
large)



iCloud Drive
(macOS)
(tap image for
large)



iCloud Drive
App (Windows)
(tap image for
large)

IMPORTANT: To use iCloud in Wotja you MUST have set up/toggled on iCloud Drive ("iCloud Drive") - See also [Apple's iCloud Help resource](#).

IOS IMPORTANT: You must ALSO have the relevant Wotja App's "Apps Using iCloud" toggle AND the relevant app's Settings "Use iCloud" both toggled on. If you do not want to use iCloud with Wotja turn them both off. If both have different toggle states then when you launch Wotja it can **crash. We know it is confusing, sorry!**

Using Wotja with [iCloud](#) enabled makes it easy to edit/use Wotja files across multiple devices, be they iPhones, iPads, Macs or Windows PCs. When it is enabled then all Wotja files in the iCloud Drive folder are all stored in the cloud, also a great form of backup!

iOS - Set up/Use iCloud Drive:

This screen is where you both turn on the "iCloud Drive" toggle and then set what apps can use it for file saving using the relevant "Apps Using iCloud" toggle.

This screen is accessed as follows: From the iOS Settings Screen > Apple ID, iCloud, iTunes & App Store (Your Name) > iCloud (see also [Apple's iCloud Help resource](#))

- **"iCloud Drive" toggle:** This is found after the iCloud Backup toggle. It must be toggled on for any app (including Wotja!) to use iCloud Drive to save data.
- **"Apps Using iCloud" section toggles:** Scroll further down the screen to find the version of Wotja that you have installed and then turn the toggle on. *Both this and the Wotja "Use iCloud" must have the same toggle status or you can get a [crash](#) on launching Wotja.*

iOS - Wotja "Use iCloud" toggle:

This screen is where you set whether Wotja can use Mobile Data and whether or not it uses iCloud for file saving. It is accessed from the iOS Settings Screen.

- **Wotja "Use iCloud" toggle:** Scroll down the iOS Settings screen to find the version of Wotja that you have installed, tap on it and then in the ensuing screen find the App Settings section and turn on the toggle "Use iCloud". *Both this and the Wotja "Use iCloud" must have the same toggle status or you can get a [crash](#) on launching Wotja.*

macOS - "iCloud Drive" / Wotja "Use iCloud":

See also [Apple's iCloud Help resource](#).

- **"iCloud Drive" toggle:** From the macOS System Preferences screen go into iCloud and in the ensuing iCloud screen ensure the iCloud Drive setting is toggled on.
- **Wotja "iCloud Drive" toggle:** In the iCloud screen above tap on the iCloud Drive "Options" button and in the ensuing screen (shown left) select the Documents tab and scroll down the screen to find the

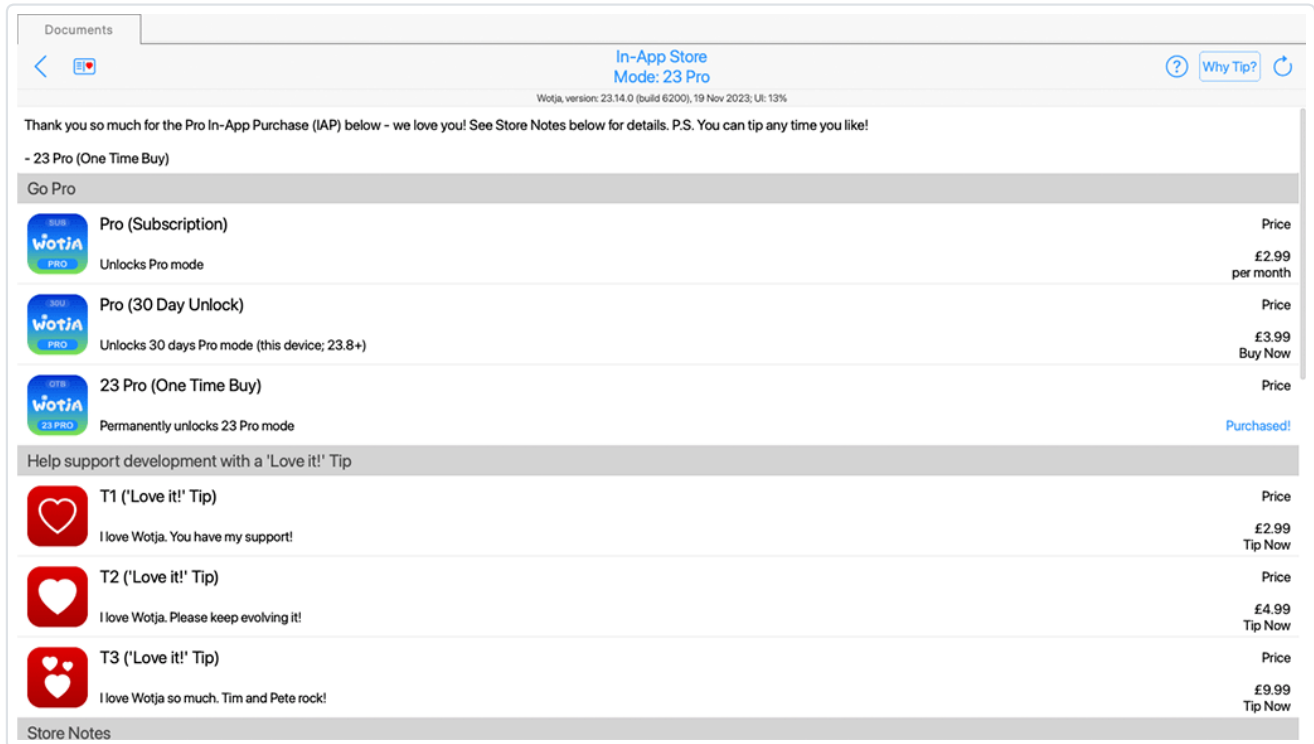
version of Wotja that you have installed and then turn the toggle on.

Wotja iCloud Drive App screen (Windows):

The Windows iCloud Drive app is required to enable/sync iCloud files on your Windows PC (and thus the Wotja iCloud Drive folder). To set it up find/load the Windows iCloud Drive app and ensure iCloud Drive is toggled on.

Important Note: Wotja for Windows will by default save Wotja files to the [Wotja Folder](#) (you can however choose to save to the Wotja iCloud Drive folder using File Save As). All mixdown recordings are always saved to the Wotja Folder. The Wotja [Documents](#) screen will, however, only display/load files from the Wotja Folder. If you have saved Wotja files to the Wotja iCloud Drive folder then to see them in the Documents screen simply move them to the Wotja Folder and then press the Action button in the Documents screen and select refresh.

In-App Store





Wotja In-App Store

(tap image for large)

In-App Store

The In-App Store screen is available in all Wotja App variants except for the TV or Watch Player Apps.

It can be accessed via:

- The  Store button (alt: 'Love it!' ) in the [Documents](#), [Settings: General](#), [Flow Player](#), [Album Player](#), in all 5 Mix Editing screens ([Music](#), [Text](#), [Display](#), [Plug-ins](#) and [Recording](#)) and in the [WAE Synth & FX Editor](#) screen.
- The Store button in various pop-up dialogs;
- Any menu item which requires Pro mode (e.g. 'Pro mode only').

This screen is also useful for support purposes because the [Title & Status bar](#) shows important details such as App Version & build number, active mode, IAP status, date etc. and it also includes a [Restore button](#).

We may ask you to send us a screengrab of this screen if you need support.

Note: The In-App Store screen in the Plug-ins does *not* include a functioning In-App Store - it is for information only.

Title bar

Rate & Review button

- Love Wotja? This displays a pop-up alert with some options to consider!

In-App Store screen title and active mode

- The screen title is "In-App Store" and below it is displayed the active [mode](#), this being one of 'Lite', 'Play' / '23 Play' or 'Pro' / '23 Pro'.

Help Button

- This displays the User Guide in a pop-up window.
- Whether this is the in-app or online version of the User Guide depends on the value of Settings > [General](#) > "[Help: Use In-App User Guide](#)".

'Why Tip?' button

- This takes you the '[Tips](#)' page on the Wotja website where we give good reasons for leaving a Tip!

Restore button

- This lets you restore a purchased [One Time Buy \(OTB\)](#) or [Subscription \(SUB\)](#).
- You might need to do this if you have purchased one of the above if you remove/reinstall Wotja on your device or install on a new device.
- **macOS/iOS only:** When you press this button, you're presented with a menu showing two items:

- *Restore Purchases (default)*: Carries out Restore as above
- *Store Sync (requires sign-in...)*: - You are prompted to log-in the App Store again. The data from the App Store is fully re-queried; you can then try the Restore option again. This may never need to be used, but it can be useful in some cases.

Status bar

The status bar is shown below the title bar and it lets you quickly see what version of Wotja you have installed, the build number, today's date and a CPU % indicator (for a playing file).

- The CPU % indicator is shown only when Wotja file is playing. It can be useful to indicate if your device CPU is being made to work too hard by the Wotja file (i.e. it is too complex for your device to play live without artefacts). If you are getting artefacts:
 - Either try recording your mix via the In-App [Record Mode](#) facility.
 - Consider simplifying your mix (see the FAQ on [Audio Issues](#)).

Top text panel

Below the Title and Status bar is a text panel which displays any Pro IAP that you have purchased and that *is/remains active*:

- *Subscription (SUB)*: The Subscription is shown whilst it remains active (i.e. whilst you remain subscribed).
- *30 Day Unlock (30U)*: You are shown that purchase has been made, and when, and how long Pro mode will remain unlocked for.
- *One Time Buy (OTB)*: The latest purchase (only) of any OTB is

shown.

Note: 'Love it!' Tip purchases are not shown here.

IAP Panel

This panel shows all the [In-App Purchase \(IAP\)](#) options available in the Wotja In-App Store.

Store Notes

Shown below the IAP panel, the Store Notes panel provides important information associated with the Store, including explanations (and abbreviations) of the terminology we use.

Miscellaneous

Shown below the Store Notes panel, the Miscellaneous panel has a number of important and useful links, including one to allow you to manage a Wotja Subscription:

- Tap the "Manage Subscriptions" button in the "Miscellaneous" section.
- This takes you to a page in the relevant App Store where you can see your active Subscription and manage it.
- **Apple info:** For Apple information on managing subscriptions please refer to [Cancel a subscription from Apple](#)
- **Microsoft info:** For Microsoft information on managing subscriptions please refer to [Manage a Microsoft subscription](#)
- See also the [FAQ entry on In-App Subscriptions](#).

[↑](#) 🎵 Wotja 23 Music Engine (WME)



The **Wotja Music Engine** ("WME") has 6 **Generator Types** and associated parameters and 4 **Generator Rule Objects** that allow creation of [generative music](#) through a combination of proprietary heuristics and chance (also sometimes referred to as being [aleatoric](#), [stochastic](#) or [algorithmic](#)). A [Wotja Mix Cell](#) can include one or more Wotja Music Engine (WME) "Generators".

🎵 Generators (see 🎵 Generator: Main Editor)

Looking for something?: *Try page search* with Cmd+F/Ctrl+F.

Generator Types

- **Rhythmic**: Generates notes according to the Scale, Harmony, Rhythm, Next Note Rules.
- **Ambient**: Similar to Rhythmic but where note durations are determined by the Ambient parameters.
- **Sequence**: Generates note sequences from a number of different generator sub-types and their data ("Items"): **Euclidian**, **Text to Music**, **Pattern** [**B**, **R**, **F**].
- **Follower**: Mirrors notes generated by another Generator.
- **Repeater**: Composes like a Rhythmic Generator but can repeat its notes.
- **Listener**: Detects incoming MIDI notes/events.

Common Parameters

- **Generator**
- **Rules**
- **Phrasing**
- **Chording**
- **Articulation**
- **Envelopes**
- **Controllers**
- **Micro Controllers**
- **Micro Note Delay**
- **Micro Pitch**
- **Note to MIDI CC**
- **Scripting**
- **Comments**

🎵 Generator Rule Objects

How do I edit these parameters? See the [Generator: Main Editor](#).

See also the [Rule Editor](#) and [Mix Rules](#) and [Cell Rules](#).

- [Scale Rule](#): 24 elements governing allowed pitches
- [Harmony Rule](#): 24 elements governing allowed harmonies
- [Next Note Rule](#): 24 elements governing allowed pitch movement
- [Rhythm Rule](#): 12 elements governing note durations

Each of the above Rule Objects can include one or more Rule Items e.g. "All Scale Major".

Rule Items ("Rules") comprise values for each of its 12 or 24 independent Rule Elements ("Elements"). These Elements can be set to values between 0% to 100% which represent **the relative probability (the "weighting")** that the Element will be selected by a Generator when it is composing. An Element with value of 0 will *not* be chosen for composition.

Every time a Generator composes a note its button and the relevant Rule Element will flash.

Composition happens a little in advance but any change to the element values can be reflected quite quickly in the music generated. Some changes, however, such as mix root change, can take a little longer than others to take effect.

Important: When the Pitch Range for a Generator is wide enough, Scale Rules will "wrap around" to accommodate the extra range in notes available.

🎵 ■ Generator - Rhythmic

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

A "Rhythmic" Generator is the default Generator Type. It composes according to the parameters in the "[Phrasing](#)" Parameter Group.

Tip: Refer to the [Generator](#) Parameter Group for the top level parameters that are common to all Generators.

Tip: To best allow note durations to fit within the bar structure of a Cell, a Rhythmic Generator calculates them according to the Rhythm Rule it uses.

🎵 ■ Generator - Ambient

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

Tip: Refer to the [Generator](#) Parameter Group for the top level parameters.

An "Ambient" Generator does not use the [Rhythm rule](#) for note durations but instead use durations defined by the specialist parameters in the Ambient parameter group. This is to allow them to generate notes without respect for tempo or bar timings. They are wonderful for creating drifting, floating sounds for either background or foreground use as drones or for musical texture.

Parameter Group - Ambient

- ■ [Units](#)
- ■ [Duration](#)
- ■ [Duration Range](#)
- ■ [Gap Minimum](#)
- ■ [Gap Range](#)

↑ ■ Units

You define the Unit of Measure for which the other Ambient Generator parameters are interpreted. This may be one of the following values:

- *Seconds (thousandths of a)*
The parameters including Duration are all interpreted as being in thousandths of a second (i.e. Milliseconds). So, a Duration value of 1000 means one second.
- *Beats (60ths of a)*
The parameters including Duration are all interpreted as being in 60ths of a beat. In the WME a Beat is defined as being one

crotchet; you get 4 beats in a bar of 4:4 music. So, a Duration value of 60 means one beat. A Duration value of 30 means a quaver. A Duration value of 20 means a triplet. A Duration value of 15 means a semi-quaver. A Duration value of 240 means 4 beats (which is a full bar if the Cell Meter is 4:4).

- *Full seconds*

The parameters including Duration are all interpreted as being in seconds. So, a Duration value of 10 means ten seconds.

[↑](#) ■ Duration

The Ambient Generator parameters govern how Ambient Generators work.

This defines the minimum duration for which the Ambient Generator will play when it composes a note. The actual value chosen for each note is a value between Duration, and Duration plus the Duration Range. Each and every note composed for this Ambient Generator will have a note whose duration is separately calculated.

[↑](#) ■ Duration Range

This is combined with the Duration parameter, to determine the duration for which the Ambient Generator will play when it composes a note. The actual value chosen for each note is a value between Duration, and Duration plus the Duration Range. Each and every note composed for this Ambient Generator will have a note whose duration is separately calculated.

[↑](#) ■ Gap Minimum

This defines the minimum duration for which the Ambient Generator will play when it composes a rest. The actual value chosen for each rest is a value between *Gap Minimum*, and *Gap Minimum* plus the *Gap Range*. Each and every rest composed for this Ambient Generator will have a rest whose duration is separately calculated.

Tip: This is the Duration used for the Phrase Gaps / Phrase Gaps

Range parameters i.e. it allows the duration of gaps to be different to that of the notes.

[↑](#) ■ Gap Range

This is combined with the *Gap Minimum* parameter, to determine the duration for which the Ambient Generator will play when it composes a rest. The actual value chosen for each rest is a value between *Gap Minimum*, and *Gap Minimum* plus the *Gap Range*. Each and every note composed for this Ambient Generator will have a note whose duration is separately calculated.

Tip: This is the Duration Range used for the Phrase Gaps / Phrase Gaps Range parameters i.e. it allows the duration of gaps to be different to that of the notes.

🎵 Generator - Sequence

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

See also: [Sequence Array Editor](#).

The Sequence Generator type is a special type of Generator as it does not itself generate notes, it use the generator sub-types below to do that:

Sequence Generator sub-types

-  [Euclidian](#)
-  [Text to Music](#)
-  [Pattern: Both \(B\)](#)
-  [Pattern: Rhythm \(R\)](#)
-  [Pattern: Fixed \(F\)](#)

It is easiest to think of it as a **list** (i.e. Sequence Array ("Array")) which supports a number of **list items** (i.e. Sequence Array Items ("Array Item")) - see [Sequence Array Editor](#).

Each Array Item includes all the parameter values needed for the generator sub-type to create note sequences.

In addition, as powerful technique for melody and beat generation, Array Items can be selected at random or played in sequence, as below (see [Sequence Chain Editor](#)):

- **Random Selection of Array Items:**
 - When the mix starts, any Sequence Generator that has more than one Array Item will have one of those selected to play, according to the probability weighting each has been given (see "[Pattern Syntax: prob](#)").
 - Which Array Item is chosen by the Generator depends on a few things:

- If there is at least one Array Item, then the Array Item chosen to play is based on the Generator making a weighted random selection from the available Array Items. When (if!) the Array Item has done what it is intended to do the Generator will make another selection as to which sequenced sub-pattern to use.
 - An TTM note sequence or Pattern note sequence that is less than a whole number of bars at the Generator's current Meter, will be padded automatically with silence to ensure that it remains bar synchronized.
- **Sequencing Array Items with Sequence Chains:**
 - A more advanced technique allows Array Items themselves to be sequenced for play and we call this a Sequence Chain Item. They are easy to use in the Wotja [Sequence Chain Editor](#). If you want to manually edit it, see the syntax below and the [syntax examples](#).

[↑](#) ■ Sequence Chain Syntax

<S100 R 1.20 2.1 1-2.1-4 2.1>

<[S][prob][.M] R {[seqnum[-seqnumrange].[repeattimes[-repeattimesrange]] [seqnum[-seqnumrange].[repeattimes[-repeattimesrange]]}* >

Where:

- **S**: identifies a sequence sub-pattern
- **prob** : relative probability of being chosen when there is more than one sequence sub-pattern.
- **M**: Mute the sub-pattern (i.e. prevent it being selected!). If none can be selected, then a non-sequence sub-pattern is chosen to play at random as usual each time.
- **R**: Required for historical reasons.
- **seqnum**: Sequence Number.
 - The index of the non-sequence sub-pattern to play. Default is 1. The sub-patterns are numbered from 1 up.

- *seqnumrange* : Sequence Number Range. Default is 0.
- **repeattimes**: Repeat Times Minimum.
 - The number of times to repeat this sub-pattern, when selected. A value of "0", will cause the sub-pattern (when selected) to keep playing forever until the end of the Cell! Default is 1.
 - *repeattimesrange* : Repeat Times Range. Default is 0.

Sequence Chain Syntax Examples:

Key: To aid understanding we use the following color coding:
durations and **scale intervals**.

- Two Array Items of type **Pattern - Both (B)**. Play 1 once, then 2 once...


```
<100 B 60 1 60 2 60 3 60 4>
```

```
<100 B 30 9 30 8 30 7 30 6 30 5 30 4 30 3 30 2>
```

```
<S100 R 1.1 2.1>
```
- Two Array Items of type **Pattern - Both (B)**. Play 1 twice, then 2 twice...


```
<100 B 60 1 60 2 60 3 60 4>
```

```
<100 B 30 9 30 8 30 7 30 6 30 5 30 4 30 3 30 2>
```

```
<S100 R 1.2 2.2>
```
- Two Array Items of type **Pattern - Both (B)**. Play 1 or 2 twice, then 1 or 2 twice...


```
<100 B 60 1 60 2 60 3 60 4>
```

```
<100 B 30 9 30 8 30 7 30 6 30 5 30 4 30 3 30 2>
```

```
<S100 R 1-1.2 1-1.2>
```
- Two Array Items of type **Pattern - Both (B)**. Play 1 once, then 2 twice, the one or 2 once, then 2 once...


```
<100 B 60 1 60 2 60 3 60 4>
```

```
<100 B 30 9 30 8 30 7 30 6 30 5 30 4 30 3 30 2>
```

```
<S100 R 1.1 2.2 1-1.1 2.1>
```
- Two Array Items of type **Pattern - Both (B)**. Play 1 once, then 2 forever...

<100 B 60 1 60 2 60 3 60 4>

<100 B 30 9 30 8 30 7 30 6 30 5 30 4 30 3 30 2>

<S100 R 1.1 2.0>

🎵 ■ Sequence: Euclidian

How do I edit these parameters? See the [Sequence: Euclidian Editor](#).

Overview

Tip: See also [this very helpful video](#) from **UncertainMusicCorps** that explains Euclidian sequencing in detail, and with examples.

The "Euclidian" Sequence Generator sub-type is for generating (at random) a note sequence from 3 core parameters ([Steps](#), [Fills](#), [Rotation](#)).

The note pitches are determined by the [Pitch](#) and [Pitch Strategy](#) settings and note durations are determined with [Duration](#) and [Rhythm Strategy](#) settings.

The generated note sequence can be repeated a number of times ([Repeats](#)) after which time a new note sequence is randomly generated (which is where Range values come into play).














If you want to more tightly specify a note sequence then consider using the "[Pattern](#)" Sequence Generator sub-type.

Notes/Tips

- The Pattern Mutation Factor doesn't apply to Euclidians.
- Unlike other Sequence items, Euclidians don't auto-pad to the current bar boundary at the end.
- A rough outline of the Sequence notes is displayed at the top of the Euclidean editor. We hope to improve this in the future.

- You can use a number of different Euclidean generators in a Cell to create a form of chording.
- If you want 4 Euclidean playing against each other, to make an interesting simple drum kit, just have 4 Euclidean sequence generators all feeding the same MIDI channel. Choose different Pitches so each one plays a different Drum sound.
- Try building up "melodic patterns" by having a number of Generators going, each with their own Euclidian pattern!

Parameter Group - Euclidian (EUC)

-  Steps
-  Steps Range
-  Fills
-  Fills Range
-  Rotation
-  Rotation Range
-  Repeats
-  Repeats Range
-  Pitch
-  Pitch Range
-  Duration
-  Rhythm Strategy
-  Pitch Strategy

[↑](#) Steps

Values: 1 to 128

This value determines the number of "steps" there will be in a generated note sequence (assuming the Steps Range, below, is 0). Empty steps are rests and filled steps (Fills, below) play notes.

Example: If Steps is 16 and Steps Range is 0, the number of steps is always 16.

Note: If a non-zero Steps Range is specified the number of steps can change every time the next note sequence is generated.

Tip: If you do not want the Steps value to change when the next note sequence is generated (see [Repeats](#)), ensure Steps Range is

set to 0.

[↑](#) ■ Steps Range

Values (optional): 0 to 128

Every time a new note sequence is generated (see [Repeats](#)) the Steps value is recalculated and will be somewhere between Steps + Steps Range.

Example: If Steps is 16 and Steps Range is 4, then the next time a note sequence is generated the calculated Steps value used could be anywhere between 16 and 16+4 (i.e. between 16 and 20).

[↑](#) ■ Fills

Values: 1 to 128

For the generated note sequence this value determines how many of the steps above will be "filled" and so play a note (assuming the Fills Range, below, is 0).

Example: If Fills is 4 and Fills Range is 0, the number of steps that are "filled" is always 4.

Note: If a non-zero Fills Range is specified the number of filled steps can change every time the next note sequence is generated.

Tip: If you do not want the Fills value to change when the next note sequence is generated (see [Repeats](#)), ensure Fills Range is set to 0.

[↑](#) ■ Fills Range

Values (optional): 0 to 128

Every time a new note sequence is generated (see [Repeats](#)) the Fills value is recalculated and will be somewhere between Fills + Fills Range.

Example: If Fills is 4 and Fills Range is 4, then the next time a note sequence is generated the calculated number of Fills used by it could be between 4 and 4+4 (i.e. 8).

[↑](#) ■ Rotation

Values: -128 to 128

Determines in which step the first note of the note sequence will occur (assuming the Rotation Range, below, is 0). This value can be thought of as a "starting offset" if you prefer as the note sequence "wraps around" and does not get foreshortened.

Example: If Rotation is 3 and Rotation Range is 0, the starting note is always in step 3.

Note: If a non-zero Rotation Range is specified the "starting offset" can change every time the next note sequence is generated.

Tip: If you do not want the Rotation value to change when the next note sequence is generated (see [Repeats](#)), ensure Rotation Range is set to 0.

[↑](#) ■ Rotation Range

Values: 0 to 256

Every time a new note sequence is generated (see [Repeats](#)) the Rotation value is recalculated and will be somewhere between Rotation + Rotation Range.

Example: If Rotation is 3 and Rotation Range is 4, then the next time a note sequence is generated the calculated Rotation value used could be between 3 and 3+4 (i.e. 7).

[↑](#) ■ Repeats

Values: 1 to 100

This value determines how many times a generated note sequence will repeat.

Once the note sequence has been repeated the correct number of times a new note sequence is generated. This cycle continues until the Sequence Item item is changed or the Generator is stopped.

[↑](#) ■ Repeats Range

Values (Optional): 0 to 100

Every time a new note sequence is generated the Repeats value is recalculated and will be somewhere between Repeats + Repeats Range.

Example: If Repeats is 3 and Repeats Range is 4, then the next time the note sequence repeats the calculated Repeats value might be any where between 3 and 3+4 (i.e. between 3 and 7 times).

[↑](#) ■ Pitch

Values: 1 to 128

Important: The Pitch value is only relevant when the Pitch Strategy is set to either "Pitch: Fixed MIDI Pitch" or "Pitch: Interval in Scale Rule".

Note: If a non-zero Pitch Range is specified the note pitch can change every time a note is played.

- **"Pitch: Fixed MIDI Pitch":**
 - This parameter is primarily for use with beats where a specific MIDI note pitch is used to trigger a specific drum sample.
- **"Pitch: Interval in Scale Rule":**
 - Uses the Pitch value as the *index value* for available scale rule elements (c.f. how Both patterns work). This can get a little complicated as Scale Rules can have from one to 24 elements defined and the actual note played also then depends on what is permitted by the Generator's Pitch

and Pitch Range settings.

- Example: A value of 1 corresponds to the first interval in the Scale Rule, usually the root. Say the Generator's Pitch parameter was set to 48 and Pitch Range set to 24. The note played for value of 1 would have pitch 48. What happens if you have set a Pitch value of 60? Well, that also depends on the number of elements in the Scale Rule which acts like a **modulo**. Say there were 7 elements in the Scale Rule. $60 \text{ modulo } 7$ is $56 + 4$ remainder. So, 60 would represent the 4th scale rule element. As we said, it can get a bit confusing...

[↑](#) ■ Pitch Range

Values: 0 to 128

Every time a note is played the Pitch value is recalculated and will be somewhere between Pitch and Pitch Range.

Example: If Pitch is 60 and Pitch Range is 4, then the next time a note is played the calculated Pitch value used could be between 60 and $60+4$ (i.e. between 60 and 64).

[↑](#) ■ Duration

Values:

- 2 note (breve, 480 ticks)
- 1 note (semibreve, 240 ticks)
- 1/2. note (dotted minim, 180 ticks)
- 1/2 note (minim, 120 ticks)
- 1/4 note (crotchet, 60 ticks)
- 1/8. note (dotted quaver, 45 ticks)
- 1/8 note (quaver, 30 ticks)
- 1/12 note (triplet, 20 ticks)
- 1/16 note (semiquaver, 15 ticks)
- 1/24 note (-, 10 ticks)

- 1/48 note (-, 5 ticks)

The value of this setting determines the duration of a "step" when [Rhythm Strategy](#) is set to "Built-in".

If Rhythm Strategy is "Use Rhythm Rule" then the duration of any step is that of the particular element of the Generator's [Rhythm Rule](#) chosen to be used for that step. That means that *each step* can have a different duration.

[↑](#) ■ Rhythm Strategy

Values:

- Built-in
- Use Rhythm Rule

If Rhythm Strategy is "Built-in" then the duration of a "step" is set by the [Duration](#) parameter.

If Rhythm Strategy is "Use Rhythm Rule" then the duration of any step is that of the particular element of the Generator's [Rhythm Rule](#) chosen to be used for that step. That means that *each step* can have a different duration.

[↑](#) ■ Pitch Strategy

Values:

- Pitch: Fixed MIDI Pitch
 - Note value number (0 to 127) - great for drums. See [Pitch](#).
- Pitch: Interval in Scale Rule
 - Uses the Pitch value as the index for available scale rule elements. See [Pitch](#).
- Ignore: Let Wotja Compose Each Note
 - The note sequence is composed using the Generator's Scale, Harmony, Next Note rules (e.g. as like for for Ambient, Rhythmic etc. Generators)

🎵 ■ Sequence: Text to Music (TTM)

How do I edit these parameters? See the [Sequence: Text to Music Editor](#).

Overview

"Text to Music" Generators have their own special set of parameters and allow text *in any language* to generate a seed melody which, even though not visible, is in a Pattern syntax. Use English, Chinese, Japanese, Russian, German, French - whatever language takes your fancy, you will always get a melody!

In general it takes 2 characters to generate a note. Note that if your text is < 6 characters (e.g. Hello, which is 5 characters), we turn it into HelloHello ... which makes it sufficiently long to make at least 3 notes (that actually generates a few more).

Parameter Group - Text to Music (TTM)

- [Cut-up Rule](#)
- [TTM Custom Text](#)
- [Tune Start at Index](#)
- [Tune Length Override](#)
- [Phrase Length](#)
- [Phrase Length Range](#)
- [Gaps](#)
- [Gaps Range](#)
- [Interval](#)
- [Interval Range](#)
- [Repeats](#)
- [Repeats Range](#)
- [After Tune Repeats](#)
- [Variation](#)
- [Rhythm Strategy](#)
- [Duration Multiplier](#)

[↑](#) ■ [Cut-Up Rule](#)

The selection you make here determines what text is used for TTM. If you select one of the Cut-up options then the **relevant text from your mix [Cut-up](#)** will be displayed in the [Note](#)

[Sequence & Cut-up Text Graphic](#) above this parameter. Note that if there is no text available in a selected line of Cut-up (or Custom Text, depending which is selected to be used) then the TTM Generator will have no text to work with and so no notes will be generated.

- *Custom*: Uses text that you enter in the TTM Custom Text field.
 - See the [TTM Editor](#) for details on how to do this.
- *Cut-Up: Line#=Track#* (Default): This setting is very powerful when it comes to mixes that feature TTM. It means you can harness the power of the Cut-up Editor to quickly generate text that can be used to populate the TTM for multiple Generators - all at once! It is easiest to understand by example: if you have this setting and are using a TTM Generator in say Track 1 then it will use line 1 of text in your mix Cut-Up. If you had a TTM Generator in Track 3 it would use line 3 of your mix cut-up, and so on.
- *Cut-up: All Lines*: Uses the text in all lines in your Cut-up for the purposes of TTM
- *Cut-Up: Line# 1-11*: Uses the text from Line# 1 to Line# 11 (as selected) of your Cut-up for the purposes of TTM. You can set up TTM generators all to use the same line if you want!

[↑](#) ■ TTM Custom Text

This is custom text *in any language* that can be used to generate a TTM seed melody. In Wotja, tap on this field to go to the [TTM Custom Text Editor screen](#).

[↑](#) ■ Tune Start at Index

From the notes composed, set the first note you want your tune to start playing at. Maximum value is Notes - 1.

[↑](#) ■ Tune Length Override

From the notes composed, set how many notes will play. Maximum value is Notes - Tune Start at Index.

[↑](#) ■ Phrase Length

Defines the minimum number of notes there are in a "phrase" (and you can see in the indicator above how many notes your text has generated - all of these notes get put into phrases to make the "tune").

[↑](#) ■ Phrase Length Range

Sets the range above the minimum.

[↑](#) ■ Gaps

Defines the minimum number of rests between each phrase (allows a tune to breathe). Rests are measured in terms of 16th notes.

[↑](#) ■ Gaps Range

Sets the range above the minimum.

[↑](#) ■ Interval

Defines the minimum number of rests between each play of the tune (allows a tune to breathe). Rests are measured in terms of 16th notes.

[↑](#) ■ Interval Range

Sets the range above the minimum.

[↑](#) ■ Repeats

The total number of times the original melody or a variation of it is played. This also applies to improvised melodies (see [Improvise toggle](#)).

[↑](#) ■ Repeat Range

Sets the range above the minimum. Also applies to improvised melodies (see [Improvise toggle](#)).

[↑](#) ■ After Tune Repeats

This parameter determines what happens after the FIRST complete play and specified number of repeats of the original TTM generated melody (the "repeat cycle"). There are 3 options:

- *Improvise with Variations*
 - After the repeat cycle the TTM Generator will continuously generate melody variations.
 - *Tip:* If Variation (below) set to 0, then the original TTM generated melody will continue to repeat for ever.
- *Go Quiet*
 - Once the repeat cycle has completed then the TTM Generator stop playing.
- *Select Next Sub-Pattern*
 - Once the repeat cycle has completed then the next Sequence Array Item (if any) is selected to play.

[↑](#) ■ Variation

Selects how much variation is applied to the previous melody when improvising.

[↑](#) ■ Rhythm Strategy

Determines the duration of notes to be used for the TTM melody.

- *Built-in*
 - The note durations are generated according to some fixed (and non editable) default settings.
- *Use Rhythm Rule*
 - The note durations are generated according to the Rhythm Rule in use by the Generator.
 - *Tip:* This allows you to decide what durations you want to have used.

[↑](#) ■ Duration Multiplier

Values: 1 - 32

This "multiplier" setting lets you increase the duration of EACH

TTM note generated.

Example: A value of 2 will double the duration of all TTM notes generated so e.g. a 1/8th note is changed to have a duration of a 1/4 note etc.

Example Use Case: Using TTM to generate a series of long "pedal" notes where you do not want to have your mix use a very slow mix tempo.

🎵 ■ Sequence: Pattern

How do I edit these parameters? See the [Sequence: Pattern Editor](#).

Overview

The Sequence "Pattern" Generator sub-type can generate notes from various fixed MIDI-like patterns.

There are 3 different kinds of pattern type, and the Generator will reflect the color. of whatever is in use at the time: ■ **Both (B)**, ■ **Rhythm (R)** and ■ **Fixed (F)** (see [Pattern Types](#)).

Patterns are able to follow generative sequencing rules and can adapt automatically to changes in Scale Rules. They are great for bringing some structure to your composition.

Patterns can be mutated while playing, according to parameters defined in the Pattern Parameter Group. When a Pattern is mutating it composes as would a [Rhythmic](#) Generator, and they use the [Phrasing](#) Parameter Group parameters.

They are easy to edit/use in the related [Wotja Pattern Editors](#). As they have a [text syntax](#) (below) they can also be edited in a text editor.

Parameter Group - Pattern

- [Pattern Types](#)
- [Use Percent](#)
- [Mutation Factor](#)
- [Bars Between](#)
- [Bars Range](#)
- [Mutate Rhythm?](#)
- [Meter](#)
- [Pattern Syntax](#)
- [Pattern Syntax Examples](#)

[↑](#) [Pattern Types](#)

There are 3 types of Pattern:

- **B - Both:** i.e. "Melodic" pattern using scale rule intervals. Includes a series of *both* paired note durations and scale rule interval values. A scale rule interval value of 1 represents the 0ve scale interval used by the Generator and a value of 0 represents a rest.
- **R - Rhythm:** Defines note durations to use, but leaves selection of the note pitches to use up to the Generator acting as a Rhythmic Generator. A negation duration represents a rest.
- **F - Fixed:** i.e. "Melodic" pattern using fixed MIDI pitches. Defines the root pitch (60 is Middle C) to use for the pattern and a series of both paired note durations and relative pitches. The pitch values are relative to the root pitch and are independent of scale rule. A pitch value of 0 represents the root pitch and a value of -1 means treat this note as a rest note. These patterns can be useful for drum riffs, e.g. with MIDI drums.

[↑](#) [Use Percent](#)

When the Generator starts a new sub-pattern at the start of a bar, it consults the value you have defined for *Use Percent*. This parameter determines the probably of the Generator using the Pattern for the bar; or alternatively, compose a *completely* new

bar (that you will hear only once!) were it to be of Rhythmic Generator Type.

If *Use Percent* is 100, then the Generator will always use the pattern. If *Use Percent* is 50, then the Generator will instead compose a new bar every other bar or so. Note that the Generator will never interrupt a sub-pattern that it is playing; the *Use Percent* parameter is considered only on a sub-pattern boundary, at the start of a new bar.

[↑](#) ■ Mutation Factor

The mutation factor is used when a bar is considered for mutation (which can happen only if *Bars Between* is not zero! The *Mutation Factor* determines the level of mutation to apply. If set to 10.0%, then when playing from a sub-pattern, this means that each note that would be played from the pattern, has a 10% chance of having a different one composed, with subsequence pattern playbacks keeping that mutation. Note that if *Mutate Rhythm?* is set to Yes, then if the composed note is longer than the composed-over pattern note, this might overlap and cancel-out some other notes in the sub-pattern.

[↑](#) ■ Bars Between

This parameter defines the number of bars that the Generator waits between, before trying to mutate a bar in a pattern according to the *Mutation Factor*. If *Bars Between* is set to zero, the Generator can never mutate. Set to 1 if you want mutation every bar, 2 if you want mutation every other bar, etc. ...

The actual number of bars used is selected randomly each time, somewhere in the range from *Bars Between*, to *Bars Between* plus *Bars Range*.

[↑](#) ■ Bars Range

This parameter is used to help define the number of bars between attempts by the Generator to mutate the current pattern. The actual number of bars used is selected randomly

each time, somewhere in the range from *Bars Between* , to *Bars Between* plus *Bars Range* .

[↑](#) ■ Mutate Rhythm?

If set to *No* , then the timing of the sub-pattern is preserved perfectly; only the frequency of the pattern notes will be changed when the pattern is mutated. Otherwise, the duration of each note is chosen from the rhythm rules and phrase/phrase gap rules for the Generator.

[↑](#) ■ Meter

Defines the Meter to be used by the Generator, such 4:4 or 3:4 or 6:8. A value of ?, which is the default, means to use the Meter defined for the Cell. A different value allows the Generator to work with a completely different meter, which can be used for interesting polyphonic effects.

[↑](#) ■ Pattern Syntax

A Pattern is actually text string in a specific format, surrounded by < and > symbols.

The Pattern syntax is somewhat complicated and will require a bit of effort to get to grips with. Even if you do wish to use it, we still recommend that you first use the Wotja [Pattern Editor](#) to familiarize yourself with patterns and how they work.

```
<[prob][.M] pattype {[dur][.vff[-vffr]]  
[scaleint]}*>
```

Where:

- **prob** : the relative probability that this sub-pattern is selected; relevant only where there is more than one sub-pattern! The default value is 100%.
- **M** : Flag indicating that the sub-pattern is to be "muted", i.e. not allowed to be selected. This can be useful for testing of individual sub patterns; where you might want to

"solo" a sub-pattern by muting out all the others.

- **patttype** : One of:
 - R: Rhythm
 - B: Both
 - F: Fixed, followed by the root note in MIDIpitch. e.g. F60.
- **dur** : Note Duration / WME time units.
 - The WME employs an underlying "time unit" that is 1/60th of a crotchet/quarter note. WME note Duration values map onto standard music notation in the following way (irrespective of meter) [# WME time units - Composed note length]:
 - 240 - whole note (i.e. one bar of 4:4)
 - 120 - minim/half note
 - 60 - crotchet/quarter note
 - 30 - quaver/eighth note
 - 20 - triplet/twelfth note
 - 15 - semi-quaver/sixteenth note
 - So by way of example:
 - one bar of 4:4 is $4 * 60 = 240$ WME time units.
 - one bar of 3:4 is $3 * 60 = 180$ WME time units.
 - one bar of 2:4 is $2 * 60 = 120$ WME time units.
 - one bar of 1:4 is $1 * 60 = 60$ WME time units.
 - one bar of 6:8 is $6 * 30 = 180$ WME time units.
 - one bar of 9:8 is $9 * 30 = 270$ WME time units.
 - You are of course free to experiment using other time unit values, which will mean different things. E.g. 10 time units is a 24th note etc.

In R patterns a negative duration indicates a rest for that time; in F patterns a pitch of -1 indicates a rest for the note duration.

If a note sub-pattern is not an exact even number of bars (e.g. 2 and and half bars at the current meter!) then the engine will pad to silence to the end of the nearest bar boundary.

- **vff**: Velocity Force Factor (optional, any integer value)
 - Note: Velocity Force Factor is an **INTEGER % SCALE FACTOR** applied to the velocity, where the velocity is first determined from the velocity envelopes. For example, in a pattern [dur][.vff[-vffr]] 60.50 means a note of length 60 WME time units with 50% VFF scaling, 30.15 means a note of length 30 WME time units with 15% VFF scaling, and 120.100-20 means a note of length 120 WME time units and with 100% VFF scaling with a range of 20%.
 - The scaled pattern note velocity can never be any less than 1.
 - The scaled pattern note velocity can never be any greater than 127.
 - Note that a pattern note velocity scaling factor of 0 always returns minimum MIDI velocity, which is 1. You cannot use a factor of 0 to "completely mute" a note.
 - Example: A Generator's velocity (min) envelope has a value of 100, with a velocity range envelope value of 20 - the velocity for a given note is selected randomly in that range, to be (say) 104. Where defined, the pattern note's Velocity Force Factor is used to scale that velocity, to a final value from 1 to 127. e.g. if the Velocity Force Factor is 50 (%), in this example we'd chose a final velocity value of: $104 * 50 (\%) = 52$. The Velocity Force Factor Range value, if defined, applies a range to the scaling factor.
- **vffr**: Velocity Force Factor Range (optional, any integer

value and used in conjunction with the above).

- **scaleint**: Scale interval (not present for Rhythm patterns).
 - B rule: interpreted as being the first valid note in current Generator's Scale Rule; i.e. the first element in the Generator's Current Scale Rule which does not have a zero value. "1" is therefore usually the root note (c.f. the Pitch parameter). "0" has the special meaning of indicating a "REST" for the note duration.
 - F rule: distance in semitones up from the root note (so "0" means the root note). E.g. if F60 (Middle C), then a pitch value of 5 means MIDI pitch 65. A pitch value of -1 is a rest.

Pattern Syntax Examples:

Key: To aid understanding we use the following color coding: **durations**, **velocity values** and **scale intervals**.

Copy and paste these into Wotja to try them out.

- **Both (B):**
<100 B 60.15-30 1 60 2 60.127 3 15 7>
- **Rhythm (R):**
<100 R 60 60 60.127 60>
- **Fixed (F):**
<100 F60 60.127 1 60 4 30 5 15.70-120 7>
<100 F58 15 1 45 -1 15 1 45 -1 15 1 45 -1>
 - NB: Plays note with pitch 58 (or MIDI patch 59 on Ch10): note on, note off, note on, note off etc.<100 F40 15 1 15 7 15 6 15 13 15 2 15 8 15 4 15 11 15 13 15 2 15 8 15 2 15 2 15 8 15 4 15 14>
 - NB: Plays a series of notes for a whole bar (or patches in the drum kit on Ch10) starting at base pitch 40, each one a 16th note...

🎵 ■ Generator - Follower

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

A "Follower" Generator is used in a call-response manner, allowing it to follow the behavior of other Generators according to parameters in the "Following" Parameter Group.

In the Cell, select the Generator which you want your "Following" Generator to follow - you may follow any Generator of any type. You may even follow a Generator that follows another Generator that follows another Generator... provided that you don't try to define a cyclic dependency which loops back to the current Generator! If you *don't* specify a Generator to follow then it won't play.

Important: If you follow a Generator that is using the [Chording](#) parameter (i.e. to create more than one note), then only the first note in the chord is followed.

Parameter Group - Follower

- ■ [Follow Generator?](#)
- ■ [Percent](#)
- ■ [Strategy](#)
- ■ [Units](#)
- ■ [Delay Generator?](#)
- ■ [Delay Range](#)
- ■ [Shift Interval](#)
- ■ [Shift Interval Range](#)

[↑](#) ■ [Follow Generator?](#)

This parameter simply allows you to select another Generator *in the Cell* for your "Following" Generator to follow.

[↑](#) ■ [Percent](#)

This parameter sets the percentage of notes that the Followed

Generator responds to so as to emit a note. Set to 100 if you want the Following Generator to emit a note for every note played by the Followed Generator. Set to a smaller value if you want to thin-out the notes played by the Following Generator. This is also useful for building networks of chords, where if you have a number of Following Generators all following either each other or one main Generator, and if those Following Generators have the Percent Parameter to less than 100, then sometimes you will hear dense chords, and sometimes you will hear thinner chords.

[↑](#) ■ Strategy

This parameter defines the pitch to use for a note generated by the Following Generator.

Note: The setting of the Rule [Harmonize?](#) flag is important for this parameter. If set to "Yes" then notes will only be generated that are available in the [Scale Rule](#) and [Next Note Rule](#) AND that harmonize according to the relevant [Harmony Rule](#). If set to "No" then that is not enforced, something that is particularly important when using Semitone Shift, below. See also Cell [Harmonize With Me](#) and Cell [Harmonize With Others](#) which govern how Cells compose with each other.

The available values are:

- *Chordal Harmony*
This causes the Following Generator to choose notes which respect the currently defined Scale, Harmony and Next Note Rules.
- *Interval Within Scale Rule*
This causes the Following Generator to choose notes which are offset from the followed note, such they are at an interval within the Scale Rule, defined as a value randomly selected between the Shift / Interval and Shift / Interval plus Shift / Interval Range values.

For example, if these values are 1 and 2 respectively, then each time a note is chosen, it will be between 1 and $(1+2)=3$ Scale Rule intervals up from the Followed Generator's note. It is important to understand that this refers to the non-zeroed elements in the current Scale Rule, in other words only those notes that are available within the Scale Rule.

So, in our example, if we were using a Major Scale Rule, and if the followed note were C4 (Middle C), and if Wotja chose a value of 2 as its random value; then the played note would be E4 (Middle C), which is the second note up from Middle C within the Major Scale Rule.

- *Semitone Shift*

This causes the Following Generator to choose notes which are offset up from the followed note, such they offset from the followed note by a number of semitones which is a value randomly selected between the Shift / Interval and Shift / Interval plus Shift / Interval Range values.

For example, if these values are 1 and 2 respectively, then each time a note is chosen, it will be between 1 and $(1+2)=3$ semitones up from the Followed Generator's note.

So, in our example, if we were using a Major Scale Rule, and if the followed note were C4 (Middle C), and if Wotja chose a value of 3 as its random value; then the played note would be D#4 (Middle D#), which is the third semitone note up from Middle C. This value is used even though it is not in the current scale rule, provided of course the "Harmonize?" flag noted above is set to "No". If you want to achieve something similar but with the "Harmonize?" flag set to "Yes", then for the shifted note(s) required, use a [Scale Rule](#), [Harmony Rule](#) and [Next Note Rule](#) (for the relevant Generator) that allow those note(s) to be chosen.

[↑](#) ■ Units

You define the Unit of Measure by which the Delay and Delay Range

parameters are interpreted. This may be one of the following values:

- *Seconds (thousandths of a)*
The parameters including Duration are all interpreted as being in thousandths of a second (i.e. Milliseconds). So, a Duration value of 1000 means one second.
- *Beats (60ths of a)*
The parameters including Duration are all interpreted as being in 60ths of a beat. In Wotja a Beat is defined as being one crotchet; you get 3 beats in a bar of 4:4 music. So, a Duration value of 60 means one beat. A Duration value of 30 means a quaver. A Duration value of 20 means a triplet. A Duration value of 15 means a semi-quaver. A Duration value of 240 means 4 beats (which is a full bar if the Cell Meter is 4:4).
- *Full seconds*
The parameters including Duration are all interpreted as being in seconds. So, a Duration value of 10 means ten seconds.

[↑](#) ■ Delay

This defines the minimum delay after which the Following Generator will play a followed note. The actual value chosen for each note is a value between Delay, and Delay plus the Delay Range. Each and every note composed for this Following Generator will have a note whose delay is separately calculated.

[↑](#) ■ Delay Range

This is combined with the Delay parameter, to determine the delay after which the Following Generator will play a followed note. The actual value chosen for each note is a value between Delay, and Delay plus the Delay Range. Each and every note composed for this Following Generator will have a note whose delay is separately calculated.

[↑](#) ■ Shift/Interval

Used when the [Strategy](#) is either Interval Within Scale Rule or

Semitone Shift.

This causes the Following Generator to choose notes which are offset in some way from the followed note, according to the [Strategy](#); where the offset is defined as a value randomly selected between the Shift/Interval and Shift/Interval plus Shift/Interval Range values.

[↑](#) ■ Shift/Interval Range

This represents the "*Shift/Interval Range*", and is used when the [Strategy](#) is either Interval Within Scale Rule or Semitone Shift.

This causes the Following Generator to choose notes which are offset in some way from the followed note, according to the Strategy; where the offset is defined as a value randomly selected between the Shift/Interval and Shift/Interval plus Shift/Interval Range values.

🎵 ■ Generator - Repeater

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

"Repeater" Generators are like "Rhythmic" Generators, with the added feature that they can be defined to repeat notes that they have composed in previous bars, according to rules defined in the Repeat Parameter Group. When not repeating previous bars, Repeater Generators compose as if they were of [Rhythmic](#) Generator Type.

Parameter Group - Repeater

- ■ [Repeat Generator?](#)
- ■ [Percent](#)
- ■ [Bars](#)
- ■ [Bars Range](#)
- ■ [History Generator?](#)
- ■ [History Range](#)

[↑](#) ■ [Repeat Generator?](#)

You define the name of the Generator from which you would like, from time-to-time, to repeat past bars of music. If you simply want to repeat bars played in the past for the current Generator, simply select the magic value of '?', which is also the default value.

[↑](#) ■ [Percent](#)

When the Generator starts composing a new bar, it takes a look at this parameter value. This defines for what percent of the time the Generator should repeat previously-composed music. Set this parameter to 100 if you always want past composed music to be repeated (where available!); set to 0 if you never want past music repeated by this Generator. When the Generator doesn't choose to

repeat past data it composes a new bar of music were it to be of Rhythmic Generator Type.

[↑](#) ■ Bars

Defines the number of bars for which the Generator should repeat a past-composed chunk of music. The actual value chosen is somewhere between Bars and Bars + Bars Range.

[↑](#) ■ Bars Range

Defines the upper limit of the number of bars for which the Generator should repeat a past-composed chunk of music. The actual value chosen is somewhere between Bars and Bars + Bars Range.

[↑](#) ■ History

Defines the number of bars in the past, from which the Generator will choose the past-composed music to repeat. The actual value chosen is somewhere between History and History + History Range.

[↑](#) ■ History Range

Defines the upper limit of the number of bars in the past, from which the Generator will choose the past-composed music to repeat. The actual value chosen is somewhere between History and History + History Range.

🎵 ■ Generator - Listener

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

A "Listener" Generator detects a monophonic (not polyphonic) incoming MIDI note event on its MIDI channel and presents it as a virtual composed note. It will only detect a subsequent note if it first receives a note off for the previous note.

To generate sound via the [WAE](#) it needs to be followed by a [Follower Generator](#). Used like this, Listener Generators allow you to create simple hyper-instruments where external input can influence the music that is generated. Such music is also referred to as **Adaptive Generative Music [AGM]**.

Listener Generators do not have any special parameters, which is why there is no special Parameter Group, and nor do they require any use of scripting. However, they can be used with [Interomorphic Wotja Script](#) to create [more advanced hyper-instruments](#).

When an incoming MIDI note is detected, e.g. C60, then:

1. If the Generator has a [Chords Depth](#) value of 1 and [Chords Range](#) value of 0 (both default values) it echoes a single virtual note that can be "heard" only by a [Follower Generator](#) - this is used to create an actual note.
2. If the combined Chords Depth or calculated Chords Depth/Chords Depth Range value is >1 then the first note is still silent (and echoed as above and so can be followed, too), but the composed chording notes will also play (e.g. through the [WAE](#)) and Generators can follow those notes, too.

The virtual note created by a Listener Generator is pitch shifted, if necessary, to fit within the band of pitch values set by its Pitch and Pitch

Range parameters (see [Rhythmic Generator](#)).

Playing with a Listener Generator:

- Ensure Wotja has been setup, as below.
- Ensure your Listener Generator is on the MIDI channel you are expecting to detect MIDI notes.
- Either Follow that Listener Generator with a Follower Generator (1 above) and maybe use that Generator's Chording parameters to play chords, OR set its [Chording](#) parameters to >1 (as in 2 above).
- Press play in Wotja app to start your Cell and for the Listener Generator to detect the MIDI notes fed into it (and remember that the Listener Generator will only detect a subsequent note if it first receives a note off for the previous note!).

Wotja Setup:

MIDI emitting app or MIDI Device feeding MIDI notes into the Wotja app

- Connect the MIDI Device or load the MIDI app (e.g. for iOS [MIDIKeys](#) [you must have CoreMIDI Port set to 'Virtual Port'] or e.g. for macOS [Mini Keys](#)). Ensure you have it set up to send MIDI notes on the Virtual MIDI channel you want, e.g. MIDI Channel 1 or Omni etc. (or just check what it is sending using some kind of MIDI Monitoring app).
- Once the Device is connected or the App has loaded you will likely need to restart Wotja for it to be detected.
- Then in Wotja > [Settings: General](#), select the [MIDI Input Devices](#) button which takes you to the MIDI Input Devices screen:
 - Toggle on the relevant Channels for your desired MIDI Input Device(s), e.g. 'Network Session 1' on iOS, or e.g. iOS 'MIDIKeys' or e.g. macOS 'Mini Keys' etc.
- To hear sound in Wotja, ensure you have the "[WAE for Sounds & FX](#)" setting toggled on in [Settings: General](#). Note that when playing through the [WAE](#) the latency you will experience is mostly affected by both the [Audio Block Size](#). When that is 1024 samples the latency is about 1 second; when set to its minimum value of 256 samples then it is about 1/4 of a second. You may also wish to

experiment with the MIDI Latency setting.

- **Once you have done the above, try this example:**

1. Create a New Text-only mix ([Documents](#) > [Add New](#) > Mixes > Text Only).
2. Add this [Template](#) to an empty cell - [WME Generator Types](#) > Listener + Follower (this is a good starting point).
3. Tap the play button in Wotja to start the mix playing (it will be silent).
4. Tap tap keys on your MIDI Device or MIDI App and you should hear Wotja play that note!

🎵 ■ Generator

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The "Generator" Parameter Group includes a handful of the most basic parameters used by all Generators types.

Parameter Group - Generator

- ■ [Name](#)
- ■ [Generator Type](#)
- ■ [Mute](#)
- ■ [MIDI Channel](#)
- ■ [Pitch](#)
- ■ [Pitch Range](#)
- ■ [Patch](#)
- ■ [Send MIDI Bank/Patch?](#)

[↑](#) ■ [Name](#)

Every Generator in a Wotja file has a unique name. You can use any name you want, provided it is not empty, and provided it is not a single question mark (which has a reserved meaning for use with Rules, which you will find out about later).

[↑](#) ■ [Generator Type](#)

See [Generator Types](#).

[↑](#) ■ [Mute](#)

Toggle this setting (Yes/No) to mute or unmute the Generator. Certain

Generator Types might take some time to respond, depending on how far in advance their notes are composed.

When the keyboard focus is on the Mute cell, you have various extra menu options available to you in the "Control" Menu. These are as follows:

- Solo Generator
- Unmute All Generators
- Mute All Generators

If you hold down the *ctrl* key when you click on the mute cell, you will toggle all other Generator's mute states, without changing the mute state of the Generator that you *ctrl-click* on. This can be very handy.

[↑](#) ■ MIDI Channel

A Generator emits data on a MIDI Channel. MIDI channels are numbered from 1 to 16. The default MIDI channel for a Generator is actually MIDI channel 0 - which tells the WME to assign a free channel from 1 to 16 automatically, as best it can. MIDI channel 10 is always reserved for percussion sounds, such as drum sounds or other untuned sound.

[↑](#) ■ Pitch

Set the Pitch to be the minimum pitch for which you want your Generator to compose. The WME will ensure that it composes no notes less than this pitch value.

[↑](#) ■ Pitch Range

Set the range of pitches in semitones above the Pitch which can be used for composition. The WME will ensure that it only composes notes with pitches between Pitch and Pitch + Pitch Range.

Note: This has a minimum value of 11 to ensure that notes will be generated *whatever* the Root note of the mix is set to.

[↑](#) ■ Patch

Each Generator is assigned a Patch and that Patch value is used whenever it generates a MIDI note.

Important: The Patch parameter is not used by a [WAE](#) synth network, e.g. a [Wavetable Unit](#), where SF2 and patches must be manually selected. It *is* useful, however, when sending MIDI to a 3rd Party MIDI Synth such as a [Wotja-hosted Plug-in](#), a 3rd Party DAW or an external MIDI sound module.

Other Notes

In general, the WME does not emit any MIDI bank select CC information for a Generator before it emits the Patch Change MIDI event. However, you *can* force the WME to emit such information, by typing-in a special format patch value; where you type-in the patch in the format: *patch.msb.lsb*, for example:

98.53.4

In this example, the WME will emit bank select CCs for both MSB and LSB according to the settings you supply (53 and 4 respectively, in this case). If you don't specify a value for the lsb, then the WME will only emit a Bank Select MSB CC (CC number 0). If you supply the lsb, then the WME will also emit a Bank Select LSB CC (CC number 32).

[↑](#) ■ Send MIDI Bank/Patch?

Not all software synthesizers for your favorite sequencer like having Patch data supplied to them via a Patch Change MIDI event. If this is the case, simply change the *Send MIDI Bank/Patch?* parameter to *No* (unchecked), and the WME won't send any MIDI patch change events.

🎵 ■ Generator - Rule Objects

How do I edit these parameters? See the [Generator: Rule Editor](#).

The Generator Rule Object parameters govern how your Generator works. The Rules themselves are edited in the relevant [Rule Editor](#). See [Rule Objects](#).

Parameter Group - Rules

- ■ [Scale](#)
- ■ [Harmony](#)
- ■ [Rhythm](#)
- ■ [Next Note](#)
- ■ [Harmonize?](#)
- ■ [Generator Root](#)

↑ ■ [Scale Rule](#)

See also: [Rule Editor](#) and [See Rule Objects; Standard Rule Values](#)

Each Generator composes according to an [Wotja Music Engine \(WME\) Scale Rule](#). The Rule defines both the notes in the musical scale that are available for use and the note probability weightings.

Scale Rules can be selected from the [Standard Rule Values](#) list (below) or can be a custom Rule you have created and named as you want.


Tip: If you are getting unexpected results, remember that the notes that can be chosen by the WME ALSO depend on the [Harmony Rule](#) and [Next Note Rule](#) in use, and, as relevant, the settings of the "Harmonize?" and/or [Harmonize with Me/Others](#) checkboxes.

Scale Rules can be set at a Generator, Cell or Mix level - see the [Rule Editor](#) for details.

- **Scale Rule elements: 24**

- These elements represent the semitone distance from the Root note defined for this Cell, these being: P1 (root), m2, M2, m3, M3, P4 (perfect 4th), b5, P5 (perfect 5th), m6, M6, m7, M7, P8 Oct (octave), m9, M9, m10, M10, P11 (perfect 11th), m125, P15 (perfect 13th), m14, M14, m15, M15.
- Element values: % probability weighting
- *Note 1:* If opening an "old" rule that contains elements in just one octave range, we automatically extend it by duplicating those elements into a higher octave, and;
- *Note 2:* We wrap around the two octaves, matching Pitch Minimum as well as we can:
 - If Generator has pitch minimum of B, but Root is C; wrap around the rule starting from the C below.
 - If Generator has pitch minimum of D, but Root is C; wrap around the rule starting from the D below.

Included Scale Rules

The "Standard Rule" items below are included in Wotja. To select one of them see the [Rule Editor](#) > [Toolbar Action button](#)  > "Use Standard Rule Value" menu item.

Note: Rule objects can be referenced in [Wotja Script](#).

Scale Rule Name	Element Values
Default	1 0 0.5 0 1 0.5 0 1 0 0.5 0 0.5
All Scale Major	1 0 1 0 1 1 0 1 0 1 0 1
All Scale Minor Natural	1 0 1 1 0 1 0 1 1 0 1 0
All Scale Minor Harmonic	1 0 1 1 0 1 0 1 0 0 0 1
Chord Major triad	1 0 0 0 1 0 0 1 0 0 0 0
Chord Major sixth	1 0 0 0 1 0 0 1 0 1 0 0
Chord Dominant seventh	1 0 0 0 1 0 0 1 0 0 1 0
Chord Major seventh	1 0 0 0 1 0 0 1 0 0 0 1
Chord Augmented triad	1 0 0 0 1 0 0 0 1 0 0 0
Chord Augmented seventh	1 0 0 0 1 0 0 0 1 0 1 0
Chord Minor triad	1 0 0 1 0 0 0 1 0 0 0 0

Chord Minor sixth	1 0 0 1 0 0 0 1 0 1 0 0
Chord Minor seventh	1 0 0 1 0 0 0 1 0 0 1 0
Chord Minor-major seventh	1 0 0 1 0 0 0 1 0 0 0 1
Chord Diminished triad	1 0 0 1 0 0 1 0 0 0 0 0
Chord Diminished seventh	1 0 0 1 0 0 1 0 0 1 0 0
Chord Half-diminished seventh	1 0 0 1 0 0 1 0 0 0 1 0
Chord Augmented major seventh	1 0 0 0 1 0 0 0 1 0 0 1
Chord Seven-six	1 0 0 0 1 0 0 1 0 0 1 0
Chord Mixed-third	1 0 0 1 1 0 0 1 0 0 0 0
Chord Suspended fourth	1 0 0 0 0 1 0 1 0 0 0 0
Chord Dominant ninth	1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0
Chord Dominant eleventh	1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 1 0 0 0 0 0 0 0
Chord Dominant thirteenth	1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 1 0 0 0 1 0 0 0
Chord Seventh minor ninth	1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0
Chord Seventh sharp ninth	1 0 0 0 1 0 0 1 0 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0
Chord Seventh augmented eleventh	1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0
Chord Seventh diminished thirteenth	1 0 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 1 0 0 1 0 0 0 0
Chord Add nine	1 0 0 0 1 0 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0
Chord Add fourth	1 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
Chord Add sixth	1 0 0 0 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Chord Six-nine	1 0 0 0 1 0 0 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0

- These elements represent in semitones the possible harmonies available, these being: P1 (root), m2, M2, m3, M3, P4 (perfect 4th), b5, P5 (perfect 5th), m6, M6, m7, M7, P8 Oct (octave), m9, M9, m10, M10, P11 (perfect 11th), m12, P12, P15 (perfect 13th), m14, M14, m15, M15.
- Element values: % probability weighting
- *Note 1:* For single note drones to work as intended the the harmony rule MUST include the octave element, too (e.g. Standard Rule "P1 and P8").
- *Note 2:* When opening most older mixes that uses an "old" 12 element rule we automatically extend it by duplicating into a higher octave.
- If harmonic distance is greater than 2 octaves, wrap around the rule.
- **Example:**
 - Imagine that you have three Generators, called X, Y and Z.
 - Imagine that at some time in the Cell, the WME has already chosen to play note C for Generator X, and note G for Generator Y. At that time, the WME thinks about composing a note for Generator Z. It looks at the notes available for it to compose, and adjusts the probabilities of choosing each of those notes, by applying the Harmony Rule element values for each of those two composed notes which are active at time (i.e. notes C and G).
 - Harmonies are always calculated based on a rising direction up from the Cell Root. So, if the Cell Root is B and the WME is considering if it can compose note D for Generator Z, and it looks at the note it needs to harmonize with which is note C for Generator X; then Wotja figures-out the Harmony Rule values for Generator Z from the C of Generator X, up and through the Octave (i.e. E, F, F#, G, G# etc.).

Included Harmony Rules

The "Standard Rule" items below are included in Wotja. To select one

or them see the [RULE EDITOR](#) > [TOOLBAR ACTION BUTTON](#) (B) > "Use Standard Rule Value" menu item.

Note: Rule objects can be referenced in [Wotja Script](#).

Harmony Rule Name	Element Values
Default	.35 0 0 .65 .85 1 .65 .65 .65 .1 .1 0 .35
All (one octave)	1 1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0
All (two octaves)	1 1
P1	1 0
P1 and P8	1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0

↑ ■ Rhythm Rule

See also: [Rule Editor](#) and [See Rule Objects; Standard Rule Values](#).

Each Generator composes note durations according a Rhythm Rule. The Rule defines how likely it is that a note for that Generator has a certain duration. This rule is combined with other factors, including the remaining length of time a Generator has left in the current bar (the WME tries to avoid having notes from non-Ambient Generators drifting across bar boundaries).

Rhythm Rules can selected from the [Standard Rule Values](#) list (below) or can be a custom Rule you have created and named as you want.

Rhythm Rules can be set at a Generator, Cell or Mix level - see the [Rule Editor](#) for details.

- **Rhythm Rule elements: 12**

- These elements represent the permitted note durations, these being: 1, 1/2., 1/2, 1/4., 1/4, 1/8., 1/8, Triplet, 1/16
- Element values: % probability weighting

Included Rhythm Rules

The "Standard Rule" items below are included in Wotja. To select one of them see the [Rule Editor](#) > [Toolbar Action button](#) (B) > "Use Standard Rule Value" menu item.

(perfect 11th), m125, P15 (perfect 13th), m14, M14, m15, M15

- Element values: % probability weighting
- Note: If opening a mix that uses an "old" 12 element rule, we automatically extend it by setting the "upper range" items to zero.

Included Next Note Rules

The "Standard Rule" items below are included in Wotja. To select one of them see the [Rule Editor](#) > [Toolbar Action button](#) B > "Use Standard Rule Value" menu item.

Note: Rule objects can be referenced in [Wotja Script](#).

Next Note Rule Name	Element Values
Default	0.25 1 1 .7 .3 .2 .1 .1 .1 .1 .05 .02 .05 0 0 0 0 0 0 0 0 0 0 0
All (one octave)	1 1 1 1 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0
All (two octaves)	1 1

[↑](#) ■ Harmonize?

The default value for this parameter is "Yes". What that means is that notes composed by this Generator will be considered for harmonization with other Generators (including itself, if it uses [Chording](#)).

If you *do not* want A) other Generators to harmonize with the notes composed by this Generator, or B) for it not to harmonize with its own notes when chording (i.e. within Chords), then set it to "No".

See also: [Follower](#) / [Follower Strategy](#) and [Chording](#) / [Chording Strategy](#).

[↑](#) ■ Generator Root

Normally, you want your Generator to use the Cell Root. This is represented by the value ? However, sometimes you really want to

represented by the value : However, sometimes you really want to

force your Generator to use a different Root note; in which case, set the Generator Root to be whatever value suits.

This allows you to work-around the following sort of problem:

Imagine that you have a sampler, where you load-up a variety of loops against MIDI note C3 up to D3. To have your Cell drive this from a Rhythmic Generator such that the sounds you hear are not affected by changes to the Cell Root, you should set the Generator Root to e.g.

C3 and your Generator will then be unaffected by changes to the Cell Root. Note that in this specific example, it would probably be a good idea to set the Harmonize? Flag to No.

🎵 ■ Generator - Phrasing

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The Phrasing parameters are used in certain situations by most of the generators with the exception of the TTM Generator, which has its own special Phrasing parameters.

Parameter Group - Phrasing

- ■ [Note Rest %](#)
- ■ [Phrase Length](#)
- ■ [Phrase Length Range](#)
- ■ [Phrase Gaps](#)
- ■ [Phrase Gaps Range](#)

[↑](#) ■ [Note Rest %](#)

This value defaults to zero. If not zero, then the defined percentage of notes that would otherwise be played by your Generator will instead be treated as a rests of the same duration. This is very useful for making any Generator sound sparser. Give it a go: this parameter is very powerful, and applies to **all** Generator Types.

[↑](#) ■ [Phrase Length](#)

Set this to define the shortest possible sequence of notes that your Generator will compose in sequence. The Generator composes a sequence of notes, followed by a sequence of rests. The length of each sequence of notes is governed by this and the Phrase Length Range parameter.

[↑](#) ■ [Phrase Length Range](#)

This value defines the upper limit to the number of notes that your Generator will compose in sequence. For example, if the Phrase Length is 3, and the Phrase Length Range is 25, then the minimum phrase will be 3 notes, and the maximum phrase length will be $(3+25) = 28$ notes.

[↑](#) ■ Phrase Gaps

Set this to define the shortest possible sequence of rests that your Generator will compose. Your Generator composes a sequence of notes, followed by a sequence of rests. The length of each sequence of rests is governed by this and the Phrase Gaps Range parameter.

[↑](#) ■ Phrase Gaps Range

This value defines the upper limit to the number of rests that your Generator will compose in sequence. For example, if the Phrase Gaps is 3, and the Phrase Gaps Range is 25, then the minimum phrase will be 3 rests, and the maximum phrase length will be $(3+25) = 28$ rests.

🎵 ■ Generator - Chording

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The Chording parameters let you configure *any* Generator Type to generate chords automatically.

In outline, use the *Depth* and *Depth Range* values to define the "Chording Depth"; which is the number of notes that will play at any one time for a given Generator. The first note in any chord is composed according to the normal mechanism for the Generator Type; additional notes that cause a chord to be built-up may be generated automatically according to the Chording parameters.

Parameter Group - Chording

- ■ Depth
- ■ Depth Range
- ■ Percent
- ■ Strategy
- ■ Units
- ■ Delay
- ■ Delay Range
- ■ Shift/Interval
- ■ Shift/Interval Range
- ■ Pitch Offset
- ■ Velocity Factor

↑ ■ Depth

Specify the minimum *Depth* of chord that you want your Generator to play with. A value of 1 will mean that the Generator will not chord (unless the *Depth Range* parameter is greater than zero).

The *Depth* defines the number of notes that are played by the Generator at any one time.

↑ ■ Depth Range

Specify the relative maximum *Depth* of chord that you want your Generator to play with. A value of 0 means that whenever the Generator is played, it will play a number of notes equal to the *Depth*. A value of one or more means that whenever the Generator is played, it will play a number of notes equal to a randomly selected value between the *Depth* and the *Depth* plus the *Depth Range*.

↑ ■ Percent

This parameter tells the Generator the percentage chance that it should actually emit any given note in the chord (after the first note, of course!). Set to 100 if you want the Chording Generator to always emit a note for every note played by the Generator. Set to a smaller value if you want to thin-out the notes played within the chord. This allows you to create chords of varying depth; sometimes dense, sometimes thin.

↑ ■ Strategy

This parameter tells the Generator what it should do when it decides the pitch to use for a note generated within a chord.

Note: The setting of the Rule [Harmonize?](#) flag is important for this parameter. If set to "Yes" then notes will only be generated that are available in the [Scale Rule](#) and [Next Note Rule](#) AND that harmonize according to the relevant [Harmony Rule](#). If set to "No" then that is not enforced, something that is particularly important when using Semitone Shift, below. See also Cell [Harmonize With Me](#) and Cell [Harmonize With Others](#) which govern how Cells compose with each other.

The available values are:

- *Chordal Harmony*
This causes the Generator's chord notes to be selected according to the currently defined Scale, Harmony and Next Note Rules.
- *Interval Within Scale Rule*

This causes the Generator's chord note to be selected offset from the followed note, such that it is at an interval within the Scale Rule beyond the previous note in the chord, defined as a value randomly selected between the Shift / Interval and Shift / Interval plus Shift / Interval Range values.

For example, if these values are 1 and 2 respectively, then each time a note is chosen within the chord, it will be between 1 and $(1+2)=3$ Scale Rule intervals up from the previous note in the chord. It is important to understand that this refers to the non-zeroed elements in the current Scale Rule, in other words only those notes that are available within the Scale Rule.

So, in our example, if we were using a Major Scale Rule, and if the first note in the chord were C4 (Middle C), and if the Generator chose a value of 2 as its random value; then the played note would be E4 (Middle C), which is the second note up from Middle C within the Major Scale Rule.

- *Semitone Shift*

This causes the the Generator's chord note to be selected offset up from the previous note in the chord, such that it is offset from the previous chord note by a number of semitones which is a value randomly selected between the Shift / Interval and Shift / Interval plus Shift / Interval Range values. A note chosen in this way ignores the current Scale Rule.

For example, if these values are 1 and 2 respectively, then each time a note is chosen, it will be between 1 and $(1+2)=3$ semitones up from the previous note in the chord.

So, in our example, if we were using a Major Scale Rule, and if the previous note in the chord were C4 (Middle C), and if the Generator chose a value of 3 as its random value; then the played note would be D#4 (Middle D#), which is the third semitone note up from Middle C. This value is used even though it is not in the current scale rule, provided of course the "Harmonize?" flag noted above is set to "No". If you want to achieve something similar but with the "Harmonize?" flag set to "Yes", then for the shifted

note(s) required, use a [Scale Rule](#), [Harmony Rule](#) and [Next Note Rule](#) (for the relevant Generator) that allow those note(s) to be chosen.

↑ ■ Units

You define the Unit of Measure by which the Delay and Delay Range parameters are interpreted. This may be one of the following values:

- *Seconds (thousandths of a)*
The parameters including Duration are all interpreted as being in thousandths of a second (i.e. Milliseconds). So, a Duration value of 1000 means one second.
- *Beats (60ths of a)*
The parameters including Duration are all interpreted as being in 60ths of a beat. In the WME a Beat is defined as being one crotchet; you get 3 beats in a bar of 4:4 music. So, a Duration value of 60 means one beat. A Duration value of 30 means a quaver. A Duration value of 20 means a triplet. A Duration value of 15 means a semi-quaver. A Duration value of 240 means 4 beats (which is a full bar if the Cell Meter is 4:4).
- *Quantized Beats (60ths of a)*
This works the same way as *Beats (60ths of a)* except that where the *Delay* has a special value of 10, 15 or 20; the delay is interpreted in a special way that is very useful for some breakbeat-based music. Specifically, in this case, the calculated value for the delay is rounded to the nearest sub-multiple of the *Delay* value. So, for example, if the engine calculates a value of 43, and if *Delay* is 20, the used value for the delay is actually 40 (which is the nearest multiple of 20).

↑ ■ Delay

This defines the minimum delay after which the Chording Generator will play a followed note. The actual value chosen for each note is a value between Delay, and Delay plus the Delay Range. Each and

every note composed for this Chording Generator will have a note whose delay is separately calculated.

[↑](#) ■ Delay Range

This is combined with the Delay parameter, to determine the delay after which the Chording Generator will play a followed note. The actual value chosen for each note is a value between Delay, and Delay plus the Delay Range. Each and every note composed for this Chording Generator will have a note whose delay is separately calculated.

[↑](#) ■ Shift/Interval

Used when the Strategy is either Interval Within Scale Rule or Semitone Shift.

This causes the Chording Generator to choose notes which are offset in some way from the followed note, according to the Strategy; where the offset is defined as a value randomly selected between the Shift / Interval and Shift / Interval plus Shift / Interval Range values.

[↑](#) ■ Shift/Interval Range

This represents the "*Shift/Interval Range*", and is used when the Strategy is either Interval Within Scale Rule or Semitone Shift.

This causes the Chording Generator to choose notes which are offset in some way from the followed note, according to the Strategy; where the offset is defined as a value randomly selected between the Shift / Interval and Shift / Interval plus Shift / Interval Range values.

[↑](#) ■ Pitch Offset

This parameter defines the amount that the pitch of each note in the chord should be offset, in semitones, from the previous note in the chord; the actual value selected might be overridden according to the various rules that apply to the Generator, but in general, this parameter allows you to "shape" a chord to have a given range of pitch values. In combination with the *Delay*-related parameters, this allows you to create some very interesting arpeggiation effects.

For example, a value of +12 would tend to space each note in the chord by a range of 12 semitones (which is one octave), with each subsequent value in the chord being higher in pitch than the previous.

For example, a value of -12 would tend to space each note in the chord by a range of 12 semitones (which is one octave), with each subsequent value in the chord being lower in pitch than the previous.

[↑](#) ■ Velocity Factor

This parameter allows you to specify the range of relative velocities for the notes in a chord. Each subsequent note in the chord is the defined percentage louder (for a positive value) or quieter (for a negative value) than the previous note in the chord. A value of zero means that all notes in the chord are played with the same velocity.

The Generator velocity envelope values are ignored when this parameter is applied.

For example, a value of -30 would tell the Generator to generate its chords such that each auto-chorded note is 30% quieter than each preceding note in the chord; giving a noticeable tailing-off effect.

🎵 ■ Generator - Articulation

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

Important: A Generator's Articulation parameters apply to any/all notes it composes, be that via e.g. generative parameters, patterns or text-to-music.

The Generator Articulation parameters define the percentage of the duration of composed note, i.e. they determine how long a composed note actually plays for. A long time ago the WME used to compose notes to be played "Legato" (no gap between one note and the next) - this parameter allows you to play them with a shorter duration, e.g. staccato.

Parameter Group - Articulation

- ■ [Minimum](#)
- ■ [Range](#)
- ■ [Change](#)
- ■ [Change Range](#)

[↑](#) ■ [Minimum](#)

1 is very staccato and 100 is legato (the new default).

[↑](#) ■ [Range](#)

Max articulation is the value of Articulation (min) + Articulation range, and is used in combination with the variation values (below).

[↑](#) ■ [Change](#)

The minimum variation in staccato between notes, c.f. other parameters that adopt the min + range approach.

[↑](#) ■ [Change Range](#)

The range in variation of staccato between the notes (in addition to the min).

🎵 ■ Generator - Envelopes

How do I edit these parameters? See the [Generator: Envelope Editor](#).

Overview

See also the [Envelope Editor](#).

Generator Envelopes are supported for a number of parameters. Envelopes work in the same way for all of these, so they are all grouped here.

Each envelope is a collection of up to 100 data points. A Cell starts with the value at the left side of the envelope, and as it progresses, eventually ends up with the value from the far right of the envelope.

You can draw direct on to the envelope with your mouse.

Alternatively, you may use one of the various powerful envelope editing tools that we have made available to you.

To use the envelope editing tools:

- Right-click (win) or ctrl-click (mac) on the envelope tool
- Select the option you want. e.g. random, curve up etc.
- Select the range using the mouse...
- Then: either press space or enter, or select pop-up envelope tool to apply to the selected range.
- Select freehand mode to return to the normal click-to-paint mode.

Parameter Group - Envelopes

- ■ Volume (User Envelope 1)
- ■ Pan (User Envelope 2)
- ■ Micro Vol Env (Envelope 1)
- ■ Velocity
- ■ Velocity Range
- ■ Velocity Change
- ■ Velocity Change Range

[↑](#) ■ Volume (User Envelope 1)

This envelope has a Default MIDI CC value of 7, which is the Volume controller CC.

This allows you to define an envelope that is used to emit a MIDI CC of your choice.

- *MIDI CC*
 - Use this to define the MIDI CC that you want to be emitted by this envelope. The default value is 7, which is the Volume controller.
- *Enabled?*
 - Use this to turn your envelope on or off.
- *Envelope*

[↑](#) ■ Pan (User Envelope 2)

This envelope has a Default MIDI CC value of 10, which is the Pan controller CC.

This allows you to define an envelope that is used to emit a MIDI CC of your choice.

- *MIDI CC*
 - Use this to define the MIDI CC that you want to be emitted by this envelope.
- *Enabled?*
 - Use this to turn your envelope on or off.
- *Envelope*

[↑](#) ■ Micro Vol Env (Envelope 1)

This is not actually an envelope, but it provides fine variation in the values generated by the User Envelope 1 above. Any value generated by this micro controller is added to the User Envelope 1 value, to give fine variation in any such envelope.

- *Range*

- The maximum amount of micro change in the User Envelope 1 that can be applied. Zero means off (which is the default).
- *Change*
 - The amount of micro change in the User Envelope that is applied by Wotja between “update” periods. The value drifts between zero (off) and the Range, changing by plus or minus the Change value each time.
- *Update*
 - The time in milliseconds between updates to the Micro User Envelope value. The actual value chosen is selected randomly each time, to be a value somewhere between Update and Update Range.
- *Update Range*
 - The upper limit of time between updates to the Micro User Envelope value. The actual value chosen is between Update and Update Range.

[↑](#) ■ Velocity Envelope

This allows you to define how the Velocity level is changed automatically for your Generator throughout playback of the Cell. The velocity defines relatively how loud each note is.

The actual Velocity value used at any point in the Cell is calculated as being a value somewhere in the range from Velocity, to Velocity plus the value of the Velocity Range envelope.

[↑](#) ■ Velocity Range Envelope

The value in this envelope is added to the value in the Velocity Envelope.

[↑](#) ■ Velocity Change Envelope

The velocity for any composed note can change by a value between Velocity Change Envelope value (VCE) and the VCE plus the Velocity Change Range Envelope value.

[↑](#) ■ Velocity Change Range Envelope

The value in this envelope is added to the value in the Velocity Change Envelope.

🎵 ■ Generator - Controllers

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The Generator Controllers parameters define some of the key MIDI controller values that are emitted by the Generator.

Parameter Group - Controllers

- ■ [Damper/Hold](#)
- ■ [Harmonic Content \(71\)](#)
- ■ [Reverb \(91\)](#)
- ■ [Chorus \(93\)](#)
- ■ [Damper Release](#)
- ■ [Portamento \(65\)](#)
- ■ [MIDI Channel Sharing](#)

[↑](#) ■ [Damper/Hold \(64\)](#)

Set this value to other than the default of "-1", if you want to emit a Damper/Hold MIDI controller (MIDI CC 64) at the specified value on this Generator's MIDI line. This is a funny MIDI controller, with only two states; in that a value of 64 or greater activates Damper/Hold, and any value of 63 or less means to turn it off! Leave this value at the default of "-1" if you don't want the Generator to emit any information for this MIDI controller.

[↑](#) ■ [Harmonic Content \(71\)](#)

Set this value to other than the default of "-1", if you want to emit a Harmonic Content MIDI controller (MIDI CC 71) at the specified value on this Generator's MIDI line. Leave this value at the default of "-1" if you don't want the Generator to emit any information for this MIDI controller.

[↑](#) ■ [Reverb \(91\)](#)

Set this value to other than the default of "-1", if you want to emit a Reverb MIDI controller (MIDI CC 91) at the specified value on this Generator's MIDI line. Leave this value at the default of "-1" if you don't want the Generator to emit any information for this MIDI controller.

[↑](#) ■ Chorus (93)

Set this value to other than the default of "-1", if you want to emit a Chorus MIDI controller (MIDI CC 93) at the specified value on this Generator's MIDI line. Leave this value at the default of "-1" if you don't want the Generator to emit any information for this MIDI controller.

[↑](#) ■ Damper Release

If you are using Damper/Hold (64), then you will find that your notes can start building-up and never decay! In which case, set the Damper Release parameter to "Yes", which tells the Generator to momentarily release the damper just before the end of every bar. This prevents build-up of notes and generally sounds wonderful.

[↑](#) ■ Portamento (65)

Set this value to other than the default of "-1", if you want to emit a Portamento MIDI controller (MIDI CC 65) at the specified value on this Generator's MIDI line. Leave this value at the default of "-1" if you don't want the Generator to emit any information for this MIDI controller.

[↑](#) ■ MIDI Channel Sharing

The default value of "Yes" means that this Generator can share its MIDI channel with other Generators. This is only considered if you have defined the MIDI Channel parameter for a Generator to be 0.

🎵 ■ Generator - Micro Controllers

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The Generator Microcontroller parameters (there are two - User C1 and User C2) allow you to define very powerful Microcontrollers to be associated with your Generator.

Microcontrollers are very powerful and you can think of them as built-in, highly configurable MIDI event generators. They can either synchronize to the tempo of your Cell, or you can let them run free-floating. Experiment with them - they can do a huge amount to make your music interesting and dynamic.

Tip: if you want to synchronize your Microcontroller to the time-base, so that your MIDI controller is synchronized to bar boundaries in your music, you'll need to use the Beat Cycle Length parameter.

Parameter Group - Micro Controllers

- ■ MIDI CC
- ■ Mode
- ■ Minimum
- ■ Range
- ■ Change
- ■ Change Range
- ■ Update
- ■ Update Range
- ■ Update Units
- ■ Beat Cycle Length
- ■ Phase Shift %

↑ ■ MIDI CC

This tells your Generator which MIDI controller (also referred to as the MIDI CC) to emit for this microcontroller, e.g. 11. When the Microcontroller is active, the Generator will emit values for this MIDI

controller that change at various times, with behavior that you define using the various parameters in this Parameter.

■ Mode

The Mode defines the shape of the waveform that the Generator will use to shape this waveform.

The Mode may be one of the following values:

- *-1 - Off*
 - The microcontroller is off. This is the default value.
- *0 - Random Drift*
 - The microcontroller will drift between the Minimum and Minimum plus Range, changing at times specified by the Update and Update Range parameters, by an amount between the Change and Change plus Change Range parameters.
- *1 - LFO (Min-Max-Min)*
 - A triangular waveform, that starts at the minimum value, works up to the maximum value, and works back to the minimum value.
- *2 - LFO (Max-Min-Max)*
 - A triangular waveform, that starts at the maximum value, works down to the minimum value, and works back to the maximum value.
- *3 - Sawtooth (Min-Max)*
 - A sawtooth waveform, that starts at the minimum value, works up to the maximum value, and then starts again from the minimum value.
- *4 - Sawtooth (Max-Min)*
 - A sawtooth waveform, that starts at the maximum value, works down to the minimum value, and then starts again from the maximum value.

[↑](#) ■ Minimum

Defines the minimum value that may be emitted by the

Microcontroller.

[↑](#) ■ Range

The microcontroller will emit a value between the Minimum and Minimum plus Range values.

So for example, if you define Minimum to be 20, and Range to be 100, the value that is emitted will be in the range 20 to 120 inclusive.

[↑](#) ■ Change

Defines the amount by which the microcontroller will change, every time it is allowed to change. Typically set to a value of 1. If this value is set to 0, the Microcontroller will change only if the Change Range is greater than or equal to 1.

[↑](#) ■ Change Range

Defines the upper limit to the amount by which the microcontroller will change, every time it is allowed to change. Typically set to a value of 1. If this value is set to 0, the Microcontroller will change only if the Change Range is greater than or equal to 1.

For example, if you define Change to be 1, and Change Range to be 3, the value that is emitted will vary by a value between 1 and $(3+1)=4$ each time.

[↑](#) ■ Update

Defines the minimum time in milliseconds between changes in the emitted Microcontroller value. The system might not be able to emit changes as quickly as you want, if you set a very small value! If you don't want changes to happen very often, then use a large value.

Ignored if Beat Cycle Length is non-zero.

[↑](#) ■ Update Range

Defines the upper limit in the time in milliseconds between changes in the emitted Microcontroller value. Use this parameter to apply some uncertainty in when the changes will occur.

For example, if you define Update to be 1000, and Update Range to be 500, the value that is emitted will change every 1000 to 1500 milliseconds (or in other words, every 1 to 1.5 seconds).

Ignored if Beat Cycle Length is non-zero.

[↑](#) ■ Update Units

You define the Unit of Measure by which the Update and Update Range parameters are interpreted. This may be one of the following values:

- *Seconds (thousandths of a)*
 - The Update and Update Range are interpreted as being in thousandths of a second (i.e. Milliseconds). So, a Update value of 1000 means one second.
- *Full seconds*
 - The Update and Update Range are interpreted as being in seconds. So, a Update value of 10 means ten seconds.

[↑](#) ■ Beat Cycle Length

This parameter is critical for generating effects which synchronize with the bar timing of your Generator. If you want to achieve an effect like a filter-sweep that synchronizes to your bar boundary, then this is the parameter to use.

Here are some of the values you could use.

Note in the WME a Beat is defined as being one crotchet; you get 4 beats in a bar of 4:4 music. So, a Duration value of 60 means one beat. A Duration value of 30 means a quaver. A Duration value of 20 means a triplet. A Duration value of 15 means a semi-quaver. A Duration value of 240 means 4 beats (which is a full bar if the Cell Meter is 4:4).

[↑](#) ■ Phase Shift %

Use this parameter if you want to start the microcontroller from a start-point other than at the very start of its cycle.

🎵 ■ Generator - Micro Delay

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The Generator Micro Note Delay parameters provide fine variation in the times of Note events generated by a Generator. This can be used to give a Generator more “human” feel.

Parameter Group - Micro Note Delay

- ■ [Delay Range](#)
- ■ [Delay Change](#)
- ■ [Delay Offset](#)

[↑](#) ■ [Delay Range](#)

The maximum amount of delay generated by micro note delay changes, that may be applied to note events. Zero means off (which is the default).

[↑](#) ■ [Delay Change](#)

The amount of change in the micro delay that is applied by Wotja between note on/off events. The value drifts between zero (off) and the Delay Range, changing by plus or minus the Delay Change value each time.

[↑](#) ■ [Delay Offset](#)

Fixed amount of offset note delay to apply, used only when the Micro Note Delay controller is in use. The default value is zero.

🎵 ■ Generator - Micro Pitch

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

The Generator Micro Pitch parameters provide fine variation through use of the MIDI Pitch Wheel controller.

Tip: This is not normally used on MIDI line 10, which is the drum/percussion line!

Parameter Group - Micro Pitch

- [Bend Sensitivity](#)
- [Pitch Bend Offset](#)
- [Pitch Range](#)
- [Pitch Change](#)
- [Pitch Update](#)
- [Pitch Update Range](#)

[↑](#) ■ [Bend Sensitivity](#)

A value from 0 to 24, meaning how many semitones are controlled by the full available range of Micro Pitch parameters. The default value is 2, which represents two semitones.

[↑](#) ■ [Pitch Bend Offset](#)

Fixed amount of pitch-bend to apply on this MIDI line, used to tune/de-tune an instrument.

The default value is zero, which means to apply no offset pitch bend.

From -8192 to +8191; which covers a range of pitch bend defined by the Bend Sensitivity parameter.

[↑](#) ■ [Pitch Range](#)

The maximum amount of micro pitch change that can be applied.

Zero means off (which is the default). The maximum value allowed is 8191. The value chosen is added to the pitch bend offset.

[↑](#) ■ Pitch Change

The amount of change in Micro Pitch that is applied by Wotja between “update” periods. The value drifts between zero (off) and the Pitch Range, changing by plus or minus the Pitch Change value each time.

[↑](#) ■ Pitch Update

The time in milliseconds between updates to the pitch controller. The actual value chosen is selected randomly each time, to be a value somewhere between Pitch Update and Update Range.

[↑](#) ■ Pitch Update Range

The upper limit of time between updates to the pitch controller. The actual value chosen is between Pitch Update and Update Range.

🎵 ■ Generator - Note to MIDI CC

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

Normally, Generators compose and emit MIDI note events. The Generator Note to MIDI CC Mapping parameters allow you to tell a Generator to emit MIDI controller data instead of MIDI note events.

Why would you want to do this? Well, it lets you use a Generator as a very powerful generative MIDI event generator with a huge range of potential applications.

Parameter Group - Note to MIDI CC

- ■ [CC for Note On?](#)
- ■ [Note On CC](#)
- ■ [CC for Velocity?](#)
- ■ [Velocity CC](#)
- ■ [CC for Note Off?](#)
- ■ [Note Off CC](#)

[↑](#) ■ [CC for Note On?](#)

If you want this Generator to emit a MIDI CC instead of note on/off events, set this parameter to Yes.

[↑](#) ■ [Note On CC](#)

If you have set CC for Note On? to Yes, then instead of emitting a note on event, the Generator will emit the specified MIDI CC, with a value equal to the composed pitch.

[↑](#) ■ [CC For Velocity?](#)

If you want this Generator to emit a MIDI CC proportionate to the Velocity of the composed note (in addition to any controller defined for Note On CC), then set this parameter to Yes.

[↑](#) ■ Velocity CC

If you have set CC for Velocity? to Yes, then the Generator will (in addition to the Note On CC value) emit the specified MIDI CC, with a value equal to the composed velocity.

[↑](#) ■ CC for Note Off?

If you want this Generator to emit a MIDI CC when a note off occurs, set this parameter to Yes. This applies only if CC for Note On? Is set to Yes.

[↑](#) ■ Note Off CC

If you have set CC for Note Off? to Yes, then instead of emitting a note off event, the Generator will emit the specified MIDI CC, with a value equal to the composed pitch of the stopped note.

🎵 ■ Generator - Scripting

The Generator Scripting parameter allows your Generator to use Intermorphic Wotja Script. For full details please refer to the [Wotja Script Engine Guide](#).

🎵 ■ Generator - Comments

How do I edit these parameters? See the [Generator: Main Editor](#).

Overview

This Generator Comments parameters allow you to store comments in your Generator, in the form of copyright information and any notes you might want to make for future reference.

Parameter Group - Comment

- ■ [Copyright](#)
- ■ [Notes](#)

[↑](#) ■ Copyright

Enter the Copyright information you might want to record for the Generator. In the case of a Generator from a template pack, this might contain a copyright notice associated with that template.

[↑](#) ■ Notes

Enter any detailed notes you might want to make about this Generator for future reference.

Cell - Rules

How do I edit these parameters? See the [Cell: Properties](#).

Overview

The Cell Rules parameters allow you to define the default Rules used by the Generators in the selected Cell. Each Cell can have different Cell Rules.

Scale Rules

Set this to define the default Scale Rule to use when the Cell plays. Individual Generators are allowed to override this setting if they so wish.

Harmony Rules

Set this to define the default Harmony Rule to use when the Cell plays. Individual Generators are allowed to override this setting if they so wish.

Next Note Rules

Set this to define the default Next Note Rule to use when the Cell plays. Individual Generators are allowed to override this setting if they so wish.

🎵 Cell - Meter

How do I edit these parameters? See the [Cell: Properties](#).

Overview

The Cell Meter parameters define the Meter to be used by the Cell, such as 4:4 or 3:4 or 6:8. A Generator will generally use this Meter, but the Meter value to be used for each Generator may actually override this setting. This approach allows Generators to be configured to work with a completely different Meter, which can be used for interesting polyphonic effects.

🎵 Cell - Scripts

The Cell Scripting parameter allows a Cell to use Intermorphic Wotja Script. For full details please refer to the [Wotja Script Engine Guide](#).

Cell Info

How do I edit these parameters? See the [Cell: Properties](#).

Overview

The Cell Info Object allows you to define some book-keeping parameters for your Cell. None of these parameters affect the way that your Cell sounds. However, **they are useful if you wish to later export the Cell as a new Template because when you load that new Template it will show the values set here.**

Template Title (editable)

The title of the Template that was first added to the Cell. If you change the title the changed title is not shown in the Cell, only here.

Template Author (editable)

The author of your Template.

Template Notes (editable)

Any notes you want to include for your Template.

File Path (non-editable)

This shows file path to the Pak that the Template is in.

Content Duration (non-editable)

This is non-editable and shows the duration of a WAV file or MIDI file (if used, and which is why it is shown) or 8:53:20 for generative content.

Mix Settings

How do I edit these parameters? See the [Mix: Properties](#).

Mix Tempo

The Mix Tempo allows you to define the tempo for your mix.

Mix Root

The Mix Root parameter allows you to define the Root Pitch to use for the mix. For example, if you are using a Major Scale Rule, then set this value to be C for your Cell to play in the key of C Major.

Ramp Up

Sets how long it takes for the file volume to ramp up once the file has started to play.

Playlist Duration

Sets how long the mix file will play for in the Playlist.

Playlist Duration Range

Sets a range on how long the mix file will play for in the Playlist.

Playlist Ramp Down

Sets how long it takes for the mix file volume to ramp down before play moves to the next mix file in the Playlist.

Wotja 23 Audio Engine (WAE)

The Wotja Audio Engine ("WAE") is a powerful MIDI-driven










audio/sound engine. It comprises many Synth (TG), FX and Controller (Ctrl) units. These can be combined into complex SFX Networks.

WAE Units (see [Synth & FX Editor](#))

Looking for something?: *Try page search* with Cmd+F/Ctrl+F.





Synth (TG) (Audio-rate)

-  DSynth
-  Macro Oscillator 1
-  Oscillator
-  Particle
-  Sample Player **(V23)**
-  Wavetable
-  Junction

FX (Audio-rate)

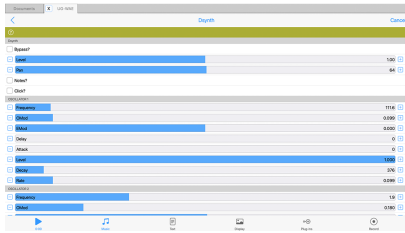
-  Amplifier
-  Chorus
-  Compressor
-  Delay
-  Distortion
-  Equaliser
-  Filter **(V23)**
-  Overdrive
-  Pitch Shifter
-  Reverb 1
-  Reverb 2XL
-  Junction

Controllers (Ctrl-rate)

-  Amp
-  Envelope
-  LFO **(V23)**
-  Junction



DSynth (TG)



DSynth - Tone

Generator

Click image for large

To build WAE networks see [Synth & FX Editor](#).

The DSynth tone generator unit can be used either as a melodic tone generator or as a Drum/Percussion Synthesizer for a range of drum/percussion related sounds. You can shift the pitch of the generated sound away from the notes that would otherwise be played, using the Tuning controls.

The unit works by combining two Oscillators which cross-modulate each other's oscillation frequency. Each oscillator has its own ADSR envelope which is used primarily to modulate the volume of the oscillator, but which can **also** be used to modulate the frequency of the oscillator!

The output of the two oscillators is merged with the output from a filtered noise generator (the bottom block of parameters) which also has its own ADSR envelope. The net effect is a unit which can create a wide array of percussive and melodic sounds. You can use the Export and Import buttons at the top of the unit to export and import DSynth settings to/from the clipboard.

Tip: Use an [audio junction unit](#) to add together sounds from multiple tone generators to make even richer sounds!



DSynth - Tone Generator (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Level:** Sets the unit's output level.
- **Pan:** Sets the unit's stereo position.
- **Notes?:** This toggle determines whether the unit will actually use the composed note frequency to override the frequency of Oscillator 1. The default is that the checkbox is clear : i.e. the system will **not** use the composed note frequency for the unit.
Tip : for percussive sounds, you might like to try clearing this checkbox!
- **Click?:** Use this toggle to add an initial transient when the notes are triggered; very useful for percussive sounds.

Oscillator 1 and Oscillator 2 Parameters

- **Frequency:** The frequency of oscillator 1 or 2.
- **OMod:** "Oscillator Modulation" - The amount of modulation provided by the other oscillator, for oscillator 1 or 2.
- **EMod:** "Envelope Modulation" - the amount of the envelope which should also be used to modulate the frequency of oscillator 1 or 2. If this is set to 0, then the ADSR envelope is used purely to modulate the volume of the oscillator.
- **Delay:** The length of time it takes after a note event occurs for the voice, before the envelope starts to rise-up from zero to its Attack level.
- **Attack:** The length of time it takes after the delay time has passed for the voice, for the envelope to rise-up from zero to its Attack level.
- **A Level:** The target Attack Level for the attack stage of the envelope, as the envelope rises from its initial value of zero.
- **Decay:** The length of time it takes for the envelope to decay down from the Attack Level, down to the Sustain Level of zero.
- **Rate:** A measure of the curvature of the Decay, down to the sustain level of zero. A value of 0 gives a linear decay, and increasing values giving an increasing level of curvature - resulting in a sound that is more "plucked" in nature.

Filter/Q Parameters

- **Type List:** The filter type to use: includes Low Pass, High Pass and Band Pass.
- **Frequency:** The frequency of the filter.
- **Q:** the amount of accentuation of the filter, 1.0 is high, 0.0 is no effect at all.
- **EMod:** "Envelope Modulation" - the amount of the envelope which should also be used to modulate the filter frequency. If this is set to 0, then the ADSR envelope is used purely to modulate the volume of the filtered noise..
- **Delay:** The length of time it takes after a note event occurs for the voice, before the envelope starts to rise-up from zero to its Attack level.
- **Attack:** The length of time it takes after the delay time has passed for the voice, for the envelope to rise-up from zero to its Attack level.
- **A Level:** The target Attack Level for the attack stage of the envelope, as the envelope rises from its initial value of zero.
Tip: A value of zero is very good for melodic sounds; set to a higher value for more percussive sounds.
- **Decay :** The length of time it takes for the envelope to decay down from the Attack Level, down to the Sustain Level of zero.
- **Rate:** A measure of the curvature of the Decay, down to the sustain level of zero. A value of 0 gives a linear decay, and increasing values giving an increasing level of curvature - resulting in a sound that is more "plucked" in nature.

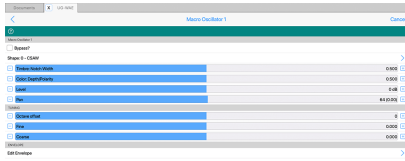
Tuning

- **Octave offset:** This allows you to specify the the octave offset from the voice's pitch.
- **Semitone:** This allows you to select the semitone offset from the voice's pitch (taking into account the octave offset above).

- **Micro:** This allows you to specify the microtonal offset in order to 'detune' the tone. -100 is the equivalent to a semitone down, and +100 is a semitone up.



Macro Oscillator 1 (TG)



Macro Oscillator 1 -
Tone Generator
Click image for large

To build WAE networks see [Synth & FX Editor](#).

This very powerful and complex modular synth unit is a port of the popular open-source "Braids" sound generator from [Mutable Instruments](#) (the github is [here](#)).

For information on its capabilities see the [Mutable Instruments Documentation](#) and/or [PDF quickstart](#). You may also wish to look at the excellent <http://www.vo1t.com/Euro/BraidsIllustrated1.8.pdf>.

The best way to experiment with it is to load one of the many "MO1-Lead" patches that can be found from the [Presets button](#).

As with any other WAE TG Unit it is a sound source for notes generated by the [WME](#). This means it can be used polyphonically (you can set the polyphony required via the top [Poly button](#) in the [Synth & FX Editor](#)).

It can also be modulated via other control-rate units (LFO and Envelope modulators are shown in the screenshot) and can be used in a WAE Sound Network in combination with other TG and Control units.

[↑](#) Macro Oscillator 1 - Tone Generator (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.

- **Shape:** Choose from 47 different algorithms.
- **Timbre:** Sets a value for the algo's timbre.
- **Color.:** Sets a value for the algo's color.
- **Level:** Sets the unit's output level.
- **Pan:** Sets the unit's stereo position.

Tuning

- **Octave offset:** This allows you to specify the octave offset from the voice's pitch.
- **Fine:** This allows you fine control over the pitch.
- **Coarse:** This allows you coarse control over the pitch.

Edit Envelope

The MO1 has its own integral envelope unit with the same capabilities as the [Ctrl Envelope Unit](#).

- **Delay:** The length of time it takes after a note on event occurs for the voice, before the volume envelope starts to rise-up from zero to its Attack level.
- **Attack:** The length of time it takes after the delay time has passed for the voice, to rise-up from zero to its Attack level.
- **Atk Level (Advanced):** The target level for the attack stage of the envelope, as the envelope rises from its initial value of zero.
- **Hold:** The length of time it takes after the attack level is reached, before the envelope starts to decay down to the Sustain Level.
- **Decay:** The length of time it takes for the envelope to decay down from the Attack Level, down to the Sustain Level.
- **Sustain:** The level at which the note will play, once all of the Decay, Attack, and Hold periods have completed.
- **Post Attack (Advanced):** The length of time it takes after the note stop event occurs, for the envelope to move from the sustain level to the post-attack level

- **Pst Atk Level (Advanced):** The target level for the post-attack stage of the envelope, as the envelope moves from its sustain level.
- **Post Hold (Advanced):** The length of time it takes after the post attack level is reached, before the envelope starts to decay down to zero.
- **Release:** This time defines the time it takes for the Voice to respond to a note off event, in terms of how long it takes to decay from the Post-Attack Level to a level of zero.



Osc (TG)



Osc - Tone Generator
Click image for large

To build WAE networks see [Synth & FX Editor](#).

This unit lets you create a range of waveforms, which are driven by MIDI pitch (via the "Pitch" checkbox); in which case, they are flexible, efficient MIDI tone generators.

Tip: You can use an [audio junction unit](#) to add together sounds from multiple tone generators to make even richer sounds!

Tip: The integrated [Envelope \(Ctrl\) Unit](#) is there to help you shape your sound.

[↑](#) Osc - Tone Generator (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Amplitude:** Sets the amplitude of the generated waveform.
- **Pan:** Sets the unit's stereo position.
- **Use MIDI Pitch?:** Select this checkbox if you want the MIDI pitch to determine the frequency of this tone generator. Use only for audio-rate units.
- **Frequency:** This controls the frequency of the unit, in Hertz (Hz, cycles per second).
- **Portamento:** This defines the amount of "pitch slide" (Portamento) from one note to the next; used when "Use Midi Pitch?" is selected. Basically a measure of the exponential approach to the pitch of the next note. Measured from 0 (minimum effect, an instantaneous change to the next note pitch) to 100 (maximum exponential approach to the target pitch).

Envelope

- **Edit Envelope:** The Osc Unit has an integrated Envelope. See the [Envelope \(Ctrl\) Unit](#).
- **Note Sync?:** Select this checkbox if you want the LFO to use the envelope to modulate the amplitude of the tone generator, or your own specific envelope settings that you can edit by pressing the "Edit Envelope" button. This only has any effect in Modular Synth networks, of course!

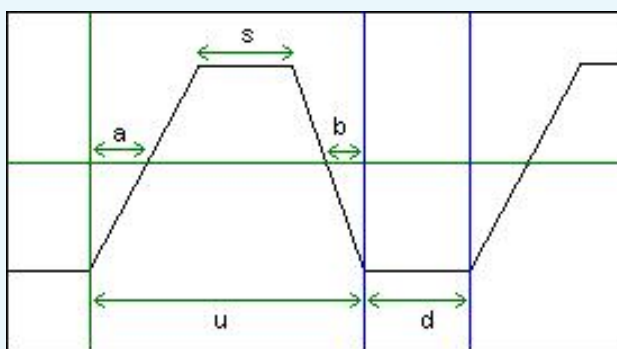
Type

- **Oscillator Type:** This list includes Sine, Saw left, Saw right, Triangle, Square, STS (Saw, Triangle, Square) and Random. Change the Oscillator Type to dramatically change the sound of your Tone Generator.
 - **Sine** produces a smooth waveform with no other harmonics.
 - **Saw Left** and **Saw Right** produce waves that look like a saw-tooth close up. The either slope to the left or to the right, but sound identical (they are both provided, as combining these with other waveforms provide interesting effects due to their different phasing!).
 - **Triangle** sounds not quite as harsh as the saw-tooth but has more harmonics than the sine.
 - **Square** produces a 'square' looking wave and sounds rougher than either the sine or saw-tooth waves. With the square wave you have the option of specifying the ratio of the up portion of the wave to the down portion. At either extreme, the square wave becomes more like a pulse wave, giving a 'pulsing' sound at lower pitches.
 - **STS** stands for 'Saw, Triangle, Square' because it is a hybrid between these three wave types. By varying the three parameters associated with it, the wave shape can be 'morphed' between the above three extremes. In effect, this waves covers all the preceding wave shapes, with the

exception of the sine wave.

- **Random** produces white noise between *Min* and *Max*, also affected by the *Amplitude*. These values are produced irrespective of the pitch of the tone generator; and do not use the envelope of the tone generator. Random signals are particularly interesting when fed into filter effect units!
- **Min**: This defines the minimum value that the generated LFO waveform can have.
- **Max**: This defines the maximum value that the generated LFO waveform can have.
- **Phase**: Useful for slow oscillators (e.g. 0.2 Hz) - determines the start point of the oscillator.
- **Ring Modulator?**: Ring mod output is the sum and the difference of two inputs. Checking this binds together the output of 2 TG Osc units (they must be next to each other in the network). The input signal from the first TG Osc unit is multiplied by its the Oscillator signal of the second. Example: If you Ring Mod 2 sine oscillators set to the same pitch then the output is a sine wave pitched up an octave (the sum) plus silence (the difference).

STS



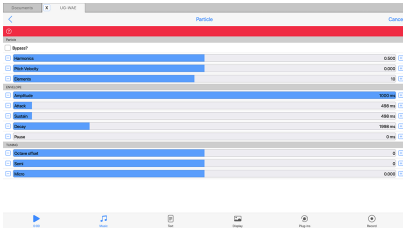
The STS Waveform and its ratios

- **Up/Down Ratio**: Only for the **Square** and **STS** wave types. Defines the ratio of "Up" to "Down" (or "On" to "Off") values (for STS waveforms, this is the ratio of *u* to *d* in the diagram below).

- **Square Ratio:** Only for the **STS** wave type. Defines the "squareness" of the waveform (the ratio of s to u in the diagram below).
- **Slant Ratio:** Only for the **STS** wave type. Defines the skew of the waveform (the ratio of a to $a + b$ in the diagram below)
 - With the Up Down Ratio at 100.0%, the Squareness Ratio at 0.0% and the Slant Ratio at 50.0%, the shape is a triangle.
 - With the Up Down Ratio at 100.0%, the Squareness Ratio at 0.0% and the Slant Ratio at 0.0% or 100.0%, the shape is a Saw Right or Saw Left respectively.
 - Lastly, with the Up Down Ratio at 100.0%, the Squareness Ratio at 100.0% and the Slant Ratio at anything you please, the shape is a Square wave.



Particle (TG)



Particle - Tone

Generator

Click image for large

To build WAE networks see [Synth & FX Editor](#).

This effect unit is an example of Granular Synthesis, which although is often used to do time stretching of samples, is used for a completely different purpose here - that of creating rich layered sounds ranging from ambient forms to plopping sounds and twinkling chimes. The particle system incorporates octave, semitone and micro tonal offsets.

The Particle System synthesizes tones from a number of sine waves. This is really granular "additive synthesis". The unit works by streaming-out grains up to a maximum of 20 at any one time. These are randomly offset from each other to blend well. When the effect decides to generate a new grain, it takes its information from the dialog values. If the grains are reasonably large then the harmonics come in and out giving a full sound.

Tip: You can use an [audio junction unit](#) to add together sounds from multiple tone generators to make even richer sounds!

[↑](#) Particle - Tone Generator (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Harmonics:** Defines the range of multiples of the selected frequency present in the Particle System's output. What this means in plain English :) is that if you (say) have a frequency of

400Hz, and you define the Harmonic to be 3, then you may find grains with frequencies of 400, 800, and 1200 Hz in the generated waveform. The higher this value, the richer the harmonic output!

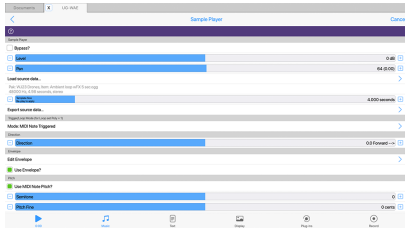
- **Pitch Velocity:** this scrollbar controls the change of Pitch **within** any one grain. Try moving this a small bit and you will find the tones start to dive or soar - good for creating horror effects!
- **Elements:** The "number of elements" - the maximum number of grains present at any one time. The higher this value, the richer the output!

Envelope

- **Amplitude:** Defines the overall amplitude of the generated waveform.
- **Attack / Sustain / Decay / Pause:** Changing these settings modifies an internal envelope generator, which is used to alter the shape and duration of the grains. It is easy to get twinkling effects just by making the attack small (say 1) and the decay longer (say 200). The pause determines the gap between grains. Modulating harmonic, attack, and pan position gives a nice full sound that alternates between twinkling and blending.



Sample Player (TG)



Sample Player - TG
Click image for large

NEW for V23

To build WAE networks see [Synth & FX Editor](#).

The modulatable & polyphonic Sample Player plays built-in ogg/WME Template file data and can only be used in a Synth Network.

Interesting looping effects can be explored with its support for (MIDI & Controller) pitch shifting, direction reverse and several loop/play modes as well as an optional built-in envelope.

By default, the Sample Player plays your sample data at its original pitch. However, all the Pitch controls below combine together to change this.

The higher the pitch, the faster the sample plays through. The lower the pitch, the slower the sample plays through. Use the envelope if you want to shape the sound.

Use of Polyphony in Looping modes (i.e. when not MIDI Note Triggered): This is experimental. When POLY is > 1 a "Round Robin" approach used to cycle around MIDI notes as they arrive.

↑ Sample Player - TG (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Level:** Determines the amount of amplification to be done by this amplifier unit. Values can range from $-\infty$ dB (value: 0), then

approx -19.00 dB (value: -0.11) up to +20.00 dB (value: 10).
The default setting is 0 dB (value: 1) i.e. no amplification.

- **Pan:** Determines the pan position of the signal. The default value is 64 (center).
- **Load source data...:**
 - Press button to browse in the [Wotja folder](#) for an audio sample (.Ogg format file) or a [WME Template](#).
 - *If you use built-in sample data:*
 - We don't save the audio data to the mix file which saves a lot of space and keeps things fast.
 - We save just the internal source path so we can get the data when we need it for sample data from your Documents folder.
 - *If you embed sample data (load an ogg file from the file system):*
 - In the mix file we save the audio data used in the SFX Network (in addition to the original document path/name); this makes the mix file larger (of course!) and slows document processing as the ogg data has first to be expanded into memory to be used.
 - *If you use a [WME Template](#) (and we believe this synthesis approach is unique to Wotja):*
 - We "cook" it to an in-memory audio file using our "cooker" approach (note that the longer the recording or more complex the Template, the longer this takes);
 - We cache results so it works consistently in poly system, meaning that the same recording is used across changes in "owning" networks even as you edit them.
 - Cooked recordings are regenerated on mix/album etc. restart (which, if you are using a generative template, means the recording can be different each time!).
- **"Pak: value..."** or **"Stored in mix"**: This non-editable field tells you about the audio sample that you're using, and the Pak (if any) it is loaded from.

- **Template Size (re-play the mix to apply):** Use this to define the "cooked" duration for WME Template-derived audio from 1 to 20 seconds
- **Export source data...:** Depending on what type the data is, exports it to an Ogg file (whether or not the sample is loaded from a Pak or is embedded in the mix) or a Template.

Triggering/Looping

- **Mode:**
 - *MIDI Note Triggered - Normal*
 - The sample only plays when triggered by a MIDI Note On and stops on a MIDI Note Off.
 - *MIDI Note Triggered - Pendulum*
 - The sample only plays when triggered by a MIDI Note On and plays from start to end and then reverses until stopped with a MIDI Note Off. Use the envelope if you want to shape the sound.
 - *Looping - Normal*
 - *If Envelope is OFF* when the Cell starts to play then the loop plays from start to end and then restarts from the start and keeps on looping. If you're playing in Reverse (using the Direction slider), your audio loop will simply loop in the opposite direction.
 - *If Envelope is ON* when the Cell starts to play then the sample does not start playing/looping until receipt of first MIDI note.
 - *Note:* If HOLD and DECAY have some values then note decays after the the HOLD value, down to the SUSTAIN value and stays there (whatever that is), If SUSTAIN is 100% then it will play at that level for the note duration (which could be v long) whatever HOLD/DECAY is used.
 - *Note:* If "Use MIDI Pitch" is ON is the sample is pitch shifted on receipt of MIDI notes.

- *Looping - Pendulum*
 - As above, but the loop plays from start to end and then reverses until it reaches the beginning and keeps looping like that.
 - See also Envelope behaviour for Looping - Normal.
- *One Shot*
 - The sample is triggered to play when the Cell starts and plays through to the end only once. This is useful for foley sounds and in conjunction with the Track Play Type "One Shot".
 - You can extend how long it plays for by using modulation to change its direction as it plays.
- **Direction:** -1 to +1;
 - 0 and up means forwards, less than zero is backwards (it is like a bias for modulation where the "final value" defines the direction to use at that point in time); modulateable e.g. with any Controller Unit.
 - Normally the selected sample plays in the "normal" direction i.e. forwards.
 - If you want to hear the sample play in reverse, set the Direction slider to less than zero; or use Mode set to one of the Pendulum modes.

Envelope

- **Edit Envelope:** The Sample Player Unit has an integrated Envelope. See the [Envelope \(Ctrl\) Unit](#).
- **Use Envelope:** Select this checkbox if you want to use the integrated envelope to modulate the output of the Sample Player.

Pitch

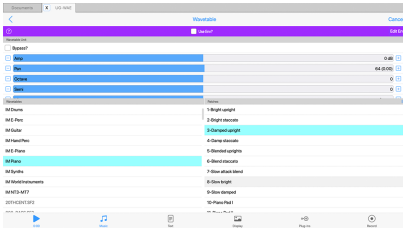
- **Use MIDI Note Pitch?:**
 - Enables (disables) control of the Semitone offset via incoming MIDI Note On events from the Generator(s)

attached to that MIDI Channel.

- **Semitone:** Offset +/- semitone shift.
- **Pitch Fine** Pitch offset of +/- 1000 cents; modulatable with any Controller Unit.
- **MIDI Pitch Offset**
 - MIDI Reference pitch (for interpreting Note On as pitch shift c.f. above - default is 60).
 - Adjust the MIDI Reference Pitch to use via the slider (default is 60, which is C4); so a MIDI On event of 61, will shift pitch up by one semitone; and MIDI Note On event of 59, will shift pitch down by semitone.
- **Portamento** Portamento in seconds (0 to 10); modulatable with any Controller Unit. The first half of the slider is used for values from 0.000 to 1.000 seconds; the second half of the slider is used for values from 1.00 to 10.00 seconds.



Wavetable (TG)



Wavetable - Tone
Generator

Click image for large

To build WAE networks see [Synth & FX Editor](#).

The Wavetable Unit is the unit that uses Soundfonts/SF2. It is also what you use if you want to use your own SF2, too.

Note: Loading of SF2 from the file system is a 'Pro' mode feature.

When added to a Synth Network, a Wavetable Unit defaults to use the integral "General MIDI" (GM) SF2 Wavetable and plays Patch "001-Acoustic Grand Piano". To change the Patch select another one in the Patch list.

It is easy to use the other IM-included SF2 wavetables (IM Brush Kit, IM Drums, IM E-Perc, IM Guitar, IM Hand Perc, IM E-Piano, IM Piano, IM Synths, IM World Instruments).

Simply use the left list control to select the Wavetable from the list of those shown and then use the right hand list control to select the Patch (all patches available in the Wavetable are listed; they are listed in standard patch bank/patch order).

To use your own or 3rd party SF2, they just first need to be put in the right place (see: [The "Wotja Folder" - Where is it and when should I use it?](#)).

Note: If a Wavetable Unit is used in a Synth Network for a MIDI line, its Wavetable and

selected patch will override the underlying piece's WME General MIDI Patch parameter (which always uses that patch in the GM Wavetable). If you DO want to use the piece's WME General MIDI Patch parameter setting, you must DELETE all units in the Synth Network and select the OK button to accept that. If you then re-enter the Synth Network you see a Wavetable Unit looks to have been added. It is a placeholder but it is not used - unless you enter the Wavetable unit in which case the sound will default to a GM Piano sound until you change it.

Top Tip: There are 4 parameters in the Wavetable unit that can be modulated: Frequency, Portamento, Amp and Pan. Try using a LFO Unit to modulate the Wavetable Unit's frequency parameter to apply a vibrato effect. To change how that vibrato is applied over time, try shaping the output of the LFO with an Envelope Unit before feeding into the Wavetable Unit.


Tip: You can use an [audio junction unit](#) to add together sounds from multiple tone generators to make even richer sounds.

[↑](#) ■ Wavetable - Tone Generator (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Amp:** Used to set the unit's output level.
- **Pan:** Used to set the unit output's pan position.
- **Ove:** This allows you to specify the the octave offset from the voice's pitch. *NB: To see this control you need to scroll down the top area.*

- **Semi:** This allows you to select the semitone offset from the voice's pitch (taking into account the octave offset above). *NB: To see this control you need to scroll down the top area.*
- **Micro:** This allows you to specify the microtonal offset in order to 'detune' the tone. -100 is the equivalent to a semitone down, and +100 is a semitone up.

Selector List

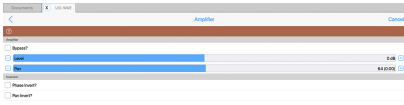
- **SF2/DLS List (left):** Used to select the Wavetable.
- **Patches List (right):** Used to select the Patch in the Wavetable.
-  **Randomize button (top right in Patches list):** Randomly selects one of the Patches from the currently selected Wavetable.

Bottom Toolbar

- **Envelope Toggle:** If on, the settings of the integral Envelope are applied. If off, the envelope values are ignored.
- **Envelope:** The Wavetable unit has an integrated [Envelope Unit](#) which can be used to shape it's sounds. This is a very powerful feature that can be used for sound design (e.g. long attack and post release sounds).



■ Amp (FX)



Amp - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

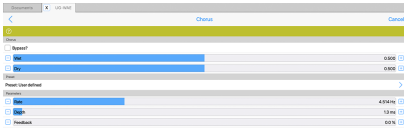
If you have a weak signal, e.g. coming out from a Filter Unit or an Wavetable Unit, then pump it into an amplifier. The Amplifier can multiply the input by a factor of up to 10. If you want more than this, feed it into another amplifier!

[↑](#) ■ Amp - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Level:** Determines the amount of amplification to be done by this amplifier unit. Values can range from $-\infty$ dB (value: 0), then approx -19.00 dB (value: -0.11) up to +20.00 dB (value: 10). The default setting is 0 dB (value: 1) i.e. no amplification.
- **Pan:** Determines the pan position of the signal. The default value is 64 (center).
- **Phase Invert?:** When on, the phase of the signal will be inverted.
- **Pan Invert?:** When on, the pan of the signal will inverted.



■ Chorus (FX)



Chorus - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

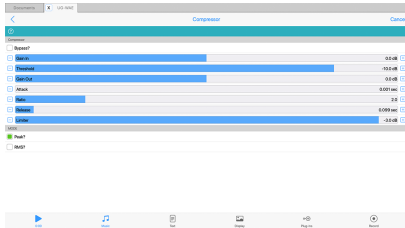
Sums the input and duplicates it at varying delay rates with the effect of "thickening" the audio. The delay time and frequency should be tweaked to give the right feel.

[↑](#) ■ Chorus - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Preset:** Use this to apply a "macro" setting of chorus parameters.
- **Rate:** A measure of the chorus modulation rate, in Hertz.
- **Depth:** A measure of the chorus modulation depth, in milliseconds.
- **Feedback:** The amount of Chorus Modulation Feedback to apply, as a percentage from 0 to 100 (which is the maximum).



Compressor (FX)



Compressor - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

Used to help compress the signal in the FX chain.

If you view the compressor behavior as a function of Output (measured in decibels [dB]) against Input (measured in decibels [dB]), the compressor displays three distinct regions of behavior:

- **Linear** with a slope of 1 up to the Compression Threshold (*CT*)
- **Compressor** with a slope of $1/CR$ (where *CR* is the Compression Ratio) up to the Limit Threshold (*LT*)
- **Limiter** with a slope of 0 from the Limit Threshold (*LT*) and beyond

[↑](#) Compressor - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Gain In:** Input gain setting; defaults to 0 dB.
- **Threshold:** This is the input/output level where the compressor becomes active. Below this level input = output.
- **Gain Out:** Output gain setting; defaults to 0 dB.
- **Attack:** This determines how quickly the envelope will respond to a positive change in the signal level. The value indicates the time it takes the envelope to rise 50% of the change.
- **Ratio:** Determines the compression ratio. If this value is < 1 it will in effect work as an expander.

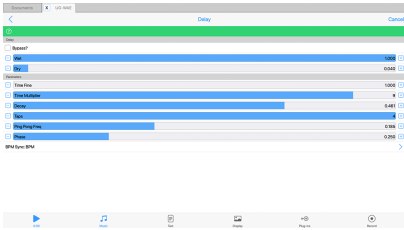
- **Release:** This determines how quickly the envelope will respond to a negative change in the signal level. The value indicates the time it takes the envelope to fall 50% of the change.
- **Level Detect Mode:** This has one of two values, which determines whether the signal is compressed/limited according to the peak or RMS level of the signal.
- **Limiters:** The output is limited to this level. If this value is lower than dBCompThreshold, the compressor will not be in operation.

Mode

- **Peak:** Use Peak signal
- **RMS:** Use RMS signal



Delay (FX)



Delay - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

Used to add interesting delay effects to an audio signal.

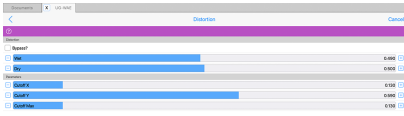
[↑](#) Delay - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Time Fine:** This parameter quickly determines the gross delay time in multiples of two. Increasing this parameter by one stop doubles the delay time, decreasing it halves it.
- **Time Multiplier:** This parameter allows the user to fine tune the delay time in between the multiples specified by the parameter above.
- **Decay:** This determines the amplitude attenuation with each passing delay tap.
- **Taps:** The number of "taps" in the delay system : the greater this number, the greater is the "thickness" of the delay effect.
- **Ping Pong Freq:** Frequency (Ping Pong) is the movement across the stereo field with each passing delay tap. A high Ping-Pong frequency ensures a 'Ping-Pong' type of effect from one channel to the other. A low frequency results in a type of drift from one channel to the other. Only applies if the Delay is applied to a stereo signal pipeline.

- **Phase:** This simply determines where in the stereo field the Ping-Pong starts. Only applies if the Delay is applied to a stereo signal pipeline.
- **BPM Sync:** Default (non-tempo synced option) and various BPM values, e.g. BPM/4 which means generate the waveform selected in the above list at a tempo of the mix tempo (BPM)/4. This control allows for tempo-synced control of the Delay unit, for great effect.



Distortion (FX)



Distortion - FX

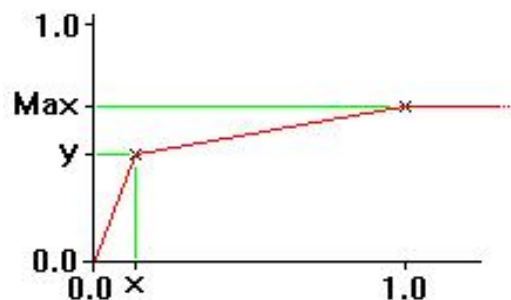
Click image for large

To build WAE networks see [Synth & FX Editor](#).

Distorts the sum of your incoming signals. Take cutoff X right down to about 0.02 to get a really distorted sound - it sounds great on a particle system! Cutoff Y acts like an amp and Cutoff Max determines the position of the output wave when the input is at 1.0 or -1.0.

The combination of Cutoff X, Y and Cutoff Max contribute to reshaping the input signal.

Graph of the Distortion Cutoff parameters



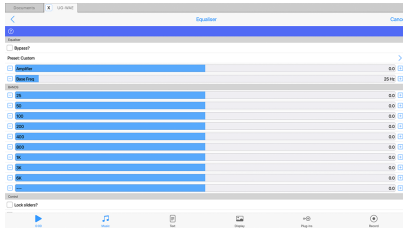
[↑](#) Distortion - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Cutoff X:** This determines the input value which will be scaled to the output value of 'y'.
- **Cutoff Y:** As above, i.e. at input 'x', 'y' is the output.

- **Cutoff Max:** At input value of 1.0, the output is 'Max'. Max may even be set to be lower than Cutoff Y



Equaliser (FX)



Equaliser - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

Use the Equaliser Unit to modify the frequency response of your audio signal. Depending on how you configure the unit, it can operate as either a 5-band or a 10-band equaliser. Note that the 5-band equaliser takes less CPU power.

[↑](#) Equaliser - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Preset:** Select from a range of presets.
- **Amplifier:** Specifies the amount of pre-amplification applied to the equaliser input signal. Adjusts from -20 dB to +20 dB.
- **Base Freq:** This slider adjusts the frequency of the lowest EQ band. All other sliders will automatically follow to maintain the frequency ratio between bands.
- **EQ bands:** Specify the gain for the individual frequency bands. Adjust from -14 dB to +14 dB. Unused frequency bands will display "N/A" in case of 5-band EQ mode, or if band frequencies are close to or above half the sample frequency.

Toolbar

- **Lock checkbox:** Use to allow all sliders to move together at the same time when you change any one of the individual slider values.
- **On/Off checkbox:** Use this to enable or disable the EQ



Filter (FX) (UPDATED for V23)



Filter - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

The Filter Unit can work in a variety of different ways depending on how you configure it:

- Using a fixed filter frequency;
- Using a filter frequency that is adjusted dynamically such that it tracks currently playing note pitches;
- Using a built-in frequency sweep.

[↑](#) Filter - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Type, Frequency, Resonance (Q):**
 - **Filter Type:**
 - 2 Pole SVF: Low Pass (NEW in V23): Powerful smooth, state variable 2 pole filter
 - 2 Pole SVF: High Pass (NEW in V23): Powerful smooth, state variable 2 pole filter
 - 2 Pole SVF: Band Pass (NEW in V23): Powerful smooth, state variable 2 pole filter
 - 2 Pole SVF: Notch (NEW in V23): Powerful smooth, state variable 2 pole filter
 - 4 Pole Classic: Low Pass (NEW in V23): Powerful and resonant 4 pole filter

- Legacy Low Pass: Less powerful old-style filter (multi-stage)
 - Legacy High Pass: Less powerful old-style filter (multi-stage)
 - Legacy Band Pass: Less powerful old-style filter (multi-stage)
 - Legacy Notch: Less powerful old-style filter (multi-stage)
- **Frequency:** Determines the minimum frequency (1 Hz - 10 kHz) for the filter (i.e. a Cut-off wrt High Pass and Low Pass). The first half of the slider is allocated to the first 1000 Hz, second half allocated to 1000 to 10000 Hz
- **Q:** The amount of accentuation (resonance) of the filter, 1.0 is the lowest value, and provides low quality filtering with little resonance, 5.0 provides high quality filtering with high resonance, and 10.0 provides the greatest resonance.
- **Frequency Options:**
 - **Track MIDI Note On Pitch?:** When checked, this toggle allows the Filter frequency to track the MIDI note pitch, where the note is generated by the WME. The Frequency slider setting above is then ignored.
 - **Tip:** setting this checkbox gives a tonal quality to the Filter effect.
 - **Relative to MIDI Pitch:** Gives an offset to the current note pitch.
 - **Octave Offset:** This combo-box allows you to specify the octave offset from the current note pitch
 - **Semi:** This allows you to select the semitone offset from the current note pitch (taking into account the octave offset above).
 - **Micro:** This allows you to specify the microtonal offset in order to 'detune' the filter. The value supplied is in cents (1 cent = 1/100 semitone). Note that the Max cutoff rate after modulation is approximately 2/5 of current system sample rate; so around 19 kHz for 48 kHz; beyond this, the cutoff rate is clamped.

- **Cutoff Controller: Log Scale? (NEW in V23):** Use for logarithmic control of Frequency via external controller (default is unchecked).
 - *Checkbox off (the default case):* the Cutoff controller (modulator) is used to directly scale the cut-off frequency. Value -& scale factor = $1 + (\text{value}/2)$. Min mod value is -1: scale factor = 0.5 (divide by two, i.e. drop by 1 octave)). Value of 0; scale factor = 1 (keep the same). Value of 2; scale factor = 2 (up one octave). Min mod value is -1, max is +1; any values outside of this range are clamped.
 - *Checkbox on:* the Cutoff controller (modulator) is used to logarithmically scale the cut-off frequency. So value of 0, keeps as zero. Value of 1, shifts up 1 octave (doubles frequency). 2 shifts up two octaves (quadruples). -1 shifts down one octave (divides frequency by 2). -2 shifts down one octave (divides frequency by 4). No inherent limit of min/max values.
 -
- **Auto Sweep:**
 - **Auto Sweep?:** This toggle determines whether or not the built-in filter frequency is in use. When *not* selected, this checkbox disables automatic filter sweeping.
 - **Cutoff min:** Determines the cutoff or center frequency for the filter in Hertz.
 - **Range:** This value, when added to the *Filter Cutoff Min* determines the upper frequency for the built-in filter frequency sweep
 - **Rate:** Determines the rate in Hertz at which the filter sweep moves from minimum to maximum value (and back again) [Auto Sweep? check box must be checked].
 - **Phase:** Determines the phase used by the built-in frequency sweep.
 - **Sync Auto Sweep to MIDI Note On?:** Only relevant when the filter is used on the output of a WAE Synth being driven

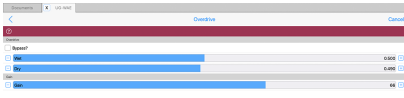
by a WME Generator.

- **Legacy:**

- **Number of Sections:** The number of cascaded 12 dB/octave filter sections used in the Legacy Filter Types, defaults to 1. Use a higher value to get sharper cutoff, at the cost of greater CPU consumption.



■ Overdrive (FX)



To build WAE networks see [Synth & FX Editor](#).

This unit adds overdrive distortion to the sound source.

Overdrive - FX

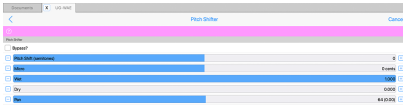
Click image for large

[↑](#) ■ Overdrive - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Gain:** Determines the amount of overdrive (distortion) applied.



Pitch Shifter (FX)



Pitch Shifter - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

This unit is quite a heavy hitter in terms of CPU usage, but it allows the pitch of the input to be live-shifted (there is a small latency) by up to a maximum of +/- 12 semitones.

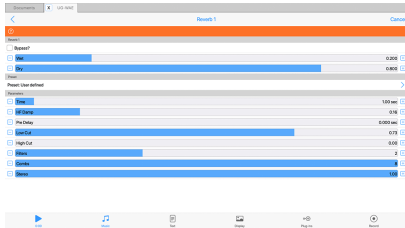
The parameters that can be modulated (by a control-rate unit) are: Dry, Wet, Pan and Micro.

[↑](#) Pitch Shifter - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Pitch Shift (semitones):** The amount of pitch shifting you want to occur in semitones (up to +/- 12).
- **Micro:** This allows you to specify the microtonal offset in cents (1 cent = 1/100 semitone).
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Pan:** Adjust this value to alter the pan of the output in the mix.



Reverb 1 (FX)



Reverb 1 - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

This unit adds reverberation to the sound. This gives depth to the sound and makes it seem as though the piece is being performed in a room. You can control the 'size' and sound of this room with the parameters below.

[↑](#) Reverb 1 - FX (Audio-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Wet:** Adjust this value to alter the amount of "wet" (processed) signal in the mix.
- **Dry:** Adjust this value to alter the amount of "dry" (unprocessed) signal in the mix.
- **Preset:** Select from a range of presets.
- **Time:** Determines the duration of the reverb.
- **HF Damp:** In most environments high frequencies will attenuate more quickly than low frequencies due to damping caused by carpets, furnishings, etc. Use this control to adjust the amount of high frequency damping.
- **Pre Delay:** Delay of reverb relative to the dry (unprocessed) signal.
- **Reverb Type List:** Choose the reverb type from a number of musical and environmental presets.
- **Low Cut:** Applies a lowpass filter to the reverberated sound. The value is the normalized cutoff frequency of the filter, with "1.00" corresponding to half the sample frequency (at 1.00 no lowpass filtering is applied).
- **High Cut:** Applies a highpass filter to the reverberated sound. The value is the normalized cutoff frequency of the filter, with

"1.00" corresponding to half the sample frequency (at 0.00 no highpass filtering is applied).

- **Combs:** Determines the number of parallel comb filters used in the reverb algorithm. A higher number generates a more dense reverb tail, but is also more CPU intensive.
- **Filters:** Determines the number of series allpass filters used in the reverb algorithm. A higher number generates a smoother reverb tail, but is also more CPU intensive.
- **Stereo:** Adjust this value to change the perceived "width" of the sound.



Reverb 2XL (FX)



Reverb 2XL - FX

Click image for large

To build WAE networks see [Synth & FX Editor](#).

This unit is a heavy hitter in terms of CPU usage (much heavier than the Reverb 1 unit) but it adds a complex reverberation to the sound giving it a deep richness. There are many parameters to explore and many effects that can be achieved - including even chorus and delay!

For the simplest level of control, check out the sliders in the Output Section. "Dry Signal Out" means the unprocessed input, and "Input Section Out" is the unprocessed input but with e.g. some pre-delay or Low or High cut. The Early and Late Reflections sliders control the depth of the reverb and so can make the biggest difference.

The unit is based on the [Cloud Seed](#) Reverb unit, see the link for full documentation.

[↑](#) Reverb - FX 2XL (Audio-rate)

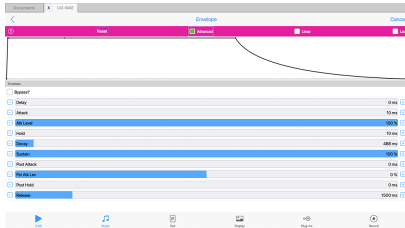
- **Bypass?:** When this is checked the unit is bypassed.
- **Preset:** Select from a range of included presets.
- **Input Section:**
 - **L/R Cross-Blend (0-1):**
 - **Pre Delay (0-1000 ms):**
 - **Low Cut Enabled?:**
 - **Low Cut (0-1):**
 - **High Cut Enabled?:**

- **High Cut(0-1):**
- **Output Section:**
 - **Dry Signal Out (0-1):**
 - **Input Section Out (0-1):**
 - **Early Reflections Out (0-1):**
 - **Late Reflections Out (0-1):**
 - **Interpolation?:**
- **Equalization:**
 - **Low Shelf Enabled?:**
 - **Low Shelf Frequency (0-1):**
 - **Low Shelf Gain (0-1):**
 - **High Shelf Enabled?:**
 - **High Shelf Frequency (0-1):**
 - **High Shelf Gain (0-1):**
 - **Cutoff Enabled?:**
 - **LP Cutoff Frequency (0-1):**
 - **Stereo Width (0-1):**
- **Early Reflections - Delays:**
 - **Tap Count (0-1):**
 - **Tap Length (0-500ms):**
 - **Tap Gain (0-1):**
 - **Tap Decay (0-1):**
 - **Tap Scheme (0-1m):**
- **Early Reflections - Diffuser:**
 - **Enabled?:**
 - **Delay (0-1):**
 - **Feedback (0-1):**
 - **Mod Amount (0-2.5):**
 - **Mod Rate (0-1):**
 - **Stages (0-8):**
 - **Diffusion Scheme (0-1m):**

- **Late Reverberation:**
 - **Lines in Parallel (1-12):**
- **Late Reverberation - Delay:**
 - **Time (0-1):**
 - **Line Decay (0-500ms):**
 - **Mod Amount (0-2.5):**
 - **Mod Rate (0-1):**
 - **Tap: Pre/Post (on = Pre; off = Post)?:**
 - **Delay Scheme (0-1m):**
- **Late Reverberation - Diffuser:**
 - **Enabled?:**
 - **Delay (0-1):**
 - **Feedback (0-1):**
 - **Mod Amount (0-2.5):**
 - **Mod Rate (0-1):**
 - **Stages (0-8):**
 - **Diffusion Scheme (0-1m):**



Envelope (Ctrl)



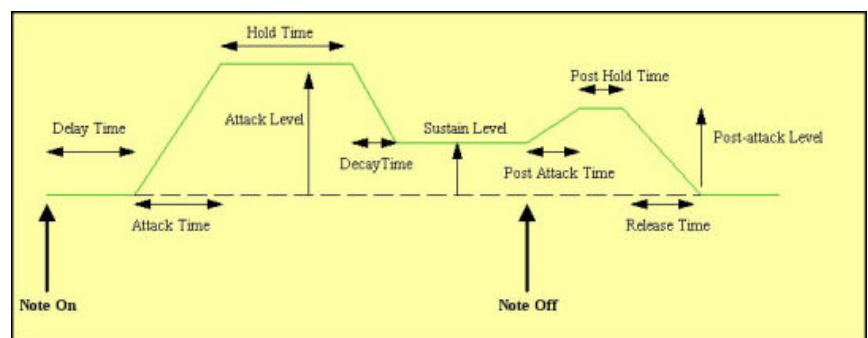
Envelope - Controller
Click image for large

To build WAE networks see [Synth & FX Editor](#).

The Envelope Unit is used to edit the "Ctrl-Envelope" control-rate plugin. It is only of use in Modular Synth networks, where it is triggered in response to MIDI note on events for the current MIDI line, and generates no sound of its own. Used in context of the TG Osc it is also triggered in response to MIDI note off events.

Note: An Envelope Unit *can* be added to an FX Network, but it cannot be used to modulate an FX and can even mute the sound - so we do not recommend doing it!

There are a number of values which you can adjust to modify the shape of your envelope. The shape used is shown in this diagram below.



Envelope - Controller (Control-rate)

- **Delay:** The length of time it takes after a note on event occurs for the voice, before the volume envelope starts to rise-up from zero to its Attack level.

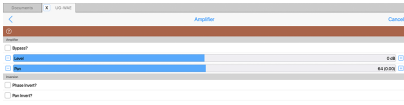
- **Attack:** The length of time it takes after the delay time has passed for the voice, to rise-up from zero to its Attack level.
- **Atk Level (Advanced):** The target level for the attack stage of the envelope, as the envelope rises from its initial value of zero.
- **Hold:** The length of time it takes after the attack level is reached, before the envelope starts to decay down to the Sustain Level.
- **Decay:** The length of time it takes for the envelope to decay down from the Attack Level, down to the Sustain Level.
- **Sustain:** The level at which the note will play, once all of the Decay, Attack, and Hold periods have completed.
- **Post Attack (Advanced):** The length of time it takes after the note stop event occurs, for the envelope to move from the sustain level to the post-attack level
- **Pst Atk Level (Advanced):** The target level for the post-attack stage of the envelope, as the envelope moves from its sustain level.
- **Post Hold (Advanced):** The length of time it takes after the post attack level is reached, before the envelope starts to decay down to zero.
- **Release:** This time defines the time it takes for the Voice to respond to a note off event, in terms of how long it takes to decay from the Post-Attack Level to a level of zero.

Toolbar

- **Reset:** Sets the envelope back to default values.
- **Linear:** This toggle lets you set both Decay and Release stages to either Linear or Exponential.
- **Advanced:** When toggled on, you can see some extra controls, indicated above as "Advanced".



■ Amp (Ctrl)



Amp - Controller

Click image for large

To build WAE networks see [Synth & FX Editor](#).

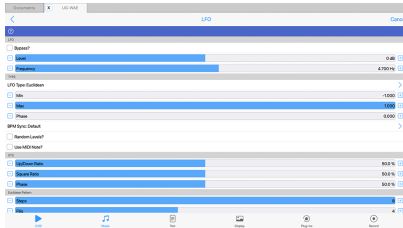
If you have a weak control rate signal, coming from a LFO for example, then pump it into an amplifier. The Amplifier can multiply the input by a factor of up to 10. If you want more than this, feed it into another amplifier!

[↑](#) ■ Amp - Controller (Control-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Level:** Determines the amount of amplification to be done by this amplifier unit. Values can range from $-\infty$ dB (value: 0), then approx -19.00 dB (value: -0.11) up to +20.00 dB (value: 10). The default setting is 0 dB (value: 1) i.e. no amplification.
- **Pan:** Determines the pan position of the signal. The default value is 64 (center).
- **Phase Invert?:** When on, the phase of the signal will be inverted.
- **Pan Invert?:** When on, the pan of the signal will inverted.



LFO (Ctrl) (UPDATED for V23)



LFO - Controller

Click image for large

NEW for V23:

To build WAE networks see [Synth & FX Editor](#).

LFO Type: Euclidian, a classic Euclidean sequence generator with a "Wotja twist". Note: Each "Step" in the Euclidean LFO maps-on to a single Cycle of the LFO. See [Euclidian Pattern](#) section.

The LFO unit lets you create a range of control-rate waveforms. The waveforms oscillate at a pitch that you dictate yourself. They are used for modulating the parameters of other effect units; they should only be run below (say) 50Hz or you'll get some odd effects.

↑ LFO - Controller (Control-rate)

- **Bypass?:** When this is checked the unit is bypassed.
- **Level:** Sets the amplitude of the generated LFO waveform.
- **Frequency:** This controls the frequency of the LFO, in Hertz (Hz, cycles per second).

Type

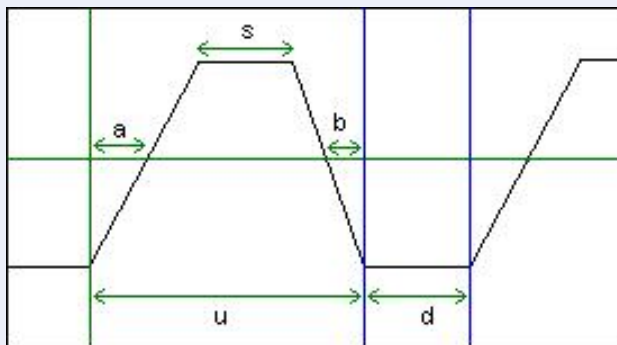
- **LFO Type:** This list includes Sine, Saw left, Saw right, Triangle, Square, STS (Saw, Triangle, Square) and Random. Change the LFO Type to dramatically change the sound of your LFO.
 - **Sine** produces a smooth waveform with no other harmonics.
 - **Saw Left** and **Saw Right** produce waves that look like a saw-tooth close up. The either slope to the left or to the

right, but sound identical (they are both provided, as combining these with other waveforms provide interesting effects due to their different phasing!).

- **Triangle** sounds not quite as harsh as the saw-tooth but has more harmonics than the sine.
 - **Square** produces a 'square' looking wave and sounds rougher than either the sine or saw-tooth waves. With the square wave you have the option of specifying the ratio of the up portion of the wave to the down portion. At either extreme, the square wave becomes more like a pulse wave, giving a 'pulsing' sound at lower pitches.
 - **STS** stands for 'Saw, Triangle, Square' because it is a hybrid between these three wave types. By varying the three parameters associated with it, the wave shape can be 'morphed' between the above three extremes. In effect, this waves covers all the preceding wave shapes, with the exception of the sine wave.
 - **Random** produces white noise between *Min* and *Max* , also affected by the *Amplitude* . These values are produced irrespective of the pitch of the tone generator; and do not use the envelope of the tone generator. Random signals are particularly interesting when fed into filter effect units!
 - **Note On Random** means that every time a note on event occurs, the random value changes, and sits there until the next note on event occurs. The value then sits there, until the next note on event - when the value is changed again.
 - **Euclidian (NEW for V23)** lets you use the [Euclidian Pattern controls](#) to create a control pattern.
- **Min:** This defines the minimum value that the generated LFO waveform can have.
 - **Max:** This defines the maximum value that the generated LFO waveform can have.
 - **Phase:** Useful for slow oscillators (e.g. 0.2 Hz) - determines the start point of the oscillator.

- **BPM Sync:** Default (non-tempo synced option) and various BPM values, e.g. BPM/4 which means generate the waveform selected in the above list at a tempo of the mix tempo (BPM)/4. This control allows for tempo-synced control of e.g. the Filter unit, for great effect.
- **Random Levels?:** When checked, creates random control values bounded between the settings of the Min and Mix knobs. If a BPM setting is chosen in the Freq List, then these values will change at that control rate for a "sample and hold" effect.
- **Use MIDI note?:** Applies the waveform each time a MIDI note is played.

STS



The STS Waveform and its ratios

- **Up/Down Ratio:** Only for the **Square** and **STS** wave types. Defines the ratio of "Up" to "Down" (or "On" to "Off") values (for STS waveforms, this is the ratio of u to d in the diagram below).
- **Square Ratio:** Only for the **STS** wave type. Defines the "squareness" of the waveform (the ratio of s to u in the diagram below).
- **Slant Ratio:** Only for the **STS** wave type. Defines the skew of the waveform (the ratio of a to $a + b$ in the diagram below)
 - With the Up Down Ratio at 100.0%, the Squareness Ratio at 0.0% and the Slant Ratio at 50.0%, the shape is a triangle.
 - With the Up Down Ratio at 100.0%, the Squareness Ratio at 0.0% and the Slant Ratio at 0.0% or 100.0%, the shape is a Saw Right or Saw Left respectively.

- Lastly, with the Up Down Ratio at 100.0%, the Squareness Ratio at 100.0% and the Slant Ratio at anything you please, the shape is a Square wave.

Euclidian Pattern (NEW for V23)

- *Tip:* For general details on how a Euclidian generator works, you may also wish to refer to the general overview in the [WME Sequence: Euclidian Generator](#) type.
- The parameters below are for use with the [LFO Type: Euclidian](#). See also [Euclidian Pattern Ranges](#) and [Euclidian Wave Shape](#)
- **Steps** (Values 1-8)
 - This value determines the number of "steps" there will be in a generated sequence (assuming the Steps Range, below, is 0). Empty steps are at Minimum level and filled steps (Fills, below) are at Maximum level.
 - Example: If Steps is 8 and Steps Range is 0, the number of steps is always 8.
 - Note: If a non-zero Steps Range is specified the number of steps can change every time the next sequence is generated.
 - Tip: If you do not want the Steps value to change when the next sequence is generated (see Repeats), ensure Steps Range is set to 0.
- **Fills** (Values 1-8)
 - For the generated sequence this value determines how many of the steps above will be "filled" and so play a note (assuming the Fills Range, below, is 0).
 - Example: If Fills is 4 and Fills Range is 0, the number of steps that are "filled" is always 4.
 - Note: If a non-zero Fills Range is specified the number of filled steps can change every time the next sequence is generated.

- Tip: If you do not want the Fills value to change when the next sequence is generated (see Repeats), ensure Fills Range is set to 0.
- **Rotation** (Values 0-16)
 - Determines in which step the first note of the sequence will occur (assuming the Rotation Range, below, is 0). This value can be thought of as a "starting offset" if you prefer as the sequence "wraps around" and does not get foreshortened.
 - Example: If Rotation is 3 and Rotation Range is 0, the starting note is always in step 3.
 - Note: If a non-zero Rotation Range is specified the "starting offset" can change every time the next sequence is generated.
 - Tip: If you do not want the Rotation value to change when the next sequence is generated (see Repeats), ensure Rotation Range is set to 0.
- **Repeats** (1-16)
 - This value determines how many times a generated sequence will repeat.
 - Once the sequence has been repeated the correct number of times a new sequence is generated. This cycle continues until the Sequence Item item is changed or the Generator is

Euclidian Ranges (NEW for V23)

- *Tip:* For general details on how a Euclidian generator works, you may also wish to refer to the general overview in the [WME Sequence: Euclidian Generator](#) type.
- The parameters below are for use with the [LFO Type: Euclidian](#). See also [Euclidian Pattern](#) and [Euclidian Wave Shape](#)
- **Steps Range** (Optional: Values 0-8)
 - Every time a new sequence is generated (see Repeats) the Steps value is recalculated and will be somewhere between Steps + Steps Range.
 - Example: If Steps is 8 and Steps Range is 4, then the next

time a sequence is generated the calculated Steps value used could be anywhere between 8 and $8+4$ (i.e. between 8 and 20).

- **Fills Range** (Optional: Values 0-8)
 - Every time a new sequence is generated (see Repeats) the Fills value is recalculated and will be somewhere between Fills + Fills Range.
 - Example: If Fills is 4 and Fills Range is 4, then the next time a sequence is generated the calculated number of Fills used by it could be between 4 and $4+4$ (i.e. 8).
- **Rotation Range** (Optional: Values 0-16)
 - Every time a new sequence is generated (see Repeats) the Rotation value is recalculated and will be somewhere between Rotation + Rotation Range.
 - Example: If Rotation is 3 and Rotation Range is 4, then the next time a sequence is generated the calculated Rotation value used could be between 3 and $3+4$ (i.e. 7).
- **Repeats Range** (Optional: Values 0-16)
 - Every time a new sequence is generated the Repeats value is recalculated and will be somewhere between Repeats + Repeats Range.
 - Example: If Repeats is 3 and Repeats Range is 4, then the next time the sequence repeats the calculated Repeats value might be any where between 3 and $3+4$ (i.e. between 3 and 7 times).

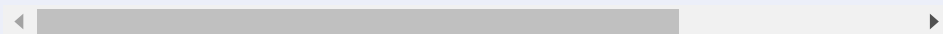
Euclidian Wave Shape (NEW for V23)

- The paramaters below are for use with the [LFO Type: Euclidian](#). See also [Euclidian Pattern](#) and [Euclidian Pattern Ranges](#).
- Use Rise/Hold/Fall ratios to "shape" the waveform!
 - For a very square waveform, set Rise and Fall to small values relative to the Hold value.
 - For a very triangular waveform, set Rise and Fall to large values relative to the Hold value.
- **Use Step Table?**: Checkbox to enable / disable the generated

Step table. Note: The generated step table is of most interest when using Euclidean "Repeats".

- When not using step table, the values are either MIN or MAX.
- When using step table, the values are:
 - When Euclidean "off" emit MIN
 - When Euclidean "on", use value extracted from a step table that is regenerated on every repeat cycle (which has random value from MIN to MAX)
 - The step table look-up is based on leading edge of the "ON" state. The following diagram should make it fairly clear:

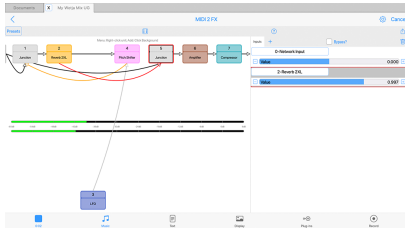
++-+---++++-----+ >- the filled slots (+ is 1/fi.
Step table index to use (increments on 'leading ed
0 1 2 3 4



- **Rise Ratio:** The relative amount of time that the waveform spends: "rising" with a slope from minimum up to the maximum.
- **Hold Ratio:** The relative amount of time that the waveform spends: at the "maximum" level.
- **Fall Ratio:** The relative amount of time that the waveform spends: "falling" with a slope from maximum down to the minimum.



Junction



Junction Unit

Click image for large

To build WAE networks see [Synth & FX Editor](#).

Audio-rate / Control-rate

Junction units are what you use whenever you need to add or combine together the output from two or more units in the system. They are added from the Units drop list below the Chain display. They are shown in grey in the network and have no interface of their own.

There are two types:

- **Junction:** Audio-rate junctions for Tone Generators and FX (and available only in Synth networks). Use these when you need to add-together outputs from two or more audio-rate units. They display in the top "audio-rate" line of the network
- **Ctrl-Junction:** Control-rate junctions for Controllers (available in both Synth and FX networks). Use these when you need to add-together outputs two or more control-rate units. They display in the bottom "control-rate" line in the network

When a junction unit is selected in the top "Chain" display area, a "Connector + Unit" section displays at the bottom of the Network Editor screen and which lets you change junction inputs.

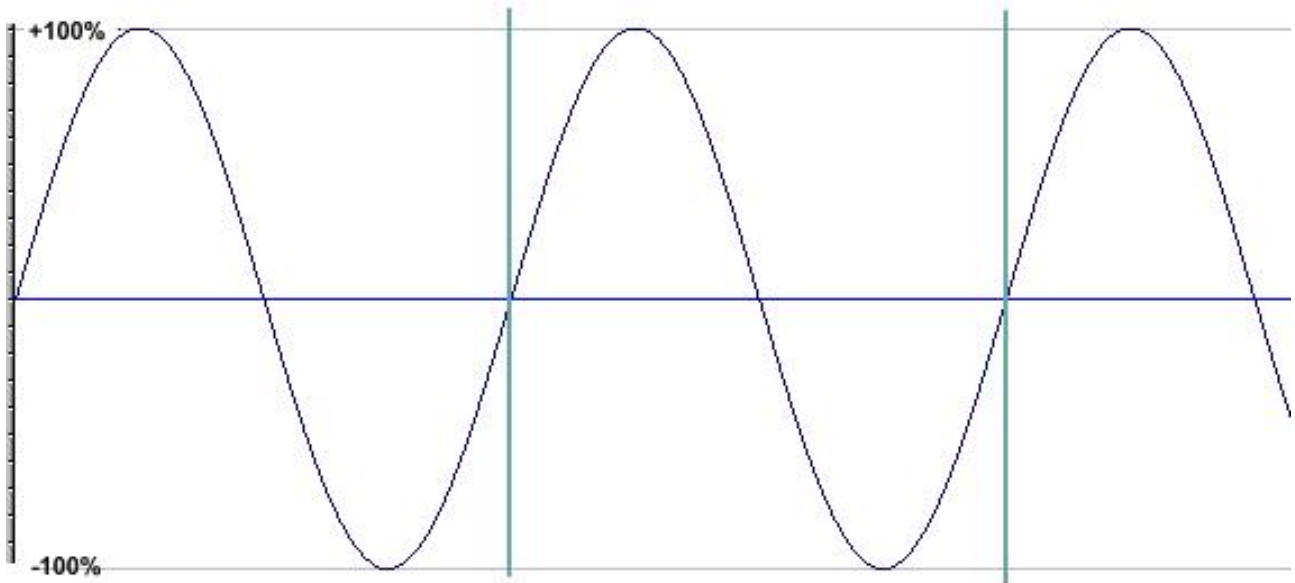


Junction - Audio-rate / Control-rate

Connector + Unit & Scale: These only show if your currently selected unit is a audio-rate [audio] junction ("Junction") or a control-rate junction ("Ctrl-Junction").

- **Bypass?:** When this is checked the junction unit is bypassed.
- **Connector:** The "Connector" list shows you a count of all the effects unit inputs that are fed-in to your junction. The numbers in the list are just always numbered automatically from 1 upwards.
- **Unit:** The "Unit" list lets you select the effects unit (which must be a unit at the same rate as the junction!) that is to be added together to help create the output of the junction. Change the entry here to be the unit number of the unit that you want to add with other unit outputs.
- **Add:** Press the "Add" button to add a new entry to your "Input" list.
- **Delete:** Press the "Delete" button to remove the currently selected Input list item.
- **Scale:** The "Scale" slider lets you fine-tune a scaling factor between -2 and 2, by which the output value of your "input" unit is multiplied, before being added together with the other unit values that are feeding this junction. This allows you to carefully adjust the amount by which a parameter is modulated. Note that if more than one control-rate unit feeds a specific parameter on a target unit, they will get added together automatically (including the appropriate scaling factor); which means that control-rate junctions are not often required. Double tap or right mouse click the Scale slider for a pop-up menu with the following options:
 - *Edit:* Enter the value you want to use in the pop-up text field.
 - *Default:* Sets the value to 1.
 - *Zero:* Sets the value to 0.
 - *Random:* Sets the value to some random value between -2 and 2.

Synth Tutorial 1



Sine Wave

Introducing sound synthesis

The WAE incorporates a very powerful and flexible software synthesizer. The WAE and its pop-up plugin editors are a new audio application suite, that supports editing of effect plugin settings. The features and flexibility of the WAE are such that, to make the best use of them you will find that a little understanding of the basics of sound synthesis will go a long way.

If you haven't delved too deeply into programming synthesizers before now, or if you fancy a quick refresher course, then this tutorial is for you. We will not be getting heavy with the physics and number crunching side of things here. We'll keep it practical and, hopefully useful. Let's go.

The naming of things

We have to start by establishing the meanings of the terms we will be using from here on in. Creating sound is all about finding new and

interesting ways to shove air around. Here is an idealized illustration of what that might look like using a single pure tone.

Using this graphic we can identify some basic units and concepts in sound generation.

The waveform	The waveform is the wiggly line, obviously! This one is a sine wave.
A cycle	<p>The area between the vertical blue lines in the graphic is a single cycle of this wave. In this instance it starts at zero, rises to the highest point, drop back down to zero, continues to the lowest point and rises up to zero again. You can start a cycle at any point of the waveform. It doesn't have to start from zero. The main thing to remember is, if you choose any arbitrary point on the waveform to start from, when you reach that point again, so long as you are traveling in the same direction as you were when you left it, you have completed a single cycle.</p> <p>If you start the waveform at some other point that the one shown here (say, from the highest point on the graph) you have changed the phase of the waveform. It doesn't make it sound any different if you listen to the tone on its own but there are good reasons for being able to change the phase of a wave if you wish. We'll get to them soon.</p>
Frequency	Describes the number of cycles in each second. It is measured in Hertz (Hz), one hertz being one cycle per second. If the frequency is in our hearing range we perceive it as the pitch of a note. The human hearing range falls roughly between 20Hz at the low end and about 20,000 Hz at the upper end. If you can hear much higher than that then your owner

needs to get you a dog license. Human ears aren't very good at detecting pitch at the extremes of our hearing range but can be incredibly acute in the midranges.

Amplitude

Describes the range of upward and downward movement the waveform makes. We hear it as volume. Large amplitude values mean loud audio signals. Small ones mean quiet ones. If you reduce the amplitude of a wave you are said to attenuate it, if you increase it you are amplifying the signal. These amounts are typically measured in decibels (dB) which are a total pain to work with, mostly because they work to a negative logarithmic scale where minus infinity is the quietest point and zero is the point of optimal loudness. So we'll move quickly past.

In a wholly analogue system, like a Stratocaster plus a Marshall stack, amplifying a sound beyond that optimal point gives the desirable sort of distortion sound that has been putting food on guitarists' tables for years. No such luck with a digital system. In the digital world you cannot take the amplitude of a waveform beyond 0 dB. If you try, the wave looks like it hit a brick wall and sounds ghastly!

We mention this because putting sound into an amplifier is only one way of increasing its amplitude. Adding another sound source also increases the amplitude of the sound we hear. Which is why a full string section is louder than a solo violin.

In sound synthesis it is not uncommon to use several sound sources to create a single sound. The WAE has a built in limiter that manages sound

levels internally for you to keep things out of the clipping zone. However, you will need to take some care of levels yourself if you want the best possible sound quality. A limiter working hard is often quite audible which might not be an effect you want to hear!

Zero crossing

If you think about it, moving air around systematically involves both pushing it and pulling it blowing and sucking. This is reflected in the graphic in that there is a line drawn through the center of the waveform. Amplitudes above the line have a positive value, those below have a negative one. In the jargon, audio signals are usually **bipolar**.

The point at which a waveform has an amplitude of zero is particularly important in sampling, something we will cover later. But the location of the zero crossing line has a significance in synthesis also.

For convenience, we show the zero line in the graphic as bisecting the waveform so there are equal amounts of waveform both above and below the line. Things don't always have to be this way and there are ways for us to move this line up or down. To do so, in the jargon once again, we apply a DC offset to the waveform.

As moving this line up or down will make no appreciable difference to the sound of the tone, why worry about it? If an audio signal is what you want, in truth it is not worth bothering with. But, if you want to use a waveform for something other than audio, like using one waveshape to control the parameters of a second then it can be very important. As we might find out later!

And that's about as much as we need to know about the components of a waveform. But there are a couple of other things we need to touch on to help understand how to synthesize sounds.

Fundamentals, harmonics and the rest.

If you play a note on any tuned musical instrument you will hear an astonishing complexity of sound. But, despite that complexity you will (hopefully) perceive a pitch. That's the **fundamental**. In all sounds that we perceive as pitched there is one frequency that stands out from all the other noises in there and this is the one the ear uses as the pitch reference. A piano, violin and oboe sound totally different to each other but, if they all play note A4 you will hear three distinctive sounds all having a common fundamental frequency of 440 Hz or thereabouts.

If you listen more closely to the sound of a single instrument playing a single note, once you get past hearing the fundamental you will hear a range of other tones. Some of these work in a musical way and sound rather like chordal notes related to the fundamental. Others have a more uneasy relationship to the fundamental or are completely atonal.

The musical ones are **harmonics**. They sound musical because they have a very precise mathematical relationship with the fundamental frequency. The frequency of the harmonics are **always a whole number (integer) ratio** of the fundamental frequency.

Just to confuse matters slightly, the fundamental is also called the first harmonic. So, a tone with a fundamental frequency of 100Hz will have the second harmonic at 200Hz (an octave), the third at 300Hz (octave plus a fifth), the fourth at 400Hz (two octaves) and so on to the limits of our hearing.

The other sounds that you can hear are called **aharmonics**. These are frequencies that have a **non integer ratio** to the fundamental. When there are a lot of these present we tend to perceive the sound as clangorous or bell like.

If these three elements were all present in a sound in similar proportions we wouldn't hear a musical note at all. We would hear noise. So, to make musical sounds we need to find some way of establishing a balance between the fundamental, the harmonics and the aharmonics for any given frequency. And that's what synthesis is all about.

There are three major routes to doing this. One is that we can start off with basic sounds that are very rich in harmonics and then use a filter to reduce or remove the ones we don't want. Oddly enough, that is called subtractive synthesis.

We can also do the exact opposite. We can take very simple tones and add them together to create complex sound. Additive synthesis, surprisingly hard to do well.

The third route is a kind of middle way between these two. If the properties of one waveform can be used to vary those of another at audio frequencies, new and complex waveforms can be generated. You could call this synthesis by modulation. The most common methods used are amplitude modulation and frequency modulation.

In reality we mix and match, using elements from all three main routes as we need them.

Blocking it out

The components of most synthesizers can be categorized into four broad groups.

The first group could be called **sources**. These are the devices that produce the raw sound you will work with. The WAE allows you to use samples as sources as well as including some very well featured tone generators.

The next group we can call **modifiers**. Included here would be envelopes that shape the sound over time and filters that remove or emphasize certain frequencies.

The third group are **modulators**. They apply regular, repeated change over time to specific sound parameters. The most common of these is

the low frequency oscillator, the LFO.

Finally there are the **effectors**. These are signal processing devices, reverberation modules, delays and so on. Usually they act at the end of the synthesis chain.

It is usual to define the output from modifiers and modulators as **control signals**; being as their usual job is to control the parameters of other devices in the synthesis chain. In the days of monster analogue modular synths it was considered sensible to use different colored patch cords for control signals to distinguish them from audio and other signals. When using the WAE it is also important to distinguish control signals from the audio path. We'll explain why in a moment.

For now, let's have a look at the first three device types in turn.

The right wave for the right job

Any self-respecting synthesizer will have a tone generator offering several basic waveforms as a starting point for sound creation. Why? What distinguishes one waveform from another? The answer lies in the harmonics on offer. So let's just quickly run through the more common waveforms and see what distinguishes one from the other.

Sine wave	Is a pure tone. It has no harmonics at all so there is not much point in applying a filter to one. Nothing to filter! This purity of tone make it very good for adding low end definition or kick to a bass sound. It is also good for additive synthesis where you don't want harmonics unless you put them there yourself. Put three or four of these waves together for an instant electronic organ type of sound.
Sawtooth wave	Is the most harmonically rich waveform in the box. Characteristically bright and buzzy. The starting point for thousands of classic synth sounds. A sawtooth wave has every harmonic present (theoretically) but their amplitude decreases from that of the fundamental by 1/the

	<p>harmonic number. So the second harmonic is $\frac{1}{2}$ as loud as the fundamental, the third harmonic is $\frac{1}{3}$ as loud as the fundamental and so on until you hearing fails.</p>
Triangle wave	<p>Really just a sine wave straightened out. It doesn't have many harmonics and those that are present are quite high up. So, if you want hard and aggressive sounds this is not the wave to choose. Nice for flute sounds and soft leads though.</p>
Square wave	<p>A bit complex this one. A graph of a true square wave looks rather like a child's drawing of castle battlements. Square wave is a shorthand way of saying "pulse wave that spends as much time at the highest point as it does at the lowest". In this form it has a sound that is usually described as "hollow". The reason is that every second harmonic is missing, there are only odd numbered harmonics present.</p> <p>But this absence of even harmonics only holds true if the time between "high" and "low" in the cycle are the same. If the wave spends half of its time at the top the ratio between the high points and the low points of the waveform is 1:2 and, as we already know, every second harmonic is missing. If we change this ratio to 1:3 (i.e. the wave spends 33.3% of its time at the top) some of the missing harmonics return. We now only loose every third harmonic instead. If the ratio was 1:4 (25%) we would only loose every fourth harmonic. And so on.</p> <p>If there was a way of shifting this ratio in real-time we would be able to hear these harmonics coming and going. We could call it pulse width modulation and use it to recreate classic synth string sounds,</p>

	all kinds of shimmery pad like sounds and some unforgettable bass tones. Sounds like a plan!
Combination waves	Unsurprisingly, combination waves can have the characteristics of most of the above. The WAE includes one waveform that can be "morphed" from triangle to sawtooth to pulse wave. If you've followed us this far you should have realized that this gives you the option of tailoring the harmonic content of the waveform quite closely; a very powerful option indeed. Similarly, being able to change the shape of a wave in real-time can open the door to a whole new bag of sonic tricks. Pulse width modulation on steroids!

Envelopes

Envelopes give us a way of shaping a sound in time. Every synthesizer will always have at least one to control the amplitude of a signal. More sophisticated synthesizers will have several envelope generators which can be assigned to control other important parameters.

Envelopes are usually "one-shot" devices. An event triggers their start and, once underway, they transmit values that correspond to the envelope shape until they are done. They then do nothing until they are triggered again. Amplitude envelopes are usually triggered by the equivalent of a note being pressed on a keyboard.

Envelopes can be described by the stages they go through. The WAE amplitude envelope is a multi-stage envelope, having separate stages for **Attack** (how quickly the envelope moves from zero to maximum), **Hold** (how long it stays at the final attack level), **Decay** (how quickly the level falls to the..), **Sustain** (the lowest possible level during a note event) and **Release** (how long the sound will take to fall to zero from wherever it was when the note event stopped). There is a set of stages associated with when the note stops.

The control signals sent by the envelope unit in the WAE can be bipolar; i.e. the control signal value can be positive or negative. This has got some implications if you want to combine control signals from more than one device.

Say you want to combine the output from an envelope and a LFO to create a LFO that fades up or down. As these could both be bipolar signals, shoving them into an adding unit (a simple mixer) won't work as you expect. Adding a minus value to a positive one is subtraction by another name so doing this will result in periodic signal cancellations and other unexpected behavior

If you recall your basic grade maths, you'll remember that a negative (minus) value multiplied by a positive always gives a negative result. So, if you want to combine bipolar control signals, use a negative scaling factor on one or more of your control-rate junction input scale factors!

Filters

Amongst some synth nerds, filters can acquire a mythical status, becoming objects to be worshiped or argued about into the small hours. This is rather off-putting for the rest of us and obscures the fact that, from a users point of view, they are actually rather simple devices.

There are only four things you need to know about a filter; its shape, its slope, its cutoff point and whether it is resonant.

The shape is usually what gives the filter its name. So it is a safe bet that a low pass filter will allow low frequencies through and exclude higher ones. Similarly, a high pass filter will do the opposite. A band pass will allow through frequencies that fall into a certain range and a band reject will allow everything through except frequencies in the defined range. Nothing mysterious about that.

The cutoff point is the frequency at which the filter will start to do its stuff. So a low pass with a cutoff point of 600Hz will start to attenuate anything over 600Hz but leave all the lower frequencies alone.

The slope of a filter simply determines how sharp the attenuation will

be. It is sometimes expressed in dB per octave and sometimes in "poles". The famous Moog filter had a 4 pole slope which equates to a reduction of 24dB per octave. If the earlier example of a 600Hz lowpass cutoff was a 4 pole type it would mean that, by the time we got to frequencies of 1200 Hz they would be attenuated by 24dB compared to the ones at 600Hz. This is quite a steep reduction and would leave very little audible signal by the time we got beyond 1500Hz. Something more gentle, like a 2 pole slope would only attenuate frequencies by 12dB per octave. So you would hear more of the higher harmonics.

Filter resonance (sometimes called Q for reasons that don't matter) is also pretty straightforward. All this does is emphasize the frequencies around the cutoff point. It is a kind of feedback loop. The higher the Q the more pronounced are the sounds at the cutoff frequency. On some old analogue synths you could crank this up so high that the only thing you could hear was the cutoff frequency so the filter would start to behave like an oscillator. This was called self-resonance. It is not so easy to do in a digital system.

And that's filters really. If they were fix and forget devices they would be little more than glorified tone controls. But, if we can use envelopes or LFO's to change the cutoff frequency or resonance in a dynamic way, then they are the heart of a subtractive synthesis system. Hence all the attention they get.

Modulators Part 1 Slow and gentle

We've made passing reference to it before but it is now time to get into some detail about modulation. It is a huge topic because there are so many possibilities. The skillful use of modulation techniques is probably the single most important factor in getting dynamic, expressive, musical sounds out of a synthesizer.

We'll start with a definition. In synthesis, modulation is the process of using one signal to apply regular, usually cyclical change to one or more parameters of a second signal. Lets look at a simple practical example.

A violinist often gives expression to a piece by adding vibrato. When he or she waggles their finger on the fretboard the net result is that they

are making small regular changes to the fundamental frequency of the note they are currently playing. We can do exactly the same thing with our instruments.

To create vibrato on a synthesized voice we simply apply small regular, cyclical changes to the oscillator frequency. We do that by routing the output of one, low frequency (i.e. slow) oscillator to the frequency controls of the main, audio oscillator.

The change this will make depends upon the properties of the signal sent from the low frequency oscillator (LFO). And, when we use a LFO as a controller of other parameters, some things that are not important to the sound of a waveform become very relevant indeed.

There are five aspects to a LFO waveform that are important to consider; the actual shape of the wave, its frequency and amplitude, its phase and its DC offset.

Frequency and amplitude are quite easy to come to terms with. The higher the frequency of the LFO the more changes per second will be made. Amplitude is an interesting one. In our violin example, sending a 100% amplitude sine wave from the LFO to the tone generator frequency control would not give us vibrato. It would give us the sonic equivalent of seasickness. You use the amplitude controls of an LFO to determine how much change is to be applied. For vibrato, very small amplitudes around 3% will do fine.

It is useful to be able to visualize the wave shape of an LFO. If we are generating a sawtooth wave at audio frequencies then the direction of the sloping part of the wave is irrelevant to the sound. A wave that has a slope to the left sounds the same as one with a slope to the right. However, if we want to use an LFO to make gradual change to one parameter, then fall down to the beginning and start again, we would not want to use a waveform with a left facing slope. Visualize it!

Phase and DC offset are related to some degree. Lets consider phase first.

In the vibrato example, for the main oscillator to remain in tune we need the LFO to start from the zero crossing point. If it started at any

other place it would automatically add something to the main oscillator and cause it to sound out of tune.

There might be other occasions when we want the effect that comes with starting the LFO at somewhere other than zero. In those circumstances we would adjust the phase to suit our purpose. Again, the best advice is to try to visualize what you want to achieve, then program it accordingly.

Finally there is the DC offset for the LFO. To go back to our violinist (for the last time, honest!) a vibrato effect that shifts the fundamental pitch up and down by equal amounts is not very natural sounding. It actually sounds far more realistic if we push the frequency in one predominant direction. The way to do this with an LFO is to shift the DC offset.

Think about it like this. The LFO is sending numerical values out to be added to the frequency of the main oscillator. As a bipolar signal with no DC offset, half of these values will be positive and half will be negative. Changing the DC offset will shift this balance. If we only want the vibrato to work up from the fundamental we would need to shift the zero crossing point right down so that the LFO sent out only positive values.

This can be hard to visualize just by applying a numerical offset value so the WAE makes it very easy by giving you an option to set the ratio between positive and negative values transmitted by the LFO using two sliders. Nice!

There is a catch to doing this though. If you change the DC offset it will obviously have a non-zero value. Less obviously, if you sent this DC offset LFO to the pitch control of another oscillator you will automatically add the DC offset value to it, taking the oscillator out of tune! So, if you are shifting DC offsets in this way you need to retune the destination oscillator to compensate.

Exactly the same principles apply when using LFO to modulate parameters other than oscillator frequency. We've mentioned how the harmonics present in a pulse wave change depending upon the pulse

width ratio. If you route a slow LFO to modulate the width of a pulse wave type oscillator you get a rich shimmering sort of sound as harmonics come and go that has been the basis for synth string patches since forever. It also gives some astonishing bass sounds in the lower registers. Pulse width modulation was actually hardwired into the infamous Moog Taurus bass pedals so beloved by `70's prog-rockers. Incidentally, if you are using an LFO to modulate pulse width you will need to attend to its amplitude. Too much modulation and you can get to the stage where there are no harmonics at all - not even the first one! Silence is not always golden.

Modulation by slow, sub-audio oscillators is not too difficult to get to grips with. But there is no rule that says that modulators always have to be inaudible. However, what happens when you crank the modulator signal up into the audio range can get pretty wild. One option is to use a device called a **Ring Modulator**.

With this device you simply take two sound sources and plug 'em into it. In effect what happens after that is that the first audio signal gets spliced with other signal at the frequency of that second signal. What you end up with is a new signal that consists of the sum and the difference of the two incoming signals. Which is OK if the two are pure sine waves. But if they have harmonics attached...:)

At low modulator speeds a ring modulator just chops up the sound in quite an obvious way. This was how they made the Daleks speak! But at high modulator speeds you can get all manner of crazy, unpredictable effects, especially if the modulator frequency is either fixed or changes in a way not related to the carrier. If you want one of those "car crash in a steel foundry" moments (and who doesn't) head for the ring modulator.

As we are talking about high speed modulation it is probably worth mentioning something that **isn't** going to work in the way you might think. At this point we need to get a bit technical about the workings of the WAE. Remember what we said about distinguishing control signals from audio signals? Here's why you need to do it.

The WAE is a digital synth (obviously!) so everything going on under the hood has to have a sample rate to work to. In order to save resources for the things that matter, the WAE gives absolute priority to rendering the audio signal at a reasonable sample rate, typically 22Khz on a modest PC. To save CPU time, **all control signals are rendered at a very low sample rate**. The default rate is 100Hz..

In most circumstances, this low sample rate isn't an issue. You don't need to hear the actual output of an LFO or envelope unit so there is no point in rendering it at CD quality when we can do better things with the resources available. However, it does mean that you can't just stick the output of one tone generator into the frequency control input of another because the (incoming) modulating signal will be interpreted as being a control signal and so will be capped at the control signal sample rate frequency.

Going granular

Granular synthesis is a relative newcomer as a synthesis method, mainly because the tools and processing power needed to do it easily haven't been readily available until recent times. As powerful computers tended to be in academic institutions it gathered a reputation for being "something for the boffins". While the underlying maths might be the stuff of nightmares, the concept of granular synthesis is dead easy. Here goes.

If you take a very small section out of a waveform (a few milliseconds at most), add an similarly small section of silence and loop play the result at audio frequencies you get an entirely new, and rather complex waveform. The audio content of this waveform will be determined by several different things; the size and content of the original mini sample (the grain), the length of the silence, the nature of the boundary between the two (is it abrupt or does it fade and by how much?) and the playback speed.

If you think about it, this is not a million miles away in principle from good old amplitude modulation. But then we take it to another level!

If you move away from using a single grain to using multiple grains, all with different frequencies, or if we modulate the grain size and/or the grain end cross-fades it all gets very strange. You very soon start to generate mutated, wholly original sounds that are not easy to achieve by other means. Which is what the buzz about granular synthesis is all about.

Now we wouldn't be telling you all this if there wasn't a way to do it with the WAE. One of the modules available is a "particle generator" and mainstream this is not! What this module does is generate up to twenty little bits of simple waveforms which are then used as the grains in creating a more complex overall sound. You control a range of the more useful and interesting parameters, most of which can be modulated by other the WAE modules.

What comes out of the business end of this module is not always predictable. It is very easy to get it to generate complex, untuned warbling or twinkling sounds. With a little more effort you can make some breathtaking, animated, tuned soft lead sounds. As it is hard to describe the indescribable the best way to learn about this little beastie is simply to play with it. Think about it as a hands on introduction to chaos theory!

A quick word about hybrid synthesis

The use of "real world" sounds instead of tone generators as the starting point for sound synthesis is hardly a new concept. But it wasn't until the 1980's and the development of affordable digital recording technology that the full potential of this could begin to be realized. The ability to process and manipulate recorded sounds using the familiar shaping and modulating tools is a form of hybrid synthesis.

The simplest implementation of this can be seen in most samplers which basically slap a subtractive synthesis engine onto a digital sample playback device. You can do this with the WAE, no problem. And we will. Later.

But that is more than enough background for this tutorial. We can now

take this knowledge forward with us and explore the WAE in more practical terms by starting to build our own instruments within the WAE.

Synth Tutorial 2

Working with the WAE Modular Synthesizer

Launch the [Synth & FX Editor](#). This is the place where you activate and program the WAE ... and where MIDI sound creation for the Intermorphic Sound System (ISS) gets very interesting!

Note that the audio plugin framework that underpins the WAE is an open framework, and has been designed to allow 3rd party developers to create application UIs into which they can plug in their own or other 3rd party sound processing modules, including support for the Intermorphic modules if so required.

When you start using the WAE for a MIDI line, what you have is an independent, non-midi, polyphonic synthesizer. The sound generation limitations of MIDI pretty much go out of the window.

The WAE is no lightweight. It has a degree of flexibility that is comparable to the old, monster modular synths. It includes some features that are seldom seen, even on very expensive, "famous name" hardware synths. Inevitably, something so well featured and flexible isn't able to hide its complexity too well so there will be a bit of a learning curve to negotiate if you are going to be able to harness this power in a creative way. This tutorial aims to help you up along that curve.

We won't be creating full pieces of music in this tutorial; instead, we'll concentrate on programming sounds using the WAE.

The Path

To get the best from any synthesizer you really need to have some understanding of the path the various signals take inside it. If you have had some experience of hardware synths you will probably be used to imagining a left to right signal path, with the sound generating

oscillators at left hand side and the sound output stage at the far right. The WAE signal path pretty much follows this convention...

It is here, in the Synth Network Editor, that we design the sound for the selected MIDI line. As you add synth units to your sound design, they appear as boxes in the bottom part of the dialog. We sometimes refer to these units as "slots"; you can have as many "slots" as you want, where you insert the various modules and units that, together, will make your synthesizer module. The sound you eventually hear will come **only** from the audio-rate unit in the rightmost slot. So, if you were to construct the simplest of synthesizers, using one tone generator and a LFO, you would have to put the tone generator in a slot somewhere to the right of the LFO. Put them the other way round and, if it was fast enough, all you would hear would be the LFO!

With the proviso that the sound comes out of the right most unit, the signal-flow is pretty strict in terms of left-right ordering. Signals from one module can only ever be passed to modules that are to the right of it in the design. In practice you must put control-rate units (your controllers and shapers, such as envelopes and LFOs) sound **BEFORE** the sound generating modules (i.e. before your tone generators). So, if you want to use an envelope to control the output from a LFO, you'll have to put the envelope to the left of the LFO. This does of course help you keep a handle on what your signal path is doing. With practice, you won't be confused.

Control signals are different.

Says it all really.

The WAE makes an important distinction between audio signals and control signals. Here's how it works.

Most signals in the system are "audio-rate" signals; they are rendered at whatever sample rate the platform is running at, for example 22Khz.

The **only** signals that can be used to modulate parameters of a synth unit (e.g. to amplitude or wave shape) are control-rate signals, that must come from a control-rate unit. To save CPU resources for the things that matter, control signals are rendered at a very low sample

rate; typically 100Hz. So, if you try to modulate a parameters between units at audio frequencies the best you are going to get is 100Hz. This is not going to be good enough for specialized applications such as FM synthesis!

The reason that we do this, is that it saves a lot of CPU horsepower; to render subsonic waveforms at near CD quality would be pretty pointless. You don't want or need to hear the direct output of an envelope unit or a slow LFO.

On tuning

A fixed architecture synthesizer with limited flexibility can hide a lot of things from the end user. Because the WAE has been designed for flexibility it is up to you to take care of some of the details to make sure that the results you get are the results you expect. This is particularly the case when making sure your MIDI line is in tune with the others in a piece.

The thing that is most likely to catch you out is when you use a LFO to modulate the frequency of a tone generator. If you use the LFO with most of its settings at the default there will not be a problem. However, if you adjust the min or max value sliders you will have a tuning problem that will need correction. Why?

If you recall in the synthesis tutorial, we said that changing these values was the same as applying a DC offset to the LFO wave, i.e. the zero crossing line has a non-zero value! So, if you route a LFO that has been shifted in this way to the frequency of another oscillator you are, in effect sending two values. One is the LFO amplitude, which will change over time and the other is the DC offset which is a constant. This DC offset will have to be allowed for by adjusting the pitch of the sound generating oscillator to get it back into tune.

So, if you have an out of tune MIDI line, check what is modulating the frequency!

Polyphony - a word about resources

All soft synths are serious processor hogs. A lot of effort has gone into minimizing the hit that the WAE will make on your processor but you can't cheat physics. Making complex sounds in realtime means doing hard sums very fast and there will be a limit to the strain your CPU can take.

Note: The polyphony a synth will play with the Polyphony ("Poly") setting in the [Network Editor](#). Note: This setting does not display in FX Networks which have no concept of polyphony.

Tips

- If your piece can use built-in wavetable (e.g. for basic drum sounds), or custom audio samples, then consider using them where possible rather than the modular synth. Remember that sample-based drum sounds can be very effective.
- **Very importantly**, use a polyphony value that is as small as your piece can get away with!
- If you wish any FX to apply to all Cells in a Track, to save processing cycles put them in Track FX (see the [Network Editor](#)) rather than directly in your synth module design.
- Be economical with units. Think about ways in which you can maybe use one unit more than once in a voice.

Finally, a word about polyphony. With the WAE, each MIDI line can become an independent, polyphonic synthesizer.

But rather than always thinking of the WAE as a polyphonic synthesizer, you can think also think about it as a synthesizer that can have multiple instances of a Synth Network. If you set the "Poly" parameter to 2 or more, what the WAE does is create the corresponding number of **identical** synth networks that can operate simultaneously, one for each possible note. So, setting your "Poly" parameter high is an excellent way to use up your processor resources - which you will want to try to conserve. Use it with care.

OK, enough of the preliminaries. Lets get on with making some sounds. The terminology and concepts we will be using will assume you are up to speed!

Simple subtractive synthesis

This is how to set up the WAE as a simple two oscillator synth in the classic style. We'll go through this in some detail because, once you have got the principles of the WAE established, working in more adventurous ways gets much, much easier.

Firstly, we need to create a piece. From Wotja create a new mix (Menu > New) and from the popup Template list Scheme (Pak) > Ambient. You will then have a mix or piece that will play long notes. Save this piece as "MyTest".

Launch the [Synth Network Editor](#) and set the poly to be 1 or more. Once you set a tone generator in your synth module design, this will then override any MIDI patch settings that your piece is using.

So: we need to design the module that our MIDI line will use. As we are going to make a classic kind of synth we will need two tone generators, a filter and an envelope to control it.

Add the following by tapping on a blank area in the Synth Network: Unit 1 - "Ctrl-Envelope", Unit 2 - "TG Oscillator"; Unit 3 - "TG Oscillator"; Unit 4 - "Filter".

Using an Audio-rate Junction

Hold on - the filter is only fed from the output from the unit immediately before it; and what we really want is to feed the filter with the combined outputs from units 2 and 3! To do this, we need to route the two tone generators into the filter unit. How we do that is fundamental to getting the WAE to work for you!

Tap/hold Unit 4 (the Filter) and press the "Add Before" button and then select a "Junction"; your Filter is now moved to become unit 5! When the Junction Unit is selected, in the bottom Connector & Controllers area tap the Add button twice. Make sure that the first input item of the two inputs you've just added comes from Unit 2 (the first tone generator), and make sure that the second of the two inputs comes from Unit 3 (the

second tone generator). You can set relative scaling factors for the two input units by playing with the scaling factors. Here is the text that we get if we now press the "Export" button on the synth module editor window (we could subsequently reimport this if we need to by highlighting the text, copying it and pressing the "Import" button):

```
<fxm>
<unit t="c/envelope" r="c"/>
<unit t="tg/osc"/>
<unit t="tg/osc"/>
<unit t="j" i="2,1.;3,1."/>
<unit t="filter"/>
</fxm>
```

The audio-rate junction you've just added takes the the signals from the two tone generators, and adds them together. The output from your audio-rate junction automatically feeds the filter unit to its right.

OK, that's the network built. Now lets fine-tune our settings.

Tap unit 2 to display the Oscillator Unit. There is a list control where you can select the wave shape for this tone generator. We want a saw wave. The direction of the slope isn't relevant. Close unit 2, then tap unit 3 to display the second Oscillator Unit.

Select a sawtooth wave for the second tone generator. Please make sure its direction is the same as its twin in unit 2 or else they will cancel each other out and you won't hear much! :)

To make a big sound, set one of the tone generators to work an octave lower than the other. You can do this with the one in Unit 2 by setting the Octave offset to 1.

Once you've done all that, tap unit 5 (the filter) to open the Filter Unit. Set the filter type to "low pass" and adjust the cutoff frequency and Q (resonance) to taste. The filter will automatically sweep unless you tell it otherwise.

Here's what the exported module now looks like:

```
<fxm> <unit t="c/envelope" r="c"/> <unit t="tg/osc"p="1280=2;1287=1;16
```

Next, let's use the control-rate envelope (unit 1) to modulate the frequency of our first tone generator (unit 2). Select unit 2, and in the bottom "Connectors & Controllers" area add a controller by pressing the "Add" button. Set the source Unit to be unit 1 (our envelope), and set the Parameter to be Frequency. Your envelope will now be modulating the frequency of your LFO! Use the Scale slider to adjust the amount of modulation. Select unit 1 if you want to modify the shape of your envelope.

Note that the envelope editor display might look a bit complex to start with, but it's not really. It can be used to send out negative as well as positive values (it is bipolar!).

For example, you might want an envelope shape that rises slowly to a maximum, falls down to a low level rather slowly and tails off to nothing once the note has ended. So you could set the attack time to around 5 seconds, the decay time to just less than 4, a very low sustain level and a release time of half a second.

Once you have an envelope shape you like it is then just a matter of playing around with things until you get the exact sound you want. Note that you can also use control-rate LFOs to modulate parameters; and many units have a large range of parameters that you can experiment with modulating.

Anyways, back to our example: you should hear a more familiar, if rather overused, sound. If you go back to one of the tone generators and tweak the "Micro Offset" value a bit you will find that fattens up the sound nicely.

For a final touch you might want to add some reverb. This is best done by using it as a global effect for the entire piece because you might have several voices that you want to treat similarly.

If you close the Synth Network Editor you'll be back to the main application window. Press the "Global FX" button to open the FX Network Editor. This looks and works just like the Synth Network Editor you saw before, but this is now being used to edit global FX for the

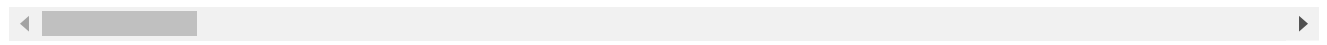
entire piece. Make sure to add an FX of type "reverb", and change the settings in the unit to get the sound you want. Then, close the Unit.

And there we have it. One classic, filter swept pad in the traditional subtractive style. Easy!

Now we have a sound that works it is a good idea to save it for use in other pieces. As noted above, you can export & import data directly via the clipboard and a text editor at various levels of the tool; this makes copying sounds around from piece-to-piece very easy.

If we export the settings from the Synth Network Editor the text should look something like this (depending on exactly what you did!). We need this by the way for our next tutorial step.

```
<fxm><unit t="c/envelope" r="c"/><unit t="tg/osc" p="1280=2;1287=1;105
```



Waveshaping

This sounds similar in some ways to Voice 1. But this time, instead of using a filter module to remove harmonics and animate the sound we will use an envelope to change the waveform shape over the duration of each note.

If you recall some of the things we covered in the previous tutorial you will realize that changing the waveshape will change the harmonic content of the sound. And, if we get it right, we'll end up with something that sounds like a traditional filter sweep without the CPU hit that the filter involves. So, really, we are almost using additive methods to make this sound. And it is more economical. Great!

Go back your piece above and open it.

Select the filter unit and press the Delete button to remove it. The last unit is now the audio-rate junction unit, which just adds the two tone generators together.

Open up the Editors for the two tone generators. Change the wave type for each of them to STS. You'll notice that you get some interesting control sliders for this wave type.

Here is the synth module definition at this stage:

```
<fxm><unit t="c/envelope" r="c"/><unit t="tg/osc" p="1280=5;1283=41.;1
```

It may not sound that interesting so far, but the STS wave is one of the quietly outstanding features of the WAE. If you couple that with modulation, and keep going, you will see why. The three parameters, controlling the up/down ratio, squareness and slope give you the capacity to morph a waveshape.

It might be a good idea to set up a simple voice just using this waveshape in a single tone generator and play around with the sliders to get the feel for what you can do with this. Basically, if you set the up/down to 100%, squareness to zero and right/left% to either 100% or zero you will hear a sawtooth wave. If you now move the right/left slider towards the center you will hear the sound mellow until, at 50%, you get a triangle wave. Now move the squareness slider and you hear the sound harden again as the wave become more pulse like. We already know that changing the up/down ratio of a square wave (the duty cycle) will change the harmonic character in other ways. Check it out!

So, by varying these three parameters in different ways in real time you can generate some excellent harmonic changes without resorting to a filter. Lets do it!

We don't need to change the current Envelope settings, but you can play with this if you like. But we **do** want to route the envelope controller (unit 1) to the appropriate destination!

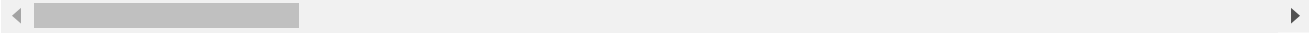
In the bottom Connectors & Controllers area, for both units 2 and 3, add a controller from unit 1. Ensure that this new controller is used to modulate the Up/Down Ratio parameter. Now do this again, adding new controllers, but this time to use unit 1 to also modulate the Squareness Ratio. Then do this again for the Slant ratio!!

As this is the "suck it and see" school of synthesis, the next bit is down

to you and your ears. Hit play and adjust the settings levels on these parameters, the envelop and the scale factors)until you get a sound you like. You'll find that if you overdo the levels you can flatten the waveshape out and lose the sound altogether.

Here is the synth module definition at this stage (it is worth a listen):

```
<fxm><unit t="c/envelope" r="c" p="1042=0;1044=0;1046=4168"/><unit t='
```



It shouldn't take you too long to find settings that sound like the filter sweep we created in the first example. If you check this sound with the one from the first example with a Filter Unit you'll find that this approach actually gives you a greater range of harmonics than using a simple filter. The sound will tend to be richer and brighter, sitting up in the mix more perhaps.

Gentle Ring Modulation

We can use the ring modulator mode of the "osc" unit to give some quite pleasant quality tones that are very similar to those you get from basic amplitude modulation. The key is to make sure that both the tone generators track the pitch of the composed notes.

A ring modulator has to have two inputs for you to hear anything. If you just load up the ring modulator on its own you'll hear nothing. The WAE oscillator use the internal oscillator as one permanent input. All you need to do is route another source into the ring modulator and off you go.

Change one of your modules such that it is one "osc" unit followed by another "osc" unit. Be sure to check the "ring-modulate?" checkbox on the second unit; verify that the "Use MIDI Notes?" checkbox is also checked.

If you play with the various oscillator parameters you'll discover that the harmonic content of the sound generated depends mostly on how far apart the two tones being modulated are.

Ring Modulated weirdness

Go back to your Ring Modulating unit. Uncheck the "Use MIDI notes". What you get is a weird, metallic noise! The quality of the noise will depend upon the relationship between the frequency coming in from the tone generator and that of the oscillator in the ring modulator. Adjust this frequency until you get a cleaner, bell like tone. It should be somewhere around 700 Hz.

If you want things to get dafter, add a control-rate LFO "(c/lfo)" to modulate the ring modulator's oscillator frequency. Try this. Add a control-rate lfo ("c/lfo") as the first unit. Set the wave type of this LFO to Random and the type to Step. Set the frequency to 2 Hz. Now add this unit as a modulator controller of the ring modulator frequency. Hit play! :)

What you should be getting now is weird, randomized electronic chime noises that change every half second. Strange, isn't it?

You can use SF2 samples as the source as well as another WAE module so you can do ring mod sound warping to your own samples in realtime. And who wouldn't want to do that?

Particles. Making ring modulation look ordinary

Now if you thought ring modulated noises were strange, check out this option. As an alternative to a comprehensive tone generator module, the WAE includes the Particle generator.

The concept is based on granular synthesis. This module generates little wavelets of sound punctuated by little sections of silence. With careful control of the comprehensive set of parameters on offer you can generate the most unworldly sounds.

A little alert before we start. This module does a lot of maths! Don't overuse it in a piece or there won't be much processor time left for anything else.

We'll use it to create an Sci-fi movie background music sort of thing.

Open the "MyTest" mix/piece you created above, and delete the Synth Network you made. Add a [Particle Unit](#) as your only unit for MIDI line 1.

And that's it! :)

Well, not really. The difficulty now is that this all gets very subjective and rather hard to write about. You just need to hit play and then adjust the many parameters on offer in the Particle module until you get a sound you like. So instead lets just check out the key variables.

The harmonic parameter is one of the most influential factors on the end sound. Low values will keep the base frequency of wavelets close to each other. Larger values will mean much greater differences between individual wavelets and a much wider harmonic range to the sound.

Frequency velocity is like a mini pitch envelope applied to each wavelet. Small values give nice detunes and sweeps. Larger values can cause queasiness!

The attack, sustain and decay parameters are like a mini amplitude envelope for each wavelet. Small values make each wavelet distinct and audible. Larger values will cause a smearing and blending of the sounds which is not unpleasant.

Pause governs the time between each wavelet.

The "Number of Elements" value sets the number of wavelets to be generated. Set this lower and reduce the processor hit for this module.

You will hopefully have noticed that every parameter can be modulated by another unit, so there is plenty of scope to sculpt some quite unique and complex pieces with this little baby!

This is just one kind of the strange little things you can get out of it (it is worth a listen):

```
<fxm><unit t="tg/particle" p="1280=1046;1281=.297;1282=.175;1283=.379;
```



DSynth - The Drum Synthesizer

This one is a little bit different because, with this beast, you can achieve so much. So some explanation is in order first.

To make decent percussive sounds using a modular synthesizer takes

quite a few modules, most of which would be rather over specified for the task to hand. Such an approach would waste a lot of computational resources. So we took a different path.

The drum synth module incorporates just the tools you need to create a huge range of tuned and untuned percussive sounds with no waste. It looks a bit complex at first sight because it packs a lot into a small area of screen but once you get the hang of it you'll love it.

The module incorporates three tone generators - two generate sine waves, one generates colored noise. The noise generator has a multi-type resonant filter. Each tone generator has its own simple attack/decay envelope that controls the amplitude. This envelope can also be routed to control pitch in the case of the sine wave generators and the filter cutoff frequency for the noise generator.

The output of the three generators is added together so you control the mix between them using the envelope level parameter. A word of warning - this module has been designed to kick - it goes loud.

One sine wave generator is designated the master and can be set to any frequency from the low 40's to about 900 Hz. The other sine wave generator slaves to this frequency, i.e. its setting is a ratio of the frequency of the first one. We do this mostly to save CPU resources (the slave oscillator's maths are slightly less taxing)

One thing worth noting is that the two sine wave generators can cross-modulate the other's frequency. What's the point of this?

Well, using the output of one sine wave generator to modulate the frequency of the other will give some metallic-like tones. It is called frequency modulation synthesis. Exactly how metallic will depend upon the difference between the frequencies of the two generators and on the depth of the modulation.

If you then take that modulated output and make a loop so it modulates the frequency of the first tone generator (modulate the modulator as it were!) then the results can get even more harsh and chaotic. At high modulation depths this is just what you need to start to create struck

metal percussive effects. Lower depth values will dirty up drum sounds for you rather nicely.

You can force this module to track composed note values. There are loads of possible uses of this feature. The obvious one is to get several percussion instruments for the price of one. If you want to set up an alternating high/low cowbell figure simply load up the relevant preset, enable note tracking on this module and set up a pitched fixed voice type or something similar to take care of the tuning. You can also create a whole battery of tuned percussive instruments; marimbas, bells by using this option.

Enjoy!

And that just about concludes this quick jaunt through the practical application of the WAE. We've really just scratched the surface but hopefully you have collected enough pointers from this and the previous tutorial to make your own way from here.

External Links

- [Video Synthesis Tutorial](#)

Glossary

Tone Generator (TG) Unit : A unit that knows how to generate sound in response to MIDI note events. These are the Wavetable, DSynth, Oscillator and Particle units. You can have as many TG Units in your design as you want, subject to the processing power of your target platform.

FX Unit : An audio processing stage which can be used to perform a variety of exciting things. You can have as many FX Units in your design as you want, subject to the processing power of your target platform.

Synth / FX Network: A grouping of all units used by a particular Synth or FX (Global FX or Track FX). Think of it in terms of a row of audio-rate units that work from left-to-right.

Audio-Rate Unit : An unit that works at the normal audio processing rate of the system, e.g. Wavetable Unit.

Control-Rate (Ctrl) Unit : A unit that works at a lower rate than the normal audio processing units and is used to control parameters on other units. These are the Ctrl-LFO, Ctrl-Envelope and Ctrl-Amp units.

LFO: Low Frequency Oscillator. The Ctr-LFO Unit can be used to control other effects unit parameters such as filter cutoff frequency or perform pitch modulation. The audio-rate LFO (Osc) can be used as a direct frequency generator, or to apply Ring Modulation effects if run at a low enough frequency.

Envelope: A Control-Rate Unit that creates a waveform in direct response to a note on MIDI event; used to modulate various critical parameters within audio-rate or control-rate Units. For example, envelopes are used to shape the volume of a note when it is triggered, and can also be used for all sorts of neat effects such as modulating the pitch of a note while it plays.

[↑](#) Wotja 23 Script Engine (WSE)



The Wotja Script Engine ("WSE") allows programmatic control of WME parameters. It's use is entirely optional but it comes into its own when creating "Adaptive Music".

Looking for something?: *Try page search* with Cmd+F/Ctrl+F.


Quick links

- [Scripting Overview](#)
- [Script Editor](#)
- [Mix Script](#)
- [Cell Script](#)
- [Generator Script](#)
- [Scripting Objects](#)
- [Script Function Reference](#)
- [Scripting Cookbook](#)
- [Hyperinstrument](#)

Scripting Overview

Wotja Scripting is aimed at those who want to push the outer limits of what Wotja can do out of the box. Wotja scripts are based on ECMAScript and edited in the [Script Editor](#) and Script Sandbox. Scripts can be used in 3 contexts: Mix Scripts, Cell Scripts, Generator Scripts. We give you lots of examples to get you started.

Wotja Script language:

The [ECMAScript](#)  scripting language (ECMAScript E5/E5.1) is widely used in the web, gaming and multimedia worlds. It is very powerful, fast and easy to learn and commonly referred to as JavaScript.

Wotja Script Editor:

- **Mix Script** - Script saved to the Mix Script parameter:
 - Wotja [Music Edit Mode](#) > [Mix Properties](#) > [Mix Script parameter](#)
- **Cell Script** - Script saved to the Cell Script parameter:
 - Wotja [Music Edit Mode](#) > [Cell Properties](#) > [Cell Script parameter](#)
- **Generator Script** - Script saved to the Generator Script parameter:
 - Wotja [Mix Edit Mode](#) > [Editor Panel \(WME\)](#) > [Generator](#) (AKA Generator) > [Generator Script parameter](#)

Wotja Script Sandbox:

Tip: The Sandbox is for you to experiment with Wotja Script. Sandbox scripts are not saved to files and don't access Mix properties.

- Wotja [Mix Mode](#) > Action Menu > Script Sandbox

Why would you want to use Scripting?

Are you a generative music fan who wants to see what your own custom code can achieve when leveraging a hugely powerful app such as Wotja? Are you code hacker who want to play with music? Are you a Wotja expert who wants to push the outer limits of what Wotja can do out of the box?

With careful use of Wotja's Event Handler Script Functions, you can do a lot of cool things, while turning Wotja into [a custom hyper-instrument](#).

You can, if you wish, create Event Handler Script Functions to run in response to the following events:

- start of playback
- every bar
- when a note is composed by the WME
- end of playback
- in response to external MIDI CC via e.g. keyboard controller
- in response to external MIDI Note on/off via e.g. keyboard controller

Every script can manipulate a large number of things in Wotja in real-time. Some examples: manipulating music rules, playing with mutation, altering patterns; and what have you.

By creating code to respond to external MIDI events, you can in turn manipulate various properties of Wotja, such as auto-chording parameters, rule settings etc.

User Interface Updates

If you change a property with a script function such as *wmeParameterSet*, the user interface doesn't always update to reflect your call; you'd need to refresh the table that displays your updated parameter, to see the change in the user interface. We hope to be able to improve this behavior at some future point.

If you change a parameter with the user interface, and that parameter is later changed by a script; the latter script call will override your user interface change. Don't get confused by this!

If you have a script which copies a parameter value at start, and then resets it when the mix stops; where you've in between changed the parameter through the user interface; the latter script call will override your user interface change. Don't get confused by this!

Latency and Timing

The WME composes events a little bit in advance of when you'll hear them. This is to ensure that the notes are composed, in time for them to be picked-up by the WAE; the system also does the audio processing required by the WAE a little ahead of time before you actually hear it. Added together, this means that script code run in response to, say, *onWmeBar* won't always appear precisely synchronized to what you're listening to!

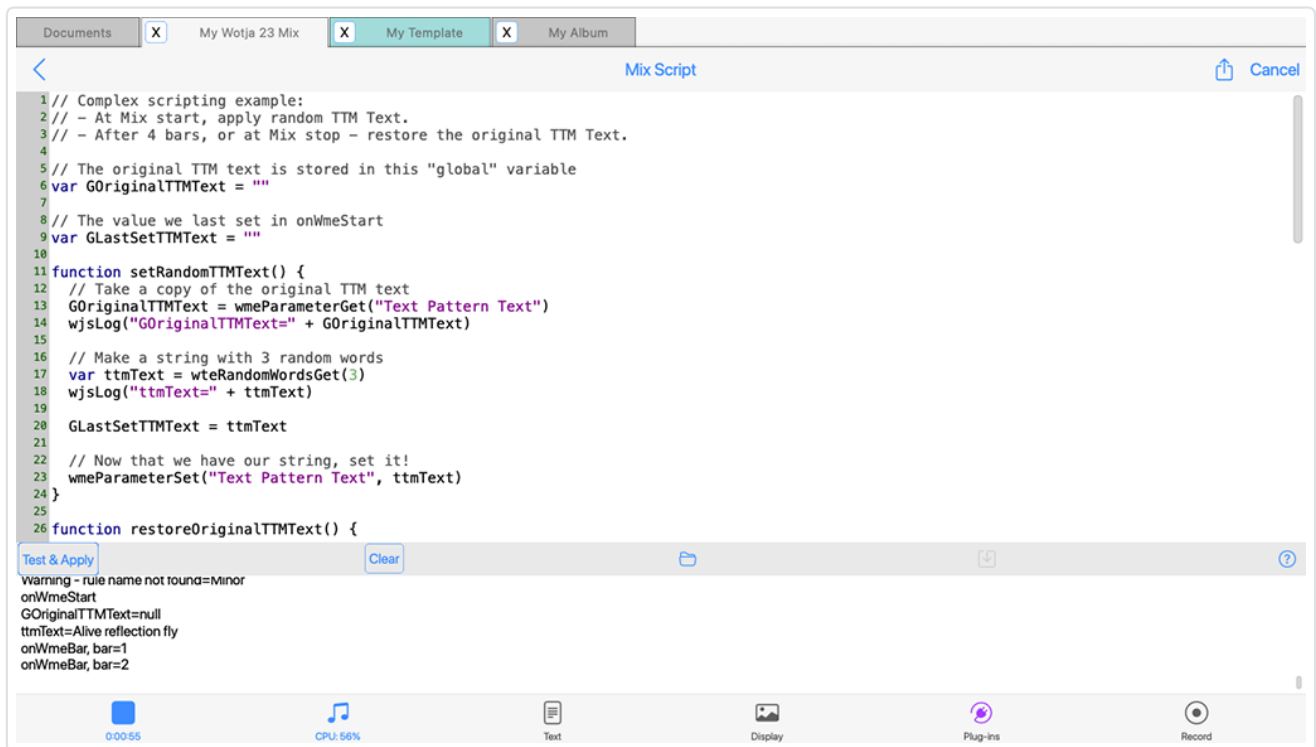
Infinite Loops

Please be careful not to implement so-called *Infinite Loops* in your script code, as that might cause the Wotja application to crash.

Recursion (recursive function calls)

Please be careful not to write script code that results in a lot of *Recursion*, as that might cause the Wotja application to crash.

Script Editor / Sandbox



Wotja Script Editor Interface

Click image for large

When you decide to edit a *Mix Script* or *Cell Script* or *Generator Script* parameter, or if you select the *Script Sandbox* menu item, you are presented with the *Script Editor* window. It supports syntax-colored code editing and a console window at the bottom lets you capture logs from your scripts.

- Mix/Cell/Generator Script Editor
In this mode, the top panel allows you to edit Wotja Script Functions associated with your Mix or Cell or Generator.
- Script Sandbox
In this mode, it is used to create and run scripts that aren't saved, and that don't access Mix properties. It is there for you to experiment with Wotja Script!

Script Editor: Top Menu Bar

< Back

Pressing the Back button will close the screen. If you're editing a Generator Script or Cell Script or Mix Script, you'll first be prompted to save or discard any changes you might have made.

Title

Will be either "Generator/Cell/Mix Script" or "Scripting Sandbox" depending how you have accessed it.

📄 Action

Pressing the *Action* button will show the following popup menu:

- *Edit...:* Allows you to edit in a standard text editor with standard copy/paste etc.
- *Clear Script:* Select this to clear the script.
- *Export to Clipboard:* Exports script to clipboard.
- *Import from Clipboard:* Imports script from clipboard.

Cancel

Pressing the *Cancel* button will discard your changes.

Script Editor: Top Text Panel

This is where you edit Wotja Script Functions associated with your object.

The panel can contain as many functions as you want, or as few as you want. Leave it blank if you don't want to use any scripting.

Logging output to the Script console with *wjsLog*

The *wjsLog* function may be used to write text to the [Script Console](#); this is very useful for debugging your scripts!

Here is an example with just one trigger script function:

```
// Just one function!

function onWmeBar(bar) {
  wjsLog ("onWmeBar: Bar number=" + bar)
}
```

Here is an example with three trigger script functions:

```
// Three functions!

function onWmeStart() {
  wjsLog ("onWmeStart!")
}

function onWmeBar(bar) {
  wjsLog ("onWmeBar: Bar number=" + bar)
}

function onWmeStop() {
  wjsLog ("onWmeStop!")
}
```

Script Editor: Bottom toolbar

"Test & Apply" (only for Generator/Cell/Mix Script)

Pressing this button will compile any Wotja Script that you type in the large text area at the top of the window, and if the script looks valid, it will send the script to be stored within the Mix. It will take effect immediately (if your Mix is running).

"Run Script" (only for Script Sandbox)

Pressing this button will compile any Wotja Script that you type in the large text area at the top of the window, and display any results in the bottom panel. Use *Run Script* to quickly check your script for obvious syntax errors.

Note that any changes you make here aren't saved within the mix.

"Clear"

Pressing the *Clear* button in the bottom area, quickly erases the text in the bottom panel.

Open

Pressing the Open button displays the Wotja Scripts Window (below), where you can select a Wotja Script file from either built-in examples, or from ones you've saved yourself (which have a *.wotjascript* extension). Your saved custom scripts are listed in the top section; you can save your own custom scripts in this section, by using the Save button.

Wotja Scripts Window

The Wotja Scripts window lets you select from a number of built-in scripts that are provided by Intermorphic. There are simple implementations of each of the Event Triggers functions for Generator Scripts or Cell Scripts or Mix Scripts, and there are a large number of *Cookbook* scripts for both Generator and Mix. The *Cookbook* scripts which are often quite detailed, and which are designed to help you get started with writing your own scripts.

When in this Window, select the item you wish to use in the Script Editor.

The top section lists any Scripts that you might have saved yourself; you can press the "Trash Can" icon to delete your user script.

Save

Pressing the *Save* button lets you save the contents of your Script editor window to a document with the `.wotjascript` extension. You can then easily find and re-open that Script using the Open button (your saved custom scripts are listed in the top section).

Help

Pressing the *Help* button displays help on Wotja Scripting system!

Script Editor: Test Results Panel (Script Console)

Any test results are displayed here.

See Also

- [Scripting Overview](#)
- [Mix - Script](#)
- [Cell - Script](#)
- [Generator - Script](#)
- [Event Handler Script Functions](#)
- [Script Function Reference](#)

Mix Script

Mix Script

- `onWmeStart()`
- `onWmeBar()`
- `onWmeStop()`
- `onMIDIInCC()`
- `onMIDIInNote()`

Mix Script applies to the whole Mix and is stored in the [Mix Script parameter](#). *Tip:* For organisational purposes it can be considered best practise to put in here all the scripts used by the Mix.

Mix-related **Event Handler Script Functions** ("*Triggers*", and which all start with `onWME`) get triggered when the Mix is playing and when certain events happen.

Use of these Triggers lets you affect how the Mix plays at certain points (or via detection of certain events) by letting you use various [Scripting Functions](#) to change the [Mix Object](#), [Cell Objects](#), [Generator Objects](#) and [Rule Objects](#).

`onWmeStart()`

Start

The **onWmeStart** Event Handler Script Function is called once at the start of the Mix playing.

The function has no parameters.

```
function onWmeStart() {
```

```
wjsLog ("Mix start!")
}
```

<> onWmeBar ()

Bar

The **onWmeBar** Event Handler Script Function is called at the start of every bar while the mix is playing, starting from 1.

The function has one parameter:

- *bar* the bar number, starting from 1.

```
function onWmeBar (bar) {
  wjsLog ("Bar number=" + bar)
}
```

<> onWmeStop ()

Stop

The **onWmeStop** Event Handler Script Function is called once, just as the Mix stops playing.

The function has no parameters.

```
function onWmeStop () {
  wjsLog ("Mix stop!")
}
```

```
}
```

<> onMIDIInCC()

MIDI In CC

The **onMIDIInCC** Event Handler Script Function is called whenever a MIDI CC event is received by the MIDI Input device.

The function has three parameters:

- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *cc* the CC event identifier, from 0 to 127.
- *value* the value of the CC event, from 0 to 127.

```
function onMIDIInCC(channel, cc, value) {  
    wjsLog ("Mix onMIDIInCC channel" + channel +  
}  
}
```

<> onMIDIInNote()

MIDI In Note

The **onMIDIInNote** Event Handler Script Event Handler Script Function is called whenever a MIDI Note On or Off event is received by the MIDI Input device.

The function has four parameters:

- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *noteon* a value indicating if this is a note on event - true means note on, false means note off.
- *pitch* the MIDI pitch of the note event, from 0 to 127.
- *velocity* the velocity of the note event, from 0 to 127.

```
function onMIDIInNote(channel, noteon, pitch,
  wjsLog ("Mix MIDI in note=" + noteon + ",
  }
```

See Also

- [Overview](#)
- [Cell Script](#)
- [Generator Script](#)
- [Scripting Overview](#)
- [Script Function Reference](#)
- [Wotja as a Hyperinstrument](#)

Cell Script

Cell Script

- [onWmeStart\(\)](#)
- [onWmeBar\(\)](#)
- [onWmeStop\(\)](#)
- [onMIDIInCC\(\)](#)
- [onMIDIInNote\(\)](#)

Cell Script applies to a specific Cell and is stored in its [Cell Script parameter](#). *Tip:* For organisational purposes it can be considered best practise to put all the scripts used by the Mix in the [Mix Script parameter](#).

Cell-related **Event Handler Script Functions** ("*Triggers*", and which all start with **onWME**) get triggered when the Cell is playing and when certain events happen.

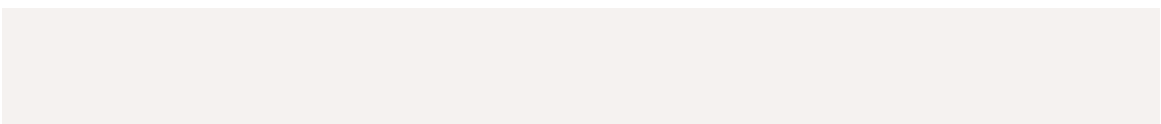
Use of these Triggers lets you affect how the Cell plays at certain points (or via detection of certain events) by letting you use various [Scripting Functions](#) to change the [Mix Object](#), [Cell Objects](#), [Generator Objects](#) and [Rule Objects](#).

[onWmeStart\(\)](#)

Start

The **onWmeStart** Event Handler Script Function is called once at the start of the Mix's owning cell, when that cell starts playing.

The function has no parameters.



```
function onWmeStart() {  
    wjsLog ("Mix start!")  
}
```

onWmeBar()

Bar

The **onWmeBar** Event Handler Script Function is called at the start of every bar while the mix is playing, starting from 1.

The function has one parameter:

- *bar* the bar number, starting from 1.

```
function onWmeBar(bar) {  
    wjsLog ("Bar number=" + bar)  
}
```

onWmeStop()

Stop

The **onWmeStop** Event Handler Script Function is called once at the end of the Mix's owning cell, just as that Cell stops playing.

The function has no parameters.

```
function onWmeStop() {  
    wjsLog ("Mix stop!")  
}
```

<> onMIDIInCC()

MIDI In CC

The **onMIDIInCC** Event Handler Script Function is called whenever a MIDI CC event is received by the MIDI Input device.

The function has three parameters:

- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *cc* the CC event identifier, from 0 to 127.
- *value* the value of the CC event, from 0 to 127.

```
function onMIDIInCC(channel, cc, value) {  
    wjsLog ("Mix onMIDIInCC channel" + channel +  
}
```

<> onMIDIInNote()

MIDI In Note

The **onMIDIInNote** Event Handler Script Event Handler Script Function is called whenever a MIDI Note On or Off event is

received by the MIDI Input device.

The function has four parameters:

- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *noteon* a value indicating if this is a note on event - true means note on, false means note off.
- *pitch* the MIDI pitch of the note event, from 0 to 127.
- *velocity* the velocity of the note event, from 0 to 127.

```
function onMIDIInNote(channel, noteon, pitch,  
    wjsLog ("Mix MIDI in note=" + noteon + ",  
})
```

See Also

- [Overview](#)
- [Mix Script](#)
- [Generator Script](#)
- [Script Function Reference](#)
- [Wotja as a Hyperinstrument](#)

Generator Script

Generator Script

- `onWmeStart()`
- `onWmeBar()`
- `onWmeStop()`
- `onWmeGeneratorComposed()`
- `onWmeGeneratorUserController()`
- `onMIDIInCC-generator()`
- `onMIDIInNote-generator()`

Generator Script applies to a specific Generator and is stored in the [Generator Script parameter](#). *Tip:* For organisational purposes it can be considered best practise to put all the scripts used by the Mix in the [Mix Script parameter](#).

Generator-related **Event Handler Script Functions** ("*Triggers*", and which all start with `onWME`) get triggered when the Mix is playing and when certain events happen.

Use of these Triggers lets you affect how the Mix plays at certain points (or via detection of certain events) by letting you use various [Scripting Functions](#) to change the [Mix Object](#), [Cell Objects](#), [Generator Objects](#) and [Rule Objects](#).

`onWmeStart()`

Start

The **onWmeStart** Event Handler Script Function is called once at the start of the Generator's owning cell, when that cell starts playing.

The function has no parameters.

```
function onWmeStart() {  
    wjsLog ("Generator start!")  
}
```

onWmeBar()

Bar

The **onWmeBar** Event Handler Script Function is called at the start of every bar while the mix is playing in its cell, starting from 1.

The function has one parameter:

- *bar* the bar number, starting from 1.

```
function onWmeBar(bar) {  
    wjsLog ("Generator Bar number=" + bar)  
}
```

onWmeStop()

Stop

The **onWmeStop** Event Handler Script Function is called once at the end of the Generator's owning cell, just as that Cell stops playing.

The function has no parameters.

```
function onWmeStop() {  
    wjsLog ("Mix stop!")  
}
```

<> onWmeGeneratorComposed()

Composed

The **onWmeGeneratorComposed** Event Handler Script Function is called when the Generator composes a note. Use this to emit MIDI CC events and what have you.

The function has five parameters:

- *generatorIndex* the generator index, starting from 0.
- *noteon* a value indicating if this is a note on event - true means note on, false means note off.
- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *pitch* the MIDI pitch of the composed note, from 0 to 127.
- *velocity* the MIDI velocity of the composed note, from 1 to 127.

```
function onWmeGeneratorComposed(generatorIndex,  
    wjsLog ("Generator Composed index=" + generat  
}
```

`onWmeGeneratorUserController()`

User Controller Changed

The **onWmeGeneratorUserController** Event Handler Script Function is called when either of the Generator's User Controllers output value changes.

The function has three parameters:

- *generatorIndex* the generator index, starting from 0.
- *controllerIndex* the zero-based index of the controller; 0 means User Controller 1, 1 means User Controller 2.
- *value* the controller's new value, from 0 to 127.

```
function onWmeGeneratorUserController(generatorIndex, controllerIndex, value)
{
    wjsLog ("onWmeGeneratorUserController, generatorIndex: " + generatorIndex + ", controllerIndex: " + controllerIndex + ", value: " + value);
}
```

`onMIDIInCC()`

MIDI In CC

The **onMIDIInCC** Event Handler Script Function is called whenever a MIDI CC event is received by the MIDI Input device.

The function has three parameters:

- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *cc* the CC event identifier, from 0 to 127.
- *value* the value of the CC event, from 0 to 127.

Note that your script will *only* respond to MIDI In CC Events that target the MIDI Channel that your generator is attached to.

```
function onMIDIInCC(channel, cc, value) {  
    wjsLog ("Generator onMIDIInCC channel=" + cha  
}
```

onMIDIInNote()

MIDI In Note

The **onMIDIInNote** Event Handler Script Event Handler Script Function is called whenever a MIDI Note On or Off event is received by the MIDI Input device.

The function has four parameters:

- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)
- *noteon* a value indicating if this is a note on event - true means note on, false means note off.
- *pitch* the MIDI pitch of the note event, from 0 to 127.
- *velocity* the velocity of the note event, from 0 to 127.

Note that your script will *only* respond to MIDI In Note Events that target the MIDI Channel that your generator is attached to.

```
function onMIDIInNote(channel, noteon, pitch, v  
    wjsLog ("Generator onMIDIInNote channel=" + c
```

```
}
```

See Also

- [Overview](#)
- [Mix Script](#)
- [Cell Script](#)
- [Script Function Reference](#)
- [Wotja as a Hyperinstrument](#)

<> Scripting Objects

Objects and Parameters

The following table lists the various Objects ([Mix](#), [Cell](#), [Generator](#) and [Rule](#)) and their associated parameters together with how those objects/parameters are available to Wotja Scripts, showing: the object name; the parameter group / view (where shown to a user); the displayed name (where shown to a user); the parameter name (as supplied to functions and which is always unique for a given object); and the range of legal values that you may supply.

<> Object: "Mix"

Parameter Group / View	Displayed Name	Script Parameter Name	Notes
Mix Rules	Scale Rules	"Scale Rules"	
	Harmony Rules	"Harmony Rules"	
	Next Note Rules	"Next Note Rules"	
Mix	Mix Root	"Mix Root"	"A", "A#", "Ab" etc.
	Tempo	"Tempo"	Value in range 1, 400

<> Object: "Cell"

Parameter Group / View	Displayed Name	Script Parameter Name	Notes
Cell Generative Rules	Scale Rules	"Scale Rules"	
	Harmony Rules	"Harmony Rules"	
	Next Note Rules	"Next Note Rules"	
Cell Meter	Meter	"Meter"	"1:4", "2:4", "3:4", "4:4", "5:4", "6:4", "7:4", "8:4", "1:8", "2:8", "3:8", "4:8", "5:8", "6:8", "7:8", "8:8", "9:8", "10:8", "11:8", "12:8"

<> Object: "Generator" (AKA Generator)

Parameter	Displayed Name	Script Parameter	Notes
-----------	----------------	------------------	-------

Group / View		Name	
Generator - Basics	Name	"Generator"	<i>Generator name</i>
	Mute	"Mute"	Yes or No
	Patch	"Patch"	Value in range 0 to 127
	Use Patch?	"Use Patch?"	Yes or No
	MIDI Channel	"MIDI Channel"	Value in range 0, 16
	Generator Type	"Generator Type"	"Rhythmic", "Ambient", "Follower", "Repeater", "Patterns", "Listening"
	Pitch	"Pitch"	Value in range 0 to 127
	Pitch Range	"Pitch Range"	Value in range 11, 127
	Phrase Length	"Phrase Length"	Value in range 1, 256; also in Generator - Ambient
	Phrase Length Range	"Phrase Length Range"	Value in range 0, 256; also in Generator - Ambient
	Phrase Gaps	"Phrase Gaps"	Value in range 0, 256; also in Generator - Ambient
	Phrase Gaps Range	"Phrase Gaps Range"	Value in range 0, 256; also in Generator - Ambient
	Note Rest %	"Phrase Note Rest %"	Value in range 0, 100; also in Generator - Ambient
Generator - Ambient	Units	"Ambient Units"	"Seconds (thousandths of a)", "Beats (60ths of a)", "Full seconds"
	Duration	"Ambient Duration"	Value in range 0, 32000
	Duration Range	"Ambient Duration Range"	Value in range 0, 32000
	Gap Minimum	"Ambient Gap Min"	Value in range 0, 32000
	Gap Range	"Ambient Gap Range"	Value in range 0, 32000
Generator - Follower	Follow Generator	"Follow Named Generator"	<i>Generator name</i>
	Percent	"Follow Percent"	Value in range 0, 100
	Strategy	"Follow Strategy"	"Chordal Harmony", "Interval Within Scale Rule", "Semitone Shift"
	Units	"Follow Delay Unit"	"Seconds (thousandths of a)", "Beats (60ths of a)", "Full seconds"
	Delay	"Follow Delay"	Value in range 0, 32000
	Delay Range	"Follow Delay Range"	Value in range 0, 32000
	Shift/Interval	"Follow Shift/Interval"	Value in range -60, +60
	S/I Range	"Follow Shift/Interval Range"	Value in range -60, +60
Generator -	Generator	"Repeat Specific"	<i>Generator name</i>


Repeater		Generator"	
	Percent	"Repeat Bars Percent"	Value in range 0, 100
	Bars	"Repeat For Bars"	Value in range 1, 100
	History Range	"Repeat Bar History Range"	Value in range 0, 100
	History	"Repeat Bar History"	Value in range 1, 100
	Bars Range	"Repeat For Bars Range"	Value in range 0, 100
Generator - Patterns	Patterns	"Patterns"	<i>Pattern String</i>
	Use Percent	"Patterns Use Percent"	Value in range 0, 100
	Mutation Factor	"Mutation factor"	Value from 0 to 1000 (corresponding to 0 to 100 percent)
	Bars Between	"Mutate No. Bars"	Value in range 0, 100
	Bars Range	"Mutate No. Bars Range"	Value in range 0, 100
	Mutate Rhythm?	"Mutation of Rhythm"	Yes or No
	Meter	"Meter"	"1:4", "2:4", "3:4", "4:4", "5:4", "6:4", "7:4", "8:4", "1:8", "2:8", "3:8", "4:8", "5:8", "6:8", "7:8", "8:8", "9:8", "10:8", "11:8", "12:8"
Generator - Text to Music	Text Pattern Enabled	"Text Pattern Enabled"	Yes or No
	Text Pattern Text	"Text Pattern Text"	<i>TTM Text String</i>
	Text Pattern Phrase Length	"Text Pattern Phrase Length"	Value in range 1 to 16
	Text Pattern Phrase Range	"Text Pattern Phrase Range"	Value in range 0 to 16
	Text Pattern Gaps	"Text Pattern Gaps"	Value in range 0 to 16
	Text Pattern Gaps Range	"Text Pattern Gaps Range"	Value in range 0 to 16
	Text Pattern Interval	"Text Pattern Interval"	Value in range 0 to 36
	Text Pattern Interval Range	"Text Pattern Interval Range"	Value in range 0 to 36
	Text Pattern Improvise After Tune	"Text Pattern Improvise After Tune"	Yes or No
	Text Pattern Variation	"Text Pattern Variation"	Value in range 0 to 100
	Text Pattern Repeats	"Text Pattern Repeats"	Value in range 0 to 16
	Text Pattern Repeats Range	"Text Pattern Repeats Range"	Value in range 0 to 16
	Text Pattern Tune Start At Index	"Text Pattern Tune Start At Index"	Value in range 0 to 100 No
	Text Pattern Tune	"Text Pattern Tune"	Value in range 0 to 100 No

	Length Override	Length Override"	
	Text Pattern Display	"Text Pattern Display"	Yes or No
Generator - Chording	Depth	"Chord Depth"	Value in range 1, 32
	Pitch Offset	"Chord Pitch Offset"	Value in range -60, +60
	Delay	"Chord Delay"	Value in range 0, 32000
	Depth %	"Chord Depth Percent"	Value in range 0, 100
	Delay Unit	"Chord Delay Unit"	"Seconds (thousandths of a)", "Beats (60ths of a)", "Quantized Beats (60ths of a)"
	Velocity Factor	"Chord Velocity Factor"	Value in range -100, +100
	Delay Range	"Chord Delay Range"	Value in range 0, 32000
	Depth Range	"Chord Depth Range"	Value in range 0, 32
	Strategy	"Chord Strategy"	"Chordal Harmony", "Interval Within Scale Rule", "Semitone Shift"
	Shift/Interval	"Chord Shift/Interval"	Value in range -60, +60
	S/I Range	"Chord Shift/Interval Range"	Value in range -60, +60
Generator - Rules	Harmony Rules	"Harmony Rules"	<i>Rule name</i>
	Next Note Rules	"Next Note Rules"	<i>Rule name</i>
	Rhythm Rules	"Rhythm Rules"	<i>Rule name</i>
	Scale Rules	"Scale Rules"	<i>Rule name</i>
	Harmonize?	"Harmonize?"	Yes or No
	Voice Root	"Voice Root"	"A", "A#", "Ab" etc.
Generator - Comments	Copyright	"Copyright"	<i>Copyright text</i>
	Notes	"Notes"	<i>Notes text</i>
Generator - Articulation	Minimum	"Articulation Minimum"	Value in range 0, 100
	Range	"Articulation Range"	Value in range 0, 100
	Change	"Articulation Change"	Value in range 0, 100
	Change Range	"Articulation Change Range"	Value in range 0, 100
Generator - Controllers	Damper/Hold (64)	"Damper/Hold (64)"	Value in range -1, 127
	Harmonic Content (71)	"Harmonic Content (71)"	Value in range -1, 127
	Reverb (91)	"Reverb (91)"	Value in range -1, 127
	Chorus (93)	"Chorus (93)"	Value in range -1, 127
	Damper Release	"Damper Release"	Yes or No
	Portamento (84)	"Portamento (65)"	Value in range -1, 127

	MIDI Channel Sharing	"MIDI Channel Reallocation"	Yes or No
Generator - User Controller 1	MIDI CC	"User Controller 1 Midi Command"	Value in range 0 to 127
	Mode	"User Controller 1 Mode"	"-1 - Off", "0 - Random Drift", "1 - LFO (Min-Max-Min)", "2 - LFO (Max-Min-Max)", "3 - Sawtooth (Min-Max)", "4 - Sawtooth (Max-Min)"
	Minimum	"User Controller 1 Minimum"	Value in range 0, 127
	Range	"User Controller 1 Range"	Value in range 0, 127
	Change	"User Controller 1 Change"	Value in range 0, 127
	Change Range	"User Controller 1 Change Range"	Value in range 0, 127
	Update	"User Controller 1 Update"	Value in range 0, 10000
	Update Range	"User Controller 1 Update Range"	Value in range 0, 10000
	Update Units	"User Controller 1 Update Unit"	"Seconds (thousandths of a)", "Full seconds"
	Beat Cycle Length	"User Controller 1 Beat Cycle Length"	Value in range 0, 32000
	Phase Shift%	"User Controller 1 Phase Shift"	Value in range 0, 100
Generator - User Controller 2	MIDI CC	"User Controller 2 Midi Command"	Value in range 0 to 127
	Mode	"User Controller 2 Mode"	"-1 - Off", "0 - Random Drift", "1 - LFO (Min-Max-Min)", "2 - LFO (Max-Min-Max)", "3 - Sawtooth (Min-Max)", "4 - Sawtooth (Max-Min)"
	Minimum	"User Controller 2 Minimum"	Value in range 0, 127
	Range	"User Controller 2 Range"	Value in range 0, 127
	Change	"User Controller 2 Change"	Value in range 0, 127
	Change Range	"User Controller 2 Change Range"	Value in range 0, 127
	Update	"User Controller 2 Update"	Value in range 0, 10000
	Update Range	"User Controller 2 Update Range"	Value in range 0, 10000

		Update Range"	
	Beat Cycle Length	"User Controller 2 Beat Cycle Length"	Value in range 0, 32000
	Update Units	"User Controller 2 Update Unit"	"Seconds (thousandths of a)", "Full seconds"
	Phase Shift%	"User Controller 2 Phase Shift"	Value in range 0, 100
Generator - Micro Note Delay	Delay Range	"Micro Note Delay Range"	Value in range 0, 1000
	Delay Change	"Micro Note Delay Change"	Value in range 0, 1000
	Delay Offset	"Micro Note Delay Offset"	Value in range -1000, +1000
Generator - Micro Pitch	Bend Sensitivity	"Pitch Bend Sensitivity"	Value in range 0, 24
	Pitch Bend Offset	"Pitch Bend Offset"	Value in range -8192, +8191
	Pitch Range	"Micro Pitch Range"	Value in range 0, 8191
	Pitch Change	"Micro Pitch Change"	Value in range 0, 1000
	Pitch Update	"Micro Pitch Update"	Value in range 0, 10000
	Update Range	"Micro Pitch Update Range"	Value in range 0, 10000
Generator - Micro Vol Env	Range	"Micro Volume Range"	Value in range 0, 127
	Change	"Micro Volume Change"	Value in range 0, 127
	Update	"Micro Volume Update"	Value in range 0, 1000
	Update Range	"Micro Volume Update Range"	Value in range 0, 10000
Generator - Note to MIDI CC Mapping	CC for Note On?	"MIDI CC instead of Note?"	Yes or No
	Note On CC	"MIDI CC Note On Value"	Value from 0 to 127
	CC for Velocity?	"MIDI CC for Note On Velocity?"	Yes or No
	Velocity CC	"MIDI CC Note On Velocity"	Value from 0 to 127
	CC for Off?	"MIDI CC for Note Off?"	Yes or No
	Note Off CC	"MIDI CC Note Off Value"	Value from 0 to 127
Generator - User Envelope 1 (Volume)	MIDI CC	"User Envelope 1 MIDI CC"	Value from 0 to 127
	Enabled?	"User Envelope 1 Enabled"	Yes or No
	Envelope	"Volume"	<i>Envelope</i>

Generator - User Envelope 2 (Pan)	MIDI CC	"User Envelope 2 MIDI CC"	Value from 0 to 127
	Enabled?	"User Envelope 2 Enabled"	Yes or No
	Envelope	"Pan (10)"	<i>Envelope</i>
Generator - Envelope - Velocity	Velocity	"Velocity"	<i>Envelope</i>
Generator - Envelope - Velocity Range	Velocity Range	"Velocity Range"	<i>Envelope</i>
Generator - Envelope - Velocity Change	Velocity Change	"Velocity Change"	<i>Envelope</i>
Generator - Envelope - Velocity Change Range	Velocity Change Range	"Velocity Change Range"	<i>Envelope</i>

 Object: "*Scale Rule*", "*Harmony Rule*", "*Rhythm Rule*", "*Next Note Rule*"

Parameter Group / View	Displayed Name	Script Parameter Name	Notes
Scale Rule	Value	"Value"	
Harmony Rule	Value	"Value"	
Rhythm Rule	Value	"Value"	
Next Note Rule	Value	"Value"	

See Also

- [Scripting Overview](#)
- [Mix Script](#)
- [Cell Script](#)
- [Generator Script](#)
- [Wotja as a Hyperinstrument](#)

Script Function Reference

Utility Functions

- `wjsLog()`
- `wjsGetRandom()`
- `wjsRandomGetFromTo()`

Mix Functions

- `mixCellObjectCountGet()`
- `mixCellObjectIndexGet()`
- `mixCellObjectNameGet()`
- `mixCellObjectParameterGet()`
- `mixCellObjectParameterSet()`
- `mixColumnLockGet()`
- `mixColumnLockSet()`
- `mixObjectCountGet()`
- `mixObjectIndexGet()`
- `mixObjectNameGet()`
- `mixObjectParameterGet()`
- `mixObjectParameterSet()`
- `mixParameterGet()`
- `mixParameterSet()`
- `mixTrackCellLoopGet()`
- `mixTrackCellLoopSet()`
- `mixTrackPanGet()`
- `mixTrackPanSet()`
- `mixTrackRuleGet()`
- `mixTrackRuleSet()`
- `mixTrackVolumeGet()`
- `mixTrackVolumeSet()`
- `mixVolumeGet()`
- `mixVolumeSet()`

WME Functions

- `wmeParameterGet()`
- `wmeParameterSet`
- `wmeGeneratorMIDIChannelGet()`
- `wmeRuleElementGet()`
- `wmeObjectParameterGet()`
- `wmeObjectParameterSet()`
- `wmeCellElapsedPercentGet()`
- `wmeRuleElementSet()`

- `wmeMIDISendCC()`
 - `wmeBarDurationGet()`
 - `wmeObjectCountGet()`
 - `wmeObjectIndexGet()`
 - `wmeObjectNameGet()`
 - `wmeGeneratorEnvelopePercentGet()`
 - `wmeGeneratorEnvelopePercentSet()`
 - `wmeCellTrackIndexGet()`
 - `wmeCellColumnIndexGet()`
-

WAE Functions

- `waeGetFxNetworkIdForMix()`
 - `waeGetFxNetworkIdForCellGlobal()`
 - `waeGetFxNetworkIdForCellSynthTrackColumnChannel()`
 - `waeGetFxNetworkIdForCellEffectTrackColumnChannel()`
 - `waeFxNetworkAllPresetNamesGet()`
 - `waeFxNetworkRandomPresetNamesGet()`
 - `waeFxNetworkPresetGet()`
 - `waeFxNetworkPresetSet()`
-

WTE Functions

- `wteRandomWordsGet()`
 - `wteShuffleWords()`
 - `wteShuffleCharacters()`
-

Utility functions

Wotja Script Utility functions all start with the *wjs* prefix.

`wjsLog()`

The function *wjsLog* may be used to display text in the [Script Console](#); this is very useful for debugging your scripts!

Example:

```
function onWmeStart() {  
    wjsLog("Hello World!")  
}
```

<> wjsGetRandom()

This function returns a random integer.

The function has no parameters.

Example:

```
var value = wjsGetRandom()
```

<> wjsRandomGetFromTo()

This function returns a random integer in the range of the two supplied values.

The function has two parameters:

- *minimum* the minimum value that can be returned
- *maximum* the maximum value that can be returned

Example:

```
function onWmeStart() {  
    // Get a random integer between 0 and 50 incl
```



```
var value = wjsRandomGetFromTo(0, 50)
wjsLog("random value=", value)
}
```

<> Mix functions

These functions are intended to be used from [Mix Scripts](#). Wotja Script Mix functions all start with the `mix` prefix.

<> `mixCellObjectCountGet()`

Returns the number of objects of the specified type, in the current Wotja Mix.

The function has the following parameters:

- *columnIndex* the column index of interest; from 0 to 3; 0 is the first cell on the left, 3 is the last cell on the right
- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".

Example:

```
function testFunction() {
```

```

var columnIndex = 0
var trackIndex = 0
// Example usage:
var scaleRuleCount = mixCellObjectCountGet(
print("Mix cell(" + columnIndex + "," + tra
}

```

<> mixCellObjectIndexGet()

Returns the index of the named object, which will be greater than or equal to 0 if the named object is found; the function will return -1 if not found.

The function has the following parameters:

- *columnIndex* the column index of interest; from 0 to 3; 0 is the first cell on the left, 3 is the last cell on the right
- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectName* the name of the object of interest

Example:

```

function testFunction() {
var columnIndex = 0
var trackIndex = 0
// Example usage:

```

```

var scaleRuleCount = mixCellObjectCountGet(
print("Mix cell(" + columnIndex + "," + trackIndex + ")")
var scaleRuleName = mixCellObjectNameGet(columnIndex, trackIndex)
print("Mix cell(" + columnIndex + "," + trackIndex + ")")
var indexOfScaleRuleName = mixCellObjectIndexGet(columnIndex, trackIndex)
print("Mix cell(" + columnIndex + "," + trackIndex + ")")
}

```

<> mixCellObjectNameGet()

Returns the name of the specified object.

The function has the following parameters:

- *columnIndex* the column index of interest; from 0 to 3; 0 is the first cell on the left, 3 is the last cell on the right
- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object.

Example:

```

function testFunction() {
    var columnIndex = 0

```

```

var trackIndex = 0
// Example usage:
var scaleRuleCount = mixCellObjectCountGet(
print("Mix cell(" + columnIndex + "," + trackIndex + ")")
var scaleRuleName = mixCellObjectNameGet(columnIndex, trackIndex)
print("Mix cell(" + columnIndex + "," + trackIndex + ")")
}

```

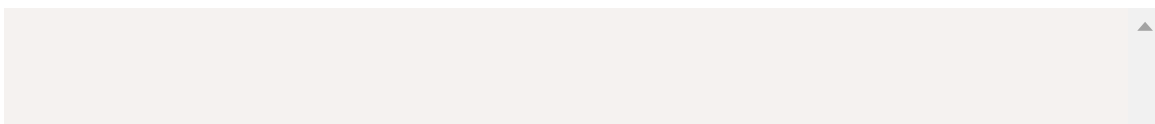
<> mixCellObjectParameterGet()

Returns the value of the parameter, for the specified object index of the specified object type, in the playing mix.

The function has the following parameters:

- *columnIndex* the column index of interest; from 0 to 3; 0 is the first cell on the left, 3 is the last cell on the right
- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object. If the objectType is "Cell", or "Mix", you do not provide this parameter.
- *parameterName* the parameter of interest.

Example:



```

function testFunction() {
  // Example usage:
  var columnIndex = 0
  var trackIndex = 0
  var generatorIndex = 0
  var generatorValue = mixCellObjectParameterGet(
  print("generatorValue = " + generatorValue)
  mixCellObjectParameterSet(columnIndex, trackIndex,
  generatorValue = mixCellObjectParameterGet(
  print("generatorValue = " + generatorValue)
  var cellValue = mixCellObjectParameterGet(columnIndex, trackIndex,
  print("cellValue = " + cellValue)
}

```

<> mixCellObjectParameterSet()

Sets the parameter to the the supplied value, for the specified object index of the specified object type, in the playing mix.

The function has the following parameters:

- *columnIndex* the column index of interest; from 0 to 3; 0 is the first cell on the left, 3 is the last cell on the right
- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object. If the objectType is "Cell", or "Mix", you

do not provide this parameter.

- *parameterName* the parameter of interest.
- *newValue* the new parameter value to use.

Special behavior for Rules: if you set *newValue* to be the name a built-in rule (e.g. [Scale Rule "All Scale Major"](#)) for the parameter value, the parameter value will be set magically to that of the corresponding rule type. Otherwise, you'd need to set the rule value in the normal way, with a string looking something like "1 0 1 0 1 1 0 1 0 1 0 1"

Example:

```
function testFunction() {
  // Example usage:
  var columnIndex = 0
  var trackIndex = 0
  var generatorIndex = 0
  var generatorValue = mixCellObjectParameterGet(
  print("generatorValue = " + generatorValue)
  mixCellObjectParameterSet(columnIndex, trackIndex,
  generatorValue = mixCellObjectParameterGet(columnIndex, trackIndex)
  print("generatorValue = " + generatorValue)
  var cellValue = mixCellObjectParameterGet(columnIndex, trackIndex)
  print("cellValue = " + cellValue)
  mixCellObjectParameterSet(columnIndex, trackIndex, cellValue)
  cellValue = mixCellObjectParameterGet(columnIndex, trackIndex)
  print("cellValue = " + cellValue)
}
```

`mixColumnLockGet()`

Returns the currently locked column index: if no column is currently locked, this returns -1 otherwise, returns a value from 0 to 3

The function has no parameters

Example:

```
function testFunction() {  
    var columnLockedIndex = mixColumnLockGet()  
    print ("columnLockedIndex = " + columnLockedIndex)  
}
```

`mixColumnLockSet()`

Sets column lock (or not); if columnIndex is 0 to 3, this sets the column lock on; if columnIndex is -1, this turns the column lock off

The function has the following parameters:

- *columnIndex* The columnIndex index of the cell (from 0 to 3).

Example:

```
function testFunction() {
```

```

// Example usages:
var columnLockedIndex = mixColumnLockGet()
print ("columnLockedIndex = " + columnLockedIndex)

mixColumnLockSet(0)
columnLockedIndex = mixColumnLockGet()
print ("columnLockedIndex = " + columnLockedIndex)

mixColumnLockSet(1)
columnLockedIndex = mixColumnLockGet()
print ("columnLockedIndex = " + columnLockedIndex)

mixColumnLockSet(2)
columnLockedIndex = mixColumnLockGet()
print ("columnLockedIndex = " + columnLockedIndex)

mixColumnLockSet(3)
columnLockedIndex = mixColumnLockGet()
print ("columnLockedIndex = " + columnLockedIndex)

mixColumnLockSet(-1)
columnLockedIndex = mixColumnLockGet()
print ("columnLockedIndex = " + columnLockedIndex)
}

```

`mixObjectCountGet()`

Returns the number of objects of the specified type, in the current Wotja Mix.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".

Example:

```
function testFunction() {  
  // Example usage:  
  var scaleRuleCount = mixObjectCountGet("Scale Rule")  
  print("Mix scale rule count = " + scaleRuleCount)  
}
```

`mixObjectIndexGet()`

Returns the index of the named object, which will be greater than or equal to 0 if the named object is found; the function will return -1 if not found.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectName* the name of the object of interest

Example:

```
function testFunction() {  
  // Example usage:  
}
```

```
var scaleRuleName = mixObjectNameGet("Scale  
print("Mix scale rule 0 has name = " + scale  
var indexOfScaleRuleName = mixObjectIndexGe  
print("Mix scale rule with name=" + scaleRu  
}
```

<> mixObjectNameGet()

Returns the name of the specified object.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object.

Example:

```
function testFunction() {  
    // Example usage:  
    var scaleRuleCount = mixObjectCountGet("Scale  
    print("Mix scale rule count = " + scaleRuleCo  
    var scaleRuleName = mixObjectNameGet("Scale F  
    print("Mix scale rule 0 has name = " + scaleF  
    var indexOfScaleRuleName = mixObjectIndexGet(  
    print("Mix scale rule with name=" + scaleRule  
}
```

<> mixObjectParameterGet()

Returns the value of the parameter, for the specified object index of the specified object type, in the playing mix.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object. If the objectType is "Cell", or "Mix", you do not provide this parameter.
- *parameterName* the parameter of interest.

Example:

```
function testFunction() {
  // Example usage:
  var scaleRuleValue = mixObjectParameterGet("Scale Rule", 0, "Scale Rule")
  print("Mix scale rule index 0, value was = " + scaleRuleValue)
  scaleRuleValue = mixObjectParameterSet("Scale Rule", 0, "Scale Rule", "Scale Rule")
  scaleRuleValue = mixObjectParameterGet("Scale Rule", 0, "Scale Rule")
  print("Mix scale rule index 0, value now = " + scaleRuleValue)
}
```

Sets the parameter to the the supplied value, for the specified object index of the specified object type, in the playing mix.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object. If the objectType is "Cell", or "Mix", you do not provide this parameter.
- *parameterName* the parameter of interest.
- *newValue* the new parameter value to use.

Special behavior for Rules: if you set *newValue* to be the name a built-in rule (e.g. "Major") for the parameter value, the parameter value will be set magically to that of the corresponding rule type. Otherwise, you'd need to set the rule value in the normal way, with a string looking something like "1 0 0.5 0 1 0.5 0 1 0 0.5 0 0.5"

Example:

```
function testFunction() {
  // Example usage:
  var scaleRuleValue = mixObjectParameterGet("Scale Rule", 0);
  print("Mix scale rule index 0, value was = " + scaleRuleValue);
  scaleRuleValue = mixObjectParameterSet("Scale Rule", "Major");
  scaleRuleValue = mixObjectParameterGet("Scale Rule", 0);
  print("Mix scale rule index 0, value now = " + scaleRuleValue);
}
```

<> mixParameterGet()

This function returns the value of the named parameter, for the object within whose trigger script you place this call. Note that the value returned is always a *string*, which you can convert to a number using *tonumber()*.

The function has one parameter:

- *parameterName* the name of the parameter for which you want to determine the current value.

Example:

```
function testFunction() {
  // Example usage:
  var mixValue = mixParameterGet("Scale Rules")
  print("Mix: Scale Rules = " + mixValue)

  mixValue = mixParameterGet("Mix Root")
  print("Mix: Mix Root = " + mixValue)

  mixValue = mixParameterGet("Tempo")
  print("Mix: Tempo = " + mixValue)
}
```

<> mixParameterSet()

This function is used to set the mix's parameter to the supplied value, for the object within whose trigger script you place this

call.

The function has two parameters:

- *parameterName* the name of the parameter for which you want to set the value.
- *newValue* the new parameter value to use.

Special behavior for Rules: if you set *newValue* to be the name a built-in rule for the parameter value (e.g. [Scale Rule "All Scale Major"](#)), the parameter value will be set magically to that of the corresponding rule type. Otherwise, you'd need to set the rule value in the normal way, with a string looking something like "1 0 1 0 1 1 0 1 0 1 0 1"

Example:

```
function testFunction() {
  // Example usage:
  var mixValue = mixParameterGet("Scale Rules")
  print("Mix: Scale Rules = " + mixValue)
  mixParameterSet("Scale Rules", "Default")
  mixValue = mixParameterGet("Scale Rules")
  print("Mix: Scale Rules = " + mixValue)

  mixValue = mixParameterGet("Mix Root")
  print("Mix: Mix Root = " + mixValue)
  mixParameterSet("Mix Root", "C")
  mixValue = mixParameterGet("Mix Root")
  print("Mix: Mix Root = " + mixValue)

  mixValue = mixParameterGet("Tempo")
  print("Mix: Tempo = " + mixValue)
```

```
mixParameterSet("Tempo", "100")
mixValue = mixParameterGet("Tempo")
print("Mix: Tempo = " + mixValue)
}
```

`mixTrackCellLoopGet()`

Returns a value which is the column currently locked for that track; from 0 to 3; or -1 if no cell is looping

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix

Example:

```
function testFunction() {
  var trackIndex = 0
  var loopingCellColumnIndex = mixTrackCellLoopGet(trackIndex)
  print("loopingCellColumnIndex = " + loopingCellColumnIndex)
}
```

`mixTrackCellLoopSet()`

sets cell to loop (or not); if columnIndex is 0 to 3, this starts the track looping at that column index; if columnIndex is -1, this

stops the track looping; what happens next, depends on the track rule.

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *columnIndex* The columnIndex index of the cell (from 0 to 3).

Example:

```
function testFunction() {  
  var trackIndex = 0  
  var loopingCellColumnIndex = mixTrackCellLoop  
  print("loopingCellColumnIndex = " + looping  
  
  mixTrackCellLoopSet(trackIndex, -1)  
  loopingCellColumnIndex = mixTrackCellLoopGe  
  print("loopingCellColumnIndex = " + looping  
}
```

`mixTrackPanGet()`

Returns pan value from 0 to 127; 0 is far left, 64 is middle, 127 is far right

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in

the mix

Example:

```
function testFunction() {  
    // Example usage:  
    var trackIndex = 0  
    var value = mixTrackPanGet(trackIndex) // Val  
    print("Track pan = " + value)  
}
```

<> mixTrackPanSet()

Sets the pan setting for the specified track.

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *panValue* The pan value to use, from 0 to 127; 0 is far left, 64 is middle, 127 is far right

Example:

```
function testFunction() {  
    // Example usage:  
    var trackIndex = 0  
    var value = mixTrackPanGet(trackIndex) // Val
```

```
print("Track pan = " + value)
mixTrackPanSet(trackIndex, 64) // Set to midc
value = mixTrackPanGet(trackIndex)
print("Track pan = " + value)
}
```

`<>` `mixTrackRuleGet()`

Returns a string value which is current track rule setting, one of: "Sequence", "Loop" or "One Shot"

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix

Example:

```
function testFunction() {
    var trackIndex = 0
    var trackRule = mixTrackRuleGet(trackIndex)
    print("trackRule = " + trackRule)
}
```

`<>` `mixTrackRuleSet()`

Sets the pan setting for the specified track.

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *ruleValue* one of: "Sequence", "Loop" or "One Shot"

Example:

```
function testFunction() {  
  
    var trackIndex = 0  
  
    var trackRule = mixTrackRuleGet(trackIndex)  
    print("trackRule = " + trackRule)  
  
    mixTrackRuleSet(trackIndex, "One Shot")  
    trackRule = mixTrackRuleGet(trackIndex)  
    print("trackRule = " + trackRule)  
  
    mixTrackRuleSet(trackIndex, "Loop")  
    trackRule = mixTrackRuleGet(trackIndex)  
    print("trackRule = " + trackRule)  
  
    mixTrackRuleSet(trackIndex, "Sequence")  
    trackRule = mixTrackRuleGet(trackIndex)  
    print("trackRule = " + trackRule)  
}
```

`mixTrackVolumeGet()`

Returns volume value from 0 to 127

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix

Example:

```
function testFunction() {  
    // Example usage:  
    var trackIndex = 0  
    var value = mixTrackVolumeGet(trackIndex)  
    print("Track volume = " + value)  
}
```

`mixTrackVolumSet()`

Sets the volume setting for the specified track.

The function has the following parameters:

- *trackIndex* the track index of interest; from 0 to 11; 0 is the first track at the top of the mix, 11 is the last track in the mix
- *volumeValue* The volume value to use, from 0 to 127

Example:

Example:

```
function testFunction() {  
  // Example usage:  
  var trackIndex = 0  
  var value = mixTrackVolumeGet(trackIndex)  
  print("Track volume = " + value)  
  mixTrackVolumeSet(trackIndex, 127) // Set to  
  value = mixTrackVolumeGet(trackIndex)  
  print("Track volume = " + value)  
}
```

mixVolumeGet()

Returns the mix master volume value from 0 to 127

The function has no parameters

Example:

```
function testFunction() {  
  // Example usage:  
  var trackIndex = 0  
  var value = mixVolumeGet(trackIndex)  
  print("mix volume = " + value)  
}
```

<> mixVolumSet()

Sets the the mix master volume setting

The function has the following parameters:

- *volumeValue* The volume value to use, from 0 to 127

Example:

```
function testFunction() {  
  // Example usage:  
  var trackIndex = 0  
  var value = mixVolumeGet(trackIndex)  
  print(" volume = " + value)  
  mixVolumeSet(trackIndex, 127) // Set to max!  
  value = mixVolumeGet(trackIndex)  
  print("mix volume = " + value)  
}
```

<> WME functions

The WME contains many powerful scripting features. The WME related functions all start with the *wme* prefix.

<> wmeParameterGet()

This function returns the value of the named parameter for the

This function returns the value of the named parameter, for the object within whose trigger script you place this call. Note that the value returned is always a *string*, which you can convert to a number using *tonumber()*.

The function has one parameter:

- *parameterName* the name of the parameter for which you want to determine the current value.

Example:

```
function onWmeStart() {  
  // Get the current Chord Depth (assuming we  
  // Generator's trigger script!)  
  var chordDepth = wmeParameterGet("Chord Dep  
  wjsLog ("Chord Depth=" + chordDepth)  
}
```

<> wmeParameterSet()

This function is used to set the object's parameter to the supplied value, for the object within whose trigger script you place this call.

The function has two parameters:

- *parameterName* the name of the parameter for which you want to set the value.
- *newValue* the new parameter value to use.

Special behavior for Rules: if you set *newValue* to be the name a built-in rule (e.g. "Major") for the parameter value, the parameter value will be set magically to that of the

corresponding rule type. Otherwise, you'd need to set the

corresponding rule type. Otherwise, you'd need to set the rule value in the normal way, with a string looking something like "1 0 0.5 0 1 0.5 0 1 0 0.5 0 0.5"

Example:

```
function onWmeStart() {  
    // Set the Chord Depth to 4 (assuming we make  
    // Generator's trigger script!)  
    var chordDepth = 4  
    wmeParameterSet("Chord Depth", chordDepth)  
}
```

`wmeGeneratorMIDIChannelGet()`

This function returns the MIDI channel (assuming the script is called from within a generator script!). The value returned is a value from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16).

The function has no parameters.

Example:

```
function onWmeStart() {  
    var channel = wmeGeneratorMIDIChannelGet ()  
    wjsLog ("Channel=" + channel)  
}
```

`wmeRuleElementGet()`

wmeRuleElementGet ()

This function returns the rule element value of the specified index, for the indexed rule object. The value returned is a value between 0 and 127.

The function has the following parameters:

- *ruleObjectType* the object type i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *ruleObjectIndex* the index of the rule object of interest, starting at 0 for the first object.
- *ruleElementIndex* the index of the element; starting at 0 for the initial element.

Example 1:

```
function onWmeStart() {
  // Dump out the scale rule element values,
  var scaleRuleIndex = 0
  var itemIndex = 0
  while (itemIndex < 12)
  {
    var value = wmeRuleElementGet ("Scale Rule", scaleRuleIndex, itemIndex)
    wjsLog ("value=" + value)
    index = itemIndex + 1
  }
}
```

Example 2:

```
function onWmeStart() {
```

```

FUNCTION onwmeStart() {
    var scaleRuleCount = wmeObjectCountGet("Scale
wjsLog ("Scale Rule objects=" + scaleRuleCour

    for (var scaleRuleIndex = 0; scaleRuleIndex <
        // Dump out the scale rule element values,
        var ruleName = wmeObjectNameGet("Scale Rule
wjsLog ("Scale=" + ruleName)

        var itemIndex = 0
        while (itemIndex < 12)
        {
            var value = wmeRuleElementGet ("Scale Ru
wjsLog ("itemIndex" + ", " + itemIndex +
            itemIndex = itemIndex + 1
        }
    }
}

```

<> wmeMIDISendCC()

This function emits the specified MIDI CC event.

The function has the following parameters:

- *channel* the MIDI channel to use; from 1 to 16.
- *cc* the MIDI CC to use; from 0 to 127.
- *value* the controller value to use, from 0 to 127.
- *delay* an optional delay to use, from 0 up, defaulting to 0; in WME pattern time units (where 60 represents one crotchet or quarter note). The delay is relative to the current WME timebase relevant to the trigger script in question.

question.

Example:

```
function onWmeBar(bar) {
  // Generator trigger...
  // Apply a pan sweep through the bar from left to right
  // to show-off the use of wmeMIDISendCC.

  var duration = wmeBarDurationGet()

  var midiChannel = wmeGeneratorMIDIChannelGet()
  var delay = 0
  var ccController = 10 // Pan controller!
  var value = 0
  while delay <= duration {
    var value = (127 * delay) / duration
    // Note that the "delay" is optional; we use it in this
    // demo, to get a sweep effect from start to finish.
    wmeMIDISendCC(midiChannel, ccController, value, delay)
    delay = delay + 20
  }
}
```

wmeBarDurationGet ()

This function returns the duration of the mix bar, in WME pattern time units; where 240 represents four crotchets or one whole note or a bar of 4:4 time.

The function has no parameters.

The function has no parameters.

Example:

```
function onWmeStart() {  
    var duration = wmeBarDurationGet()  
    wjsLog ("duration=" + duration)  
}
```

wmeObjectCountGet()

Returns the number of objects of the specified type, in the current Wotja Mix.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Generator", "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule"

Example:

```
function onWmeStart() {  
    var generatorCount = wmeObjectCountGet("Gener  
    wjsLog ("Generator objects=" + generatorCount  
}
```

wmeObjectIndexGet()

Returns the index of the named object, which will be greater

Returns the index of the named object, which will be greater than or equal to 0 if the named object is found; the function will return -1 if not found.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Generator", "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectName* the name of the object of interest

Example:

```
function onWmeStart() {
    var majorScaleRuleIndex = wmeObjectIndexGet
    wjsLog ("majorScaleRuleIndex=" + majorScale
}
```

<> wmeObjectNameGet()

Returns the name of the specified object.

The function has the following parameters:

- *objectType* the type of the object of interest, i.e. one of "Generator", "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object.

Example:

```
function onWmeStart() {
    var generatorCount = wmeObjectCountGet("Generator");
    wjsLog ("Generator objects=" + generatorCount);

    for (var index = 0; index < generatorCount; index++) {
        wjsLog ("Generator name=" + wmeObjectNameGet("Generator", index));
    }
}
```

wmeObjectParameterGet()

Returns the value of the parameter, for the specified object index of the specified object type, in the playing mix.

The function has the following parameters:

- *objectType* the type object of interest, i.e. one of "Mix", "Cell", "Generator", "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *objectIndex* the index of the object of interest, starting at 0 for the first object. If the objectType is "Cell", or "Mix", you do not provide this parameter.
- *parameterName* the parameter of interest.

Example:

```
function onWmeStart() {
    var valueWas = wmeObjectParameterGet("Generator", 0, "Chord");
    wmeObjectParameterSet("Generator", 0, "Chord", valueWas);
}
```

```

var valueNow = wmeObjectParameterGet("Genera
wjsLog("Chord Depth valueWas=" + valueWas + '
}

```

<> wmeObjectParameterSet()

Sets the parameter to the the supplied value, for the specified object index of the specified object type, in the playing mix.

The function has the following parameters:

- *objectType* the type object of interest, i.e. one of "Mix", "Cell", "Generator", "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule"
- *objectIndex* the index of the object of interest, starting at 0 for the first object. If the objectType is "Cell", or "Mix", you do not provide this parameter.
- *parameterName* the parameter of interest.
- *newValue* the new parameter value to use.

Special behavior for Rules: if you set *newValue* to be the name a built-in rule (e.g. "Major") for the parameter value, the parameter value will be set magically to that of the corresponding rule type. Otherwise, you'd need to set the rule value in the normal way, with a string looking something like "1 0 0.5 0 1 0.5 0 1 0 0.5 0 0.5"

Example:

```

function onWmeStart() {

```

```
var valueWas = wmeObjectParameterGet("Gene  
  
wmeObjectParameterSet("Generator", 0, "Chord  
  
var valueNow = wmeObjectParameterGet("Gene  
  
wjsLog("Chord Depth valueWas=" + valueWas +  
}
```

<> wmeCellElapsedPercentGet ()

Returns the elapsed percentage of the playing mix, within the context of it's container cell. A cell with duration set to "Infinite" is actually around 8 hours before it restarts; so will tend to report 0 percent. A cell with duration of just a few bars, will progress quickly from 0 through to 100.

The function has no parameters.

Example:

```
function onWmeBar () {  
  var value = wmeCellElapsedPercentGet()  
  wjsLog ("wmeCellElapsedPercentGet=" + value)  
}
```

<> wmeRuleElementSet ()

This function set the rule element value of the specified index, for the indexed rule object, to the specified value. The value

for the indexed rule object, to the specified value. The value must be between 0 and 127.

The function has the following parameters:

- *ruleObjectType* the object type i.e. one of "Scale Rule", "Harmony Rule", "Rhythm Rule", "Next Note Rule".
- *ruleObjectIndex* the index of the rule object of interest, starting at 0 for the first object.
- *ruleElementIndex* the index of the element; starting at zero for the initial element.
- *newValue* the new element value to use, in a range from 0 to 127.

Example 1:

```
function onWmeStart() {
  // Set the scale rule element values, to odd
  var scaleRuleIndex = 0
  var itemIndex = 0
  while (itemIndex < 12) {
    wmeRuleElementSet ("Scale Rule", scaleRuleIndex,
      itemIndex = itemIndex + 1
    )
  }
}
```

Example 2:

```
function onWmeStart() {
  var ruleCount = wmeObjectCountGet("Scale Rule")
  wjsLog ("Scale Rule objects=" + ruleCount)
```

```

for (var scaleRuleIndex = 0; scaleRuleIndex
// Set the scale rule element values, for
var ruleName = wmeObjectNameGet("Scale Ru
wjsLog ("Scale=" + ruleName)

var itemIndex = 0
while (itemIndex < 12) {
    var value = (itemIndex * 127) / 12
    wmeRuleElementSet ("Scale Rule", scaleR
    itemIndex = itemIndex + 1
}
}
}

```

<> wmeGeneratorEnvelopePercentGet()

This function returns the percent value for the specified envelope at the given percent position. The value returned is a value between 0 and 127.

The function has the following parameters:

- *generatorObjectIndex* the index of the generator object of interest.
- *parameterName* the name of the envelope parameter (e.g. *Volume*).
- *percent* the percent value; from 0 to 100.

Example:

```

function onWmeStart() {

```

```

var generatorCount = wmeObjectCountGet ("Gener
wjsLog ("Generator objects=" + generatorCount

for (var generatorIndex = 0; generatorIndex <
// Ramp-up every generator volume envelope!
var generatorName = wmeObjectNameGet ("Gener
wjsLog ("Generator=" + generatorName)

var percent = 0
while (percent <= 100)
{
    var valueWas = wmeGeneratorEnvelopePerce
wjsLog ("Volume at " + percent + ", " +

    var setToValue = percent + 1
wjsLog ("set to new value =" + setToValue
wmeGeneratorEnvelopePercentSet (generator

    var valueNow = wmeGeneratorEnvelopePerce
wjsLog ("Volume at " + percent + ", " +

    percent = percent + 1
}
}
}

```

<> wmeGeneratorEnvelopePercentSet ()

This function sets the envelope value at the specified percent, for the indexed generator, to the specified value. The value must be between 0 and 127.

The function has the following parameters:

The function has the following parameters.

- *generatorObjectIndex* the index of the generator object of interest.
- *parameterName* the name of the envelope parameter (e.g. *Volume*).
- *percent* the percent value; from 0 to 100.
- *newValue* the new element value to use, in a range from 0 to 127.

Example:

```
function onWmeStart() {
    var generatorCount = wmeObjectCountGet("Generators");
    wjsLog ("Generator objects=" + generatorCount);

    for (var generatorIndex = 0; generatorIndex < generatorCount; generatorIndex++)
        // Ramp-up every generator volume envelope
        var generatorName = wmeObjectNameGet("Generators", generatorIndex);
        wjsLog ("Generator=" + generatorName);

        var percent = 0
        while (percent <= 100)
        {
            var valueWas = wmeGeneratorEnvelopePercentGet(generatorName, percent);
            wjsLog ("Volume at " + percent + "%, " + valueWas);

            var setToValue = percent + 1
            wjsLog ("set to new value =" + setToValue);
            wmeGeneratorEnvelopePercentSet (generatorName, setToValue);

            var valueNow = wmeGeneratorEnvelopePercentGet(generatorName, setToValue);
            wjsLog ("Volume at " + setToValue + "%, " + valueNow);

            percent = setToValue;
        }
}
```

```
percent = percent + 1
}
}
}
```

<> wmeCellTrackIndexGet()

This function returns the track index of the Mix Cell containing the current generator/mix. This is used with various WAE related functions.

The function has no parameters

Example:

```
function onWmeStart() {
    var cellTrackIndex = wmeCellTrackIndexGet()
}
```

<> wmeCellColumnIndexGet()

This function returns the column index of the Mix Cell containing the current generator/mix. This is used with various WAE related functions.

The function has no parameters

Example:

```
function onWmeStart() {
```

```
function onWmeStart() {  
  
    var cellColumnIndex = wmeCellColumnIndexGet  
  
}
```

<> WAE functions

WAE related functions all start with the `wae` prefix.

<> `waeGetFxNetworkIdForMix()`

This function returns the id that can be used for manipulating the effects chain for the Global Mix FX.

The function has no parameters

Example:

```
function onWmeStart() {  
  
    var fxNetworkIdForMix = waeGetFxNetworkIdFo  
  
}
```

<> `waeGetFxNetworkIdForCellGlobal()`

This function returns the id that can be used for manipulating the effects chain for the Cell, identified by the supplied track

and column indexes.

The function has the following parameters:

- *trackIndex* The track index of the cell (from 0 to 11).
- *columnIndex* The columnIndex index of the cell (from 0 to 3).

Example:

```
function onWmeStart() {  
  
    var fxNetworkIdForCellAtTrack0Column1 = wae  
  
}
```



waeGetFxNetworkIdForCellSynthTrackColumnChannel()

This function returns the id that can be used for manipulating the effects chain for the Cell, identified by the supplied track and column indexes.

The function has the following parameters:

- *trackIndex* The track index of the cell (from 0 to 11).
- *columnIndex* The columnIndex index of the cell (from 0 to 3).
- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)

Example:

```
function onWmeStart() {  
  
    var synthFxNetworkIdForCellAtTrack0Column1M  
  
}
```



waeGetFxNetworkIdForCellEffectTrackColumnChannel()

This function returns the id that can be used for manipulating the effects chain for the Cell, identified by the supplied track and column indexes.

The function has the following parameters:

- *trackIndex* The track index of the cell (from 0 to 11).
- *columnIndex* The columnIndex index of the cell (from 0 to 3).
- *channel* the MIDI Channel, from 0 to 15 (MIDI channel is actually displayed in the WME Network screen as 1 to 16)

Example:

```
function onWmeStart() {  
  
    var trackFxNetworkIdForCellAtTrack0Column1M  
  
}
```


<> waeFxNetworkAllPresetNamesGet()

This function returns an array of all FX presets that can be supplied to the FX network with the specified ID. The list returned using an FX Network ID generated by *waeGetFxNetworkIdForCellSynthTrackColumnChannel* is different to those using other FX network IDs (which all otherwise return the same array of values)

The function has the following parameters:

- *fxNetworkId* The id of the FX Network in question.

Example:

```
function onWmeStart() {  
  
    var fxNetworkIdForMix = waeGetFxNetworkIdFor  
    var allEffectsPresets = waeFxNetworkAllPres  
  
    // Display the preset names on the console  
    for (var effectPresetIndex = 0; effectPrese  
        wjsLog(allEffectsPresets.length[effectPre  
    }  
  
    var synthFxNetworkId = waeGetFxNetworkIdFor  
    var allSynthPresets = waeFxNetworkAllPresetl  
  
    // Display the preset names on the console  
    for (var synthFxIndex = 0; synthFxIndex < a  
        wjsLog(allSynthPresets.length[synthFxInde
```

```
}  
}
```

<> waeFxNetworkRandomPresetNamesGet()

This function returns an array of all FX presets that can be supplied to the FX network with the specified ID; filtered such that only the presets that you have enabled in your current Schema (i.e. randomization schema) are returned. The list returned using an FX Network ID generated by *waeGetFxNetworkIdForCellSynthTrackColumnChannel* is different to those using other FX network IDs (which all otherwise return the same array of values)

The function has the following parameters:

- *fxNetworkId* The id of the FX Network in question.

Example:

```
function onWmeStart() {  
  
    var fxNetworkIdForMix = waeGetFxNetworkIdFo  
    var allEffectsPresets = waeFxNetworkRandomP  
  
    // Display the preset names on the console  
    for (var effectPresetIndex = 0; effectPrese  
        wjsLog(allEffectsPresets.length[effectPre  
    }  
  
    var synthFxNetworkId = waeGetFxNetworkIdFor  
    var allSynthPresets = waeFxNetworkRandomPre  
  
    // Display the preset names on the console  
    for (var synthFxIndex = 0; synthFxIndex < a
```

```
wjsLog(allSynthPresets.length[synthFxIndex]);
}
```

waeFxNetworkPresetGet()

This function returns the FX Preset for the specified FX Network.

Example:

```
function onWmeStart() {
    var fxNetworkIdForMix = waeGetFxNetworkIdForMix();
    waeFxNetworkPresetGet(fxNetworkIdForMix);
}
```

waeFxNetworkPresetSet()

This function applies the specified FX Preset to the specified FX Network

The function has the following parameters:

- *fxNetworkId* The id of the FX Network in question.
- *fxPreset* The preset to apply to the FX Network

Example:

```
function onWmeStart() {
```

```
var fxNetworkIdForMix = waeGetFxNetworkIdFo
waeFxNetworkPresetSet(fxNetworkIdForMix, "f:
}
```

Synth Preset List

The following table all Synth Presets available to *waeFxNetworkPresetSet* in the current version of Wotja. The list was created using Wotja Script and the *waeFxNetworkAllPresetNamesGet* function.

```
sounds/Bass/Bass fat swept.tg
sounds/Bass/Bass filter sweep.tg
sounds/Bass/Bass pluck soft.tg
sounds/Bass/Bass plucked bright.tg
sounds/Bass/Bass pulser.tg
sounds/Beats/Beats ch10 eperc wt.tg
sounds/Beats/Beats ch10 imdrums wt.tg
sounds/Beats/Beats ch10 ogglegacy wt.tg
sounds/Bell/Bell bright.tg
sounds/Bell/Bell combo.tg
sounds/Bell/Bell glass felt.tg
sounds/Bell/Bell glass tri.tg
sounds/Bell/Bell synth bright.tg
sounds/Bell/Bell synth soft.tg
sounds/Drone/Drone aeolian spinner.tg
sounds/Drone/Drone airier.tg
sounds/Drone/Drone buzz chorus low.tg
sounds/Drone/Drone buzz chorus sweep.tg
sounds/Drone/Drone cosmic 1.tg
sounds/Drone/Drone cosmic 2.tg
sounds/Drone/Drone fizz 2.tg
sounds/Drone/Drone fizz.tg
sounds/Drone/Drone fm sweep variation.tg
sounds/Drone/Drone fuzz.tg
sounds/Drone/Drone gentle harmonic shifts.tg
sounds/Drone/Drone gentle shifts pan.tg
sounds/Drone/Drone index range.tg
sounds/Drone/Drone lpf ebb blurred.tg
sounds/Drone/Drone mild peril.tg
sounds/Drone/Drone motor.tg
sounds/Drone/Drone perpetual motion.tg
sounds/Drone/Drone piano orch wash.tg
sounds/Drone/Drone slow phase morph.tg
sounds/Drone/Drone slow phase pan.tg
sounds/Drone/Drone slow phase strings.tg
sounds/Drone/Drone soft chorus sweep.tg
sounds/Drone/Drone strings octave.tg
sounds/Drone/Drone strings.tg
sounds/Drone/Drone subtle offset pulse tg
```

sounds/Drone/Drone subtle offset pulse.tg
sounds/Drone/Drone subtle pulse.tg
sounds/Drone/Drone synth soft.tg
sounds/Drone/Drone voxaa.tg
sounds/Drone/Drone warm fizzer.tg
sounds/Drone/Drone wide chorus low.tg
sounds/Drone/Drone wide subtle additive.tg
sounds/Drone/Drone wind in wire.tg
sounds/E-piano/E-Piano 2.tg
sounds/E-piano/E-Piano blend 2.tg
sounds/E-piano/E-Piano blend.tg
sounds/E-piano/E-Piano bowed.tg
sounds/E-piano/E-Piano bright.tg
sounds/E-piano/E-Piano shimmer.tg
sounds/E-piano/E-Piano soft.tg
sounds/E-piano/E-Piano space.tg
sounds/E-piano/E-Piano.tg
sounds/Lead/Lead bob.tg
sounds/Lead/Lead dsynth soft warm.tg
sounds/M01-Lead/Brassy.tg
sounds/M01-Lead/Breathy chime.tg
sounds/M01-Lead/Bright FM keys 1.tg
sounds/M01-Lead/Chime bar 1.tg
sounds/M01-Lead/Felt mallet chime.tg
sounds/M01-Lead/Filter warble.tg
sounds/M01-Lead/FM keys 1.tg
sounds/M01-Lead/FM keys 2.tg
sounds/M01-Lead/FM keys 3.tg
sounds/M01-Lead/FM keys 4.tg
sounds/M01-Lead/FM keys 5.tg
sounds/M01-Lead/FM keys 6.tg
sounds/M01-Lead/FM pluck.tg
sounds/M01-Lead/Harmonic scan 1.tg
sounds/M01-Lead/Inverse harmonic scan.tg
sounds/M01-Lead/Mellow FM keys 1.tg
sounds/M01-Lead/Perc hi-lo.tg
sounds/M01-Lead/Pluck octaves.tg
sounds/M01-Lead/Rattle plate.tg
sounds/M01-Lead/Resonant filter sweep.tg
sounds/M01-Lead/Ringing sine.tg
sounds/M01-Lead/Slight vocal.tg
sounds/M01-Lead/Soft bright lead.tg
sounds/M01-Lead/Soft filter sweep.tg
sounds/M01-Lead/Soft hi-lo.tg
sounds/M01-Lead/Soft perc tine.tg
sounds/M01-Lead/Soft pluck bright tail.tg
sounds/M01-Lead/Staccato supersaws hard attack.tg
sounds/M01-Lead/Staccato supersaws.tg
sounds/M01-Lead/Supersaws hard attack.tg
sounds/M01-Lead/Supersaws.tg
sounds/M01-Lead/Tuned noise.tg
sounds/M01-Lead/WTable scan 1.tg
sounds/M01-Lead/WTable scan 2.tg

sounds/M01-Lead/WTable scan 3.tg
sounds/M01-Lead/WTable scan 4.tg
sounds/M01-Lead/WTable scan 5.tg
sounds/M01-Lead/WTable scan 6.tg
sounds/Multi/Multi 3 op fm template.tg
sounds/Multi/Multi piano strings.tg
sounds/Multi/Multi wavetable crossfade template.tg
sounds/Noise/Noise mains hum.tg
sounds/Noise/Noise on the beach.tg
sounds/Noise/Noise ring mod high bell.tg
sounds/Noise/Noise tuned breezes.tg
sounds/Pad/Pad bowed.tg
sounds/Pad/Pad brass metal shimmer.tg
sounds/Pad/Pad brass soft.tg
sounds/Pad/Pad brassy.tg
sounds/Pad/Pad coda mod.tg
sounds/Pad/Pad epiano.tg
sounds/Pad/Pad fizz grower.tg
sounds/Pad/Pad fizz.tg
sounds/Pad/Pad hummer.tg
sounds/Pad/Pad outer space.tg
sounds/Pad/Pad pipe shimmer.tg
sounds/Pad/Pad pitched metal.tg
sounds/Pad/Pad side trails vib.tg
sounds/Pad/Pad soft chev 2.tg
sounds/Pad/Pad soft easel.tg
sounds/Pad/Pad soft ep 1.tg
sounds/Pad/Pad soft ep 2.tg
sounds/Pad/Pad soft for chording.tg
sounds/Pad/Pad soft tremolo.tg
sounds/Pad/Pad space park 1.tg
sounds/Pad/Pad space park 2.tg
sounds/Pad/Pad space park 3.tg
sounds/Pad/Pad space scape.tg
sounds/Pad/Pad space shimmer.tg
sounds/Pad/Pad space wind.tg
sounds/Pad/Pad synth 1.tg
sounds/Pad/Pad synth 2.tg
sounds/Pad/Pad unresolved.tg
sounds/Pad/Pad warm chev 1.tg
sounds/Pad/Pad warm soft.tg
sounds/Perc/Perc beat sync noise.tg
sounds/Piano/Piano blend bright.tg
sounds/Piano/Piano blend upright.tg
sounds/Piano/Piano brass.tg
sounds/Piano/Piano damped bright.tg
sounds/Piano/Piano damped long 1.tg
sounds/Piano/Piano damped long 2.tg
sounds/Piano/Piano damped.tg
sounds/Piano/Piano upright long.tg
sounds/Piano/Piano upright wide.tg
sounds/Pluck/Pluck guitar bell bright.tg

```

sounds/Pluck/Pluck guitar blend edge.tg
sounds/Pluck/Pluck guitar blend ep.tg
sounds/Pluck/Pluck guitar blend osc.tg
sounds/Pluck/Pluck guitar blend soft.tg
sounds/Pluck/Pluck guitar blend steel.tg
sounds/Pluck/Pluck guitar bowed.tg
sounds/Strings/Strings build.tg
sounds/Strings/Strings distant.tg
sounds/Strings/Strings slow.tg
sounds/Strings/Strings tremolo.tg
sounds/Synth/Synth beat sync filter blip.tg
sounds/Synth/Synth dsynth warm 2.tg
sounds/Synth/Synth fizz pulse.tg
sounds/Synth/Synth fizz soft.tg
sounds/Synth/Synth organ electric.tg
sounds/Synth/Synth pwm.tg
sounds/Synth/Synth saw phase offset.tg
sounds/Synth/Synth slow vowel morph.tg
sounds/Synth/Synth soft lead.tg
sounds/Synth/Synth subtractive template 1.tg
sounds/Synth/Synth subtractive template.tg
sounds/Synth/Synth swept harmonics.tg
sounds/Synth/Synth wavetable simple vibrato.tg
sounds/Units/Unit dsynth.tg
sounds/Units/Unit osc.tg
sounds/Units/Unit particle.tg
sounds/Units/Unit wavetable.tg

```

Effect Preset List

The following table all Effect Presets available to *waeFxNetworkPresetSet* in the current version of Wotja. The list was created using Wotja Script and the *waeFxNetworkAllPresetNamesGet* function.

```

fx/ABC R2XL Reverb/ABC Reverb 01.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 02.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 03.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 04.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 05.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 06.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 07.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 08.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 09.wotja_fx
fx/ABC R2XL Reverb/ABC Reverb 10.wotja_fx
fx/Ambience/Big reverb chorus (R1).fxm
fx/Ambience/Big reverb chorus feedback (R1).fxm
fx/Ambience/Big reverb chorus input pan (R1).fxm
fx/Ambience/Big reverb dual pre (R1).fxm
fx/Ambience/Big reverb hard edge (R1).fxm
fx/Ambience/Big reverb haze edge (R2XL).fxm
fx/Ambience/Big reverb haze pure (R2XL).fxm
fx/Ambience/Big reverb input pan (R1).fxm

```

fx/Ambience/Big reverb space (R2XL).fxm
fx/Ambience/Big reverb tail filter bp (R2XL).fxm
fx/Ambience/Big reverb tail filter lp (R2XL).fxm
fx/Ambience/Big reverb tail filter notch (R2XL).fxm
fx/Ambience/Big reverb undamped (R1).fxm
fx/Ambience/Shimmer dual halo (R2XL).fxm
fx/Ambience/Shimmer dual micro high (R2XL).fxm
fx/Ambience/Shimmer dual mixed (R1).fxm
fx/Ambience/Shimmer dual mixed (R2XL).fxm
fx/Ambience/Shimmer dual octave (R1).fxm
fx/Ambience/Shimmer dual octave (R2XL).fxm
fx/Ambience/Shimmer fifth (R1).fxm
fx/Ambience/Shimmer fifth (R2XL).fxm
fx/Ambience/Shimmer micro (R1).fxm
fx/Ambience/Shimmer micro (R2XL).fxm
fx/Ambience/Shimmer micro lfo (R2XL).fxm
fx/Ambience/Shimmer octave (R2XL).fxm
fx/Amp/- Amp default.fxm
fx/Amp/Amp quad.fxm
fx/Chorus/- Chorus default.fxm
fx/Chorus/Chorus deep.fxm
fx/Chorus/Chorus double.fxm
fx/Chorus/Chorus fast flange.fxm
fx/Chorus/Chorus feedback.fxm
fx/Chorus/Chorus light.fxm
fx/Chorus/Chorus medium.fxm
fx/Chorus/Chorus strong.fxm
fx/Compressor/- Compressor default.fxm
fx/Compressor/Compressor basic.fxm
fx/Compressor/Compressor low end boost.fxm
fx/Compressor/Compressor mild.fxm
fx/Compressor/Compressor smooth.fxm
fx/Compressor/Compressor tight.fxm
fx/Delay/- Delay default.fxm
fx/Delay/Delay bounce.fxm
fx/Delay/Delay double sync.fxm
fx/Delay/Delay doubling.fxm
fx/Delay/Delay echoer.fxm
fx/Delay/Delay filtered mono.fxm
fx/Delay/Delay filtered sync pan.fxm
fx/Delay/Delay long.fxm
fx/Delay/Delay resonator.fxm
fx/Delay/Delay simple.fxm
fx/Delay/Delay slapback.fxm
fx/Delay/Delay tight slapback.fxm
fx/Distortion/- Distortion default.fxm
fx/Distortion/Distortion broken filter.fxm
fx/Distortion/Distortion fuzz drive.fxm
fx/Distortion/Distortion fuzz.fxm
fx/Distortion/Distortion mild.fxm
fx/EQ/- Equaliser default.fxm
fx/EQ/Equaliser hi cut.fxm

fx/EQ/Equaliser lo cut.fxm
fx/EQ/Equaliser mid.fxm
fx/Filter/- Filter default.fxm
fx/Filter/Filter 2Hz autowah.fxm
fx/Filter/Filter 4Hz auto wah.fxm
fx/Filter/Filter 4Hz autowah.fxm
fx/Filter/Filter dirty.fxm
fx/Filter/Filter hi cut.fxm
fx/Filter/Filter high fast sweep.fxm
fx/Filter/Filter parallel bandpass 2 bar sweep.fxm
fx/Filter/Filter slow auto wah.fxm
fx/Filter/Filter slow sweep hi q.fxm
fx/Filter/Filter subtle sweep.fxm
fx/Filter/Filter telephone.fxm
fx/Mix FX/Combi chorus delay reverb 2.fxm
fx/Mix FX/Combi chorus delay reverb.fxm
fx/Mix FX/Combi chorus reverb.fxm
fx/Mix FX/Combi compressor chorus delay eq.fxm
fx/Mix FX/Combi compressor chorus delay reverb eq.fxm
fx/Mix FX/Combi delay chorus reverb.fxm
fx/Mix FX/Combi delay eq.fxm
fx/Mix FX/Combi delay reverb eq.fxm
fx/Mix FX/Combi eq chorus reverb.fxm
fx/Mix FX/Combi filter delay 2.fxm
fx/Mix FX/Combi filter delay reverb muted.fxm
fx/Mix FX/Combi filter delay shift.fxm
fx/Mix FX/Combi filter delay.fxm
fx/Mix FX/Combi filter eq reverb.fxm
fx/Mix FX/Combi filter shifter.fxm
fx/Mix FX/Combi lfo filter chorus reverb.fxm
fx/Mix FX/Combi lfo filter chorus.fxm
fx/Mix FX/Combi mix eq compressor reverb.fxm
fx/Mix FX/Combi reverb eq.fxm
fx/Mix FX/Combi reverb lfo filter.fxm
fx/Overdrive/- Overdrive default.fxm
fx/Overdrive/Overdrive extreme.fxm
fx/Overdrive/Overdrive harmonics.fxm
fx/Overdrive/Overdrive hot.fxm
fx/Overdrive/Overdrive serious.fxm
fx/Overdrive/Overdrive warm.fxm
fx/Pan/Pan auto.fxm
fx/Pan/Pan shimmer.fxm
fx/Reverb/- Reverb default.fxm
fx/Reverb/Reverb 5 second.fxm
fx/Reverb/Reverb 9 second.fxm
fx/Reverb/Reverb basement.fxm
fx/Reverb/Reverb bright hall.fxm
fx/Reverb/Reverb bright plate.fxm
fx/Reverb/Reverb bright small room.fxm
fx/Reverb/Reverb drum hallway.fxm
fx/Reverb/Reverb drum studio.fxm
fx/Reverb/Reverb light ambience.fxm

```
fx/Reverb/Reverb medium room.fxm
fx/Reverb/Reverb resonant metallic.fxm
fx/Reverb/Reverb ringing 6 second.fxm
fx/Reverb/Reverb slapback room.fxm
fx/Reverb/Reverb smooth 10 second.fxm
fx/Volume/Volume 4hz gate pan.fxm
fx/Volume/Volume 4hz gate.fxm
fx/Volume/Volume 10 second duck.fxm
fx/Volume/Volume swell.fxm
fx/Volume/Volume tremolo fast.fxm
fx/Volume/Volume tremolo mono 2xbpm sync.fxm
fx/Volume/Volume tremolo pan.fxm
fx/Volume/Volume tremolo slow.fxm
```

<> WTE functions

WTE related functions all start with the `wte` prefix.

<> `wteRandomWordsGet()`

This function returns a string containing a number of random words.

The function has the following parameters:

- *numberOfWords* The number of random words to return.

Example:

```
function onWmeStart() {

    // Make a string with 3 random words
    var ttmText = wteRandomWordsGet(3)

    // Set the TTM text using our random string
```

```
wmeParameterSet("Text Pattern Text", ttmText)
}
```

<> wteShuffleWords()

This function returns a string containing a shuffled version of the supplied text. The words preserved from the supplied text, but the order of those words is changed.

The function has the following parameters:

- *textToShuffle* The text string to shuffle.

Example:

```
function onWmeStart() {
    // Make a string that is a random shuffle of
    var textToShuffle = "Shuffle these four words"
    var ttmText = wteShuffleWords(textToShuffle)

    // Set the TTM text using our shuffled string
    wmeParameterSet("Text Pattern Text", ttmText)
}
```

<> wteShuffleCharacters()

This function returns a string containing a shuffled version of the supplied text. All the characters are shuffled; words are broken-up.

The function has the following parameters:

- *textToShuffle* The text string to shuffle.

Example:

```
function onWmeStart() {  
  
    // Make a string that is a random shuffle of  
    var textToShuffle = "Shuffle these characters"  
    var ttmText = wteShuffleCharacters(textToShuf  
  
    // Set the TTM text using our shuffled string  
    wmeParameterSet("Text Pattern Text", ttmText)  
  
}
```

Scripting Cookbook

Trigger Script Cookbook

A great way to start thinking about Event Handler Script Functions, is to look at various real examples of how to do various interesting things with Event Handler Script Functions!

Example: How to choose a random Mix Root every time the mix starts

```
// Choose a random root

function chooseRandomRoot() {
    var roots = ["A", "A#", "B", "C", "C#", "D", "D#",
                "E", "E#", "F", "F#", "G", "G#", "A", "A#", "B", "B#", "C", "C#", "D", "D#", "E", "E#", "F", "F#", "G", "G#"];

    var rootIndex = wjsRandomGetFromTo(0, roots.length-1);
    var newRoot = roots[rootIndex];
    return newRoot;
}

function onWmeStart() {
    wjsLog ("onWmeStart!");

    var newRoot = chooseRandomRoot();
    wmeParameterSet("Mix Root", newRoot);
    wjsLog ("Mix Root now=" + newRoot);
}
```

Example: Change the scale to use depending on time of day

This is a script that you could use as a cell-level *Bar* trigger script.

```
function onWmeStart() {
  var date = new Date()
  var hour = date.getHours()
  if ((hour > 20) || (hour < 8)) {
    wmeParameterSet("Scale Rules", "early morning sca
  } else {
    wmeParameterSet("Scale Rules", "middle of day sca
  }
}
```

Example: randomly select a pattern to use for a generator

This is a generator-level *Bar* trigger script.

```
function onWmeStart() {
  // Get a random integer between 1 and 3 inclusive.
  var value = wjsRandomGetFromTo (1, 3)

  wjsLog ("value=" + value)

  var patternString = ""
  if (value == 1) {
    patternString = "<100 B 240 1>"
  } else if (value == 2) {
    patternString = "<100 B 120 1 120 2>"
  } else {
    patternString = "<100 B 60 1 60 2 60 3 60 4>"
  }
}
```

```
wmeParameterSet("Patterns", patternString)
}
```

Example: script trigger that allows Event Handler Script Functions to emit MIDI CC events, with an optional delay

This is a script that you could use as a cell-level *Bar* trigger script.

```
function onWmeBar(bar) {

    // Generator trigger...
    // Apply a pan sweep through the bar from left to
    // to show-off the use of wmeMIDISendCC.

    wjsLog ("onWmeBar(" + index + ") - Generator")

    var barDuration = wmeBarDurationGet()

    wjsLog ("barDuration=" + barDuration)

    var midiChannel = wmeGeneratorMIDIChannelGet()
    var delay = 0
    var ccController = 10 // Pan controller!
    var value = 0
    while (delay <= barDuration) {
        var value = (127 * delay) / barDuration
        // Note that the "delay" is optional; we're using it in this
        // demo, to get a sweep effect from start to end
        wmeMIDISendCC(midiChannel, ccController, value,
            delay, delay + 20
    }
```

```
    delay = delay + 20
  }
}
```

Example: cell bar event trigger, that automatically adjusts the mix root and tempo every 2 bars

```
function onWmeBar(bar) {

  // Cell trigger...
  // Change bar / tempo every 2 bars...

  wjsLog ("onWmeBar(" + bar + ") - Mix")

  if ( ((bar + 1) % 2) == 0) {
    wjsLog ("bar=" + bar)

    var rootWas = wmeParameterGet("Mix Root")

    wjsLog ("Mix Root was=" + rootWas)

    // Every 2 bars, change the root at random,
    // from all those available!
    var roots = ["A", "A#", "B", "C", "C#", "D", "D#"]

    var rootIndex = wjsRandomGetFromTo(0, roots.length)
    var newRoot = roots[rootIndex]
    wjsLog ("New root=" + newRoot)

    wmeParameterSet("Mix Root", newRoot)

    // Set tempo as well; to a value related to the
```



```

var tempoWas = wmeParameterGet("Tempo")
wjsLog ("Mix tempo was=" + tempoWas)

var newTempo = 100 + rootIndex * 5
wjsLog ("New tempo=" + newTempo)
wmeParameterSet("Tempo", newTempo)
}
}

```

Example: cell bar event trigger, that automatically adjusts the Mix Root and Scale Rule every 2 bars

```

// Choose a random root

function chooseRandomRoot() {
  var roots = ["A", "A#", "B", "C", "C#", "D", "D#",

  var rootIndex = wjsRandomGetFromTo(0, roots.length-
  var newRoot = roots[rootIndex]
  return newRoot
}

// Check if the specified Scale Rule name exists in t

function getDoesScaleRuleExistWithThisName(lookForRuleName) {
  var scaleRuleCount = wmeObjectCountGet("Scale Rule")
  //wjsLog ("Scale Rules objects=" + scaleRuleCount)

  for (var index = 0; index < scaleRuleCount; index++)
    var scaleRuleName = wmeObjectNameGet("Scale Rule"

  // wjsLog ("scaleRuleName=" + scaleRuleName)

```

```

    if (lookForRuleName == scaleRuleName) {
        // Found the rule, so return true.
        return true
    }
}

// To get here, the rule wasn't found, so return fa

return false
}

// Event Triggers

function onWmeBar(bar) {

    // Cell trigger...
    // Change bar / scale rule every 2 bars...
    // Note that this requires you to have at least two
    // one called "Major" and one called "Minor"

    wjsLog ("onWmeBar(" + bar + ") - Mix")

    // Every 2 bars, change the root at random, from al
    if ( ((bar + 1) % 2) == 0) {
        wjsLog ("bar=" + bar)

        var rootWas = wmeParameterGet("Mix Root")

        wjsLog ("Mix Root was=" + rootWas)
        var newRoot = chooseRandomRoot()
        wmeParameterSet("Mix Root", newRoot)
        wjsLog ("Mix Root now=" + newRoot)
    }
}

```

```

// Set scale as well; to a value related to the s
// Choose one of two Scale Rule names at random.

var useRuleName = ""
if (wjsRandomGetFromTo(0, 100) <= 50) {
    useRuleName = "Major"
} else {
    useRuleName = "Minor"
}

if (getDoesScaleRuleExistWithThisName(useRuleName)
    wjsLog ("Mix Scale Rule set to=" + useRuleName)

// Apply rule to all generators!
var generatorCount = wmeObjectCountGet("Generat
// wjsLog ("Generator objects=" + generatorCoun

for (var generatorIndex = 0; generatorIndex < g
    // wjsLog ("Generator name=" + wmeObjectNameG
    wmeObjectParameterSet("Generator", generatorI
}
} else {
    wjsLog("Warning - rule name not found=" + useRu
}
}
}
}

```

Example: cell start event trigger, that automatically adjusts the tempo to suit the time of day

```

function onWmeStart() {
  wjsLog ("Mix!")

  // Wotja script to get hour of day as 24-hour clock
  // ... and adjust tempo accordingly!
  var date = new Date()
  var hour = date.getHours()
  if ((hour > 20) || (hour <8)) {
    wjsLog ("late night / early morning!")
    var randomValue = wjsRandomGetFromTo(0,50)
    wmeParameterSet("Tempo", 50 + randomValue)
  } else {
    wjsLog ("middle of day!")
    var randomValue = wjsRandomGetFromTo(0,50)
    wmeParameterSet("Tempo", 100 + randomValue)
  }
}

```

Example: generator start event trigger, that automatically cycles the Chord Depth every time it starts playback

```

function onWmeStart() {
  wjsLog ("Generator!")

  var chordDepth = wmeParameterGet("Chord Depth")

  // Convert any string value to integer, then add on
  chordDepth = parseInt(chordDepth) + 1

  // Loop the value around if it gets larger than we

```

```
// Loop the value around if it gets larger than we
if (chordDepth > 8) {
  chordDepth = 1
}
wmeParameterSet("Chord Depth", chordDepth)
}
```

Example: generator event trigger, that automatically changes Chord Depth every bar

```
function onWmeBar(bar) {
  wjsLog ("onWmeBar, bar=" + bar)
  var chordDepth = wmeParameterGet("Chord Depth")

  // Convert any string value to integer, then add on
  chordDepth = parseInt(chordDepth) + 1

  // Loop the value around if it gets larger than we
  if (chordDepth > 8) {
    chordDepth = 1
  }

  wmeParameterSet("Chord Depth", chordDepth)
}
```

Example: bringing generators into the mix

In this example, imagine that you have a mutating drum Generator that you want to have muted at the start of the mix and come in with a bang at the start of bar 20. And you don't want the mutations to start until bar 21...

How would that work in the world of script?

How would that work in the world of scripts?

Here is the Generator Start trigger:

```
function onWmeStart() {  
  // When we start, disable mutation for this Generator  
  // And set mute, too!  
  wmeParameterSet("Mute", "Yes")  
  wmeParameterSet("Mutation Factor", 0)  
}
```

Here is the Generator Bar trigger:

```
function onWmeBar(bar) {  
  if (bar == 20) {  
    // At bar 20, unmute the generator!  
    wmeParameterSet("Mute", "No")  
  }  
  
  if (bar == 21) {  
    // At bar 21, adjust the mutation factor!  
    wmeParameterSet("Mutation Factor", 20)  
  }  
}
```

The power of using scripts like this, is that:

- The drums always start on the bar specified.
- They don't morph until they are audible.
- The drum elements can now make staggered entry despite all being on the same MIDI channel.

Example: Emit MIDI CC in response to composed note events

```
var GLastNote = null

function onWmeGeneratorComposed(generatorIndex, noteon)
// Keep track of last composed note using the global
// called GLastNote ...
// Note that the "pitch" parameter should be ignored

midiChannel = wmeGeneratorMIDIChannelGet()

if (noteon) {
    if (GLastNote != null) {
        wmeMIDISendCC(midiChannel, 11, GLastNote, 10)
    }

    GLastNote = pitch
    wmeMIDISendCC(midiChannel, 11, pitch, 0)
} else {
    if (GLastNote != null) {
        wmeMIDISendCC(midiChannel, 11, GLastNote, 10)
        GLastNote = null
    }
}
}
```

Example: Change TTM Text for Generator At Start of Mix

```

function makeRandomText() {
    // Make some random TTM text.
    // We show 3 different techniques!
    // Choose one of these to use at random.
    var technique = wjsRandomGetFromTo(0, 2)
    var ttmText = ""

    switch (technique) {
    case 0:
        // Make a string with 3 random words
        ttmText = wteRandomWordsGet(3)
        break
    case 1:
        // Make a string that is a random shuffle of word
        ttmText = "Shuffle these four words"
        ttmText = wteShuffleWords(ttmText)
        break
    default:
        // Make a string that is a random shuffle of char
        ttmText = "Shuffle these characters"
        ttmText = wteShuffleCharacters(ttmText)
        break
    }

    wjsLog("random ttmText=", ttmText)

    return ttmText
}

function onWmeStart() {

    // Generate some random TTM text!

```



```
var ttmText = makeRandomText()

// Now that we have our string, set it!
wmeParameterSet("Text Pattern Text", ttmText)
}
```

Example: Change TTM Repeats at Start

```
function onWmeStart() {
  // Set the TTM property "Text Pattern Repeats" to 2
  wmeParameterSet("Text Pattern Repeats", 2)
}
```

Example: Change TTM Text At Start Then Restore After 4 bars

```
// Complex scripting example:
// - At mix start, apply random TTM Text.
// - After 4 bars, or at mix stop - restore the original

// The original TTM text is stored in this "global" variable
var GOriginalTTMText = ""

// The value we last set in onWmeStart
var GLastSetTTMText = ""

function setRandomTTMText() {
```

```

// Take a copy of the original TTM text
GOriginalTTMText = wmeParameterGet("Text Pattern Te
wjsLog("GOriginalTTMText=" + GOriginalTTMText)

// Make a string with 3 random words
var ttmText = wteRandomWordsGet(3)
wjsLog("ttmText=" + ttmText)

GLastSetTTMText = ttmText

// Now that we have our string, set it!
wmeParameterSet("Text Pattern Text", ttmText)
}

function restoreOriginalTTMText() {

var ttmNow = wmeParameterGet("Text Pattern Text")
wjsLog("restoreOriginalTTMText, ttmNow=" + ttmNow)

if (ttmNow != GLastSetTTMText) {
    wjsLog("The user value has changed since last ran
} else {
    wjsLog("Restoring TTM Text to=" + GOriginalTTMTex
    wmeParameterSet("Text Pattern Text", GOriginalTTM
}
}

//
// Trigger script functions
//

function onWmeStart() {

wjsLog("onWmeStart")

```

```

    setRandomTTMText()
}

function onWmeBar(bar) {
    // On the 4th bar, restore the TTM text... UNLESS t
    // has already changed the value through the UI.

    wjsLog("onWmeBar, bar=" + bar)

    if (bar == 4) {

        wjsLog("onWmeBar, bar 4!")

        restoreOriginalTTMText()
    }
}

function onWmeStop() {
    wjsLog("onWmeStop")
    // At the end, restore the TTM text... UNLESS the u
    // has already changed the value through the UI.
    restoreOriginalTTMText()
}

```

Example: Cell: Query All Synth and Track Presets at Start

```

function onWmeStart() {

```

```

// Query what Synth and Effect presets are available

var trackIndex = 0
var columnIndex = 0
var channel = 1

var fxNetworkIdSynth = waeGetFxNetworkIdForCellSynth
var fxNetworkIdTrack = waeGetFxNetworkIdForCellEffect

var synthFxPresets = waeFxNetworkAllPresetNamesGet
wjsLog("All synthFxPresets.length=" + synthFxPresets.length)

for (var synthFxIndex = 0; synthFxIndex < synthFxPresets.length; synthFxIndex++)
    wjsLog(synthFxPresets[synthFxIndex])
}

var trackFxPresets = waeFxNetworkAllPresetNamesGet
wjsLog("All trackFxPresets.length=" + trackFxPresets.length)

for (var trackFxIndex = 0; trackFxIndex < trackFxPresets.length; trackFxIndex++)
    wjsLog(trackFxPresets[trackFxIndex])
}
}

```

Example: Cell: Query And Set Random Effects and Patches

```

function onWmeStart() {

    // Generate a set of FX Network IDs, that are used
    var fxNetworkIdMix = waeGetFxNetworkIdForMix()
}

```

```

var fxNetworkIdMixTrack0 = waeGetFxNetworkIdForMixT
var fxNetworkIdCellGlobalTrack0Column0 = waeGetFxNe
var fxNetworkIdCellSynthTrack0Column0Channel1 = wae
var fxNetworkIdCellEffectTrack0Column0Channel1 = wa

// Query what Synth and Effect presets are availabl

var trackFxPresets = waeFxNetworkRandomPresetNamesG
wjsLog("trackFxPresets.length=" + trackFxPresets.le

for (var trackFxIndex = 0; trackFxIndex < trackFxPr
    wjsLog("trackFxPreset=" + trackFxPresets[trackFxI
}

var synthFxPresets = waeFxNetworkRandomPresetNamesG
wjsLog("synthFxPresets.length=" + synthFxPresets.le

for (var synthFxIndex = 0; synthFxIndex < synthFxPr
    wjsLog("synthFxPreset=" + synthFxPresets[synthFxI
}

if (synthFxPresets.length > 0) {
    // Set a random synth patch (from those available
    // Now... set patch random for cell 1!
    var synthPresetForTrack0Column0Channel1 = synthFx
    wjsLog("Use synthPresetForTrack0Column0Channel1="

    waeFxNetworkPresetSet(fxNetworkIdCellSynthTrack0C
}

if (trackFxPresets.length > 0) {
    // Set a random FX patch (from those available) f
    var fxForMix = trackFxPresets[wjsRandomGetFromTo(
    wjsLog("Use fxForMix=" + fxForMix)
}

```

```
waeFxNetworkPresetSet(fxNetworkIdMix, fxForMix)
}
}
```

Example: Cell: Query And Set Random Global Preset at Start

```
function onWmeStart() {

    // Generate the FX Network ID ... for the Global Mi
    var fxNetworkIdMix = waeGetFxNetworkIdForMix()

    // Query what Effect presets are available... for t
    var trackFxPresets = waeFxNetworkRandomPresetNamesG

    // Set a random FX patch (from those available) for
    // Check - has the user got any suitable FX enabled
    if (trackFxPresets.length > 1) {
        // Yes, we have at least one suitable FX preset a

        // Choose one at random...
        var randomIndex = wjsRandomGetFromTo(0, trackFxPre
        var fxForMix = trackFxPresets[randomIndex]

        wjsLog("Use fxForMix=" + fxForMix)

        // Apply the randomly selected preset
        waeFxNetworkPresetSet(fxNetworkIdMix, fxForMix)
    }
}
```

Example: Generator Query And Set Random Synth and Track Preset at Start

```
function onWmeStart() {  
  
    // Generator trigger script - apply a random Synth  
  
    // Generate the FX Network ID ... for the Generator  
  
    var trackIndex = wmeCellTrackIndexGet()  
    var columnIndex = wmeCellColumnIndexGet()  
    var channel = wmeGeneratorMIDIChannelGet()  
    wjsLog("Generator trackIndex=" + trackIndex + ", co  
  
    var fxNetworkIdSynth = waeGetFxNetworkIdForCellSynt  
    var fxNetworkIdTrack = waeGetFxNetworkIdForCelleFFE  
  
    // Query what Synth and Effect presets are availabl  
  
    var synthFxPresets = waeFxNetworkRandomPresetNamesG  
    wjsLog("synthFxPresets.length=" + synthFxPresets.le  
  
    for (var synthFxIndex = 0; synthFxIndex < synthFxPr  
        wjsLog("synthFxPreset=" + synthFxPresets[synthFxI  
    }  
  
    var trackFxPresets = waeFxNetworkRandomPresetNamesG  
    wjsLog("trackFxPresets.length=" + trackFxPresets.le  
  
    for (var trackFxIndex = 0; trackFxIndex < trackFxPr  
        wjsLog("trackFxPreset=" + trackFxPresets[trackFxI  
    }  
}
```

```

if (synthFxPresets.length > 0) {
  // Set a random synth patch (from those available
  // Now... set patch random for cell 1!
  var synthPreset = synthFxPresets[wjsRandomGetFrom
wjsLog("Use synthPreset=" + synthPreset)

  waeFxNetworkPresetSet(fxNetworkIdSynth, synthPres
}

if (trackFxPresets.length > 0) {
  // Set a random FX patch (from those available) f
  var trackPreset = trackFxPresets[wjsRandomGetFrom
wjsLog("Use fxForMix=" + trackPreset)
  waeFxNetworkPresetSet(fxNetworkIdTrack, trackPres
}
}

```

Example: Mix Level script, showing various functions

```

// Scripting API methods related mix-level functio

function mixObjectParameterGetAndSet() {
  // mixObjectParameterGet
  // mixObjectParameterSet

  // Example usage:
  var scaleRuleValue = mixObjectParameterGet("Scale R
  print("Mix scale rule index 0, value was = " + s

  scaleRuleValue = mixObjectParameterSet("Scale R

```



```

    scaleRuleValue = mixObjectParameterGet("Scale Ru
    print("Mix scale rule index 0, value now = " + s
}

function mixObjectQuerying() {
    // mixObjectNameGet
    // mixObjectIndexGet
    // mixObjectCountGet

    // Example usage:
    var scaleRuleCount = mixObjectCountGet("Scale Ru
    print("Mix scale rule count = " + scaleRuleCount
    var scaleRuleName = mixObjectNameGet("Scale Rule
    print("Mix scale rule 0 has name = " + scaleRule
    var indexOfScaleRuleName = mixObjectIndexGet("Sc
    print("Mix scale rule with name=" + scaleRuleNan
}

function mixCellObjectQuerying() {
    // mixCellObjectNameGet
    // mixCellObjectIndexGet
    // mixCellObjectCountGet

    // Example usage:
    var columnIndex = 0
    var trackIndex = 0
    var scaleRuleCount = mixCellObjectCountGet(colun
    print("Mix cell(" + columnIndex + "," + trackInc
    var scaleRuleName = mixCellObjectNameGet(columnI
    print("Mix cell(" + columnIndex + "," + trackInc
    var indexOfScaleRuleName = mixCellObjectIndexGet
    print("Mix cell(" + columnIndex + "," + trackInc
}

```

```

function mixCellParameterGetAndSet() {
    // mixCellObjectParameterSet
    // mixCellObjectParameterGet

    // Example usage:
    var columnIndex = 0
    var trackIndex = 0
    var generatorIndex = 0
    var generatorValue = mixCellObjectParameterGet(c
    print("generatorValue = " + generatorValue)
    mixCellObjectParameterSet(columnIndex, trackInde
    generatorValue = mixCellObjectParameterGet(column
    print("generatorValue = " + generatorValue)
    var cellValue = mixCellObjectParameterGet(columnr
    print("cellValue = " + cellValue)
    mixCellObjectParameterSet(columnIndex, trackInde
    cellValue = mixCellObjectParameterGet(columnInde
    print("cellValue = " + cellValue)
}

```

```

function mixParameterGetAndSet() {
    // mixParameterSet
    // mixParameterGet

    // Example usage:
    var mixValue = mixParameterGet("Scale Rules")
    print("Mix: Scale Rules = " + mixValue)
    mixParameterSet("Scale Rules", "Default")
    mixValue = mixParameterGet("Scale Rules")
    print("Mix: Scale Rules = " + mixValue)

    mixValue = mixParameterGet("Mix Root")
    print("Mix: Mix Root = " + mixValue)

    mixParameterSet("Mix Root", "C")
}

```

```

mixValue = mixParameterGet("Mix Root")
print("Mix: Mix Root = " + mixValue)

mixValue = mixParameterGet("Tempo")
print("Mix: Tempo = " + mixValue)
mixParameterSet("Tempo", "100")
mixValue = mixParameterGet("Tempo")
print("Mix: Tempo = " + mixValue)
}

function mixVolumeGetAndSet() {
    // mixVolumeSet
    // mixVolumeGet

    // Example usage:
    var value = mixVolumeGet() // Get current value,
    print(value)
    mixVolumeSet(0) // Set to minimum volume
    value = mixVolumeGet()
    print(value)
    mixVolumeSet(127) // Set to maximum volume
    value = mixVolumeGet()
    print(value)
}

function mixTrackVolumeGetAndSet() {
    // mixTrackVolumeSet
    // mixTrackVolumeGet

    // Example usage:
    var trackIndex = 0
    var value = mixTrackVolumeGet(trackIndex) // Val
    print("Track volume = " + value)

    mixTrackVolumeSet(trackIndex, 100) // Value from

```

```

    value = mixTrackVolumeGet(trackIndex) // Value from 0 to 1
    print("Track volume = " + value)
}

function mixTrackPanGetAndSet() {
    // mixTrackPanSet
    // mixTrackPanGet

    // Example usage:
    var trackIndex = 0
    var value = mixTrackPanGet(trackIndex) // Value from 0 to 1
    print("Track pan = " + value)
    mixTrackPanSet(trackIndex, 64) // Value from 0 to 1
    value = mixTrackPanGet(trackIndex) // Value from 0 to 1
    print("Track pan = " + value)
}

```

Example: Mix Level script, showing various functions and triggers

```

//
// Example of script functions and triggers to cycle through the progression used in Chopin's 24 preludes
//

const cAllScaleRules = {

    "Major":
        "1 0 0.5 0 1 0.5 0 1 0 0.5 0 0.5",
    "Minor":
        "1 0 1 1 0 1 0 1 1 0 1 0",
    "All Scale Major":
        "1 0 1 0 1 1 0 1 0 1 0 1"
}

```

```
"1 0 1 0 1 1 0 1 0 1 0 1",
"All Scale Minor Natural":
  "1 0 1 1 0 1 0 1 1 0 1 0",
"All Scale Minor Harmonic":
  "1 0 1 1 0 1 0 1 0 0 0 1",
"Chord Major triad":
  "1 0 0 0 1 0 0 1 0 0 0 0",
"Chord Major sixth":
  "1 0 0 0 1 0 0 1 0 1 0 0",
"Chord Dominant seventh":
  "1 0 0 0 1 0 0 1 0 0 1 0",
"Chord Major seventh":
  "1 0 0 0 1 0 0 1 0 0 0 1",
"Chord Augmented triad":
  "1 0 0 0 1 0 0 0 1 0 0 0",
"Chord Augmented seventh":
  "1 0 0 0 1 0 0 0 1 0 1 0",
"Chord Minor triad":
  "1 0 0 1 0 0 0 1 0 0 0 0",
"Chord Minor sixth":
  "1 0 0 1 0 0 0 1 0 1 0 0",
"Chord Minor seventh":
  "1 0 0 1 0 0 0 1 0 0 1 0",
"Chord Minor-major seventh":
  "1 0 0 1 0 0 0 1 0 0 0 1",
"Chord Diminished triad":
  "1 0 0 1 0 0 1 0 0 0 0 0",
"Chord Diminished seventh":
  "1 0 0 1 0 0 1 0 0 1 0 0",
"Chord Half-diminished seventh":
  "1 0 0 1 0 0 1 0 0 0 1 0",
"Chord Augmented major seventh":
  "1 0 0 0 1 0 0 0 1 0 0 1",
"Chord Seven-six":
  "1 0 0 0 1 0 0 1 0 0 1 0"
```



```

    "1 0 1 1 0 1 0 1 0 1 1 0",
    "Mode Phrygian (III)":
    "1 1 0 1 0 1 0 1 1 0 1 0",
    "Mode Lydian (IV)":
    "1 0 1 0 1 0 1 1 0 1 0 1",
    "Mode Mixolydian (V)":
    "1 0 1 0 1 1 0 1 0 1 1 0",
    "Mode Aeolian (VI)":
    "1 0 1 1 0 1 0 1 1 0 1 0",
    "Mode Locrian (VII)":
    "1 1 0 1 0 1 1 0 1 0 1 0"
}

```

```
const cProgression = [
```

```

    "C Major",
    "A Minor",
    "G Major",
    "E Minor",
    "D Major",
    "B Minor",
    "A Major",
    "F# Minor",
    "E Major",
    "C# Minor",
    "B Major",
    "G# Minor",
    "F# Major",
    "Eb Minor",
    "Db Major",
    "Bb Minor",
    "Ab Major",
    "F Minor",
    "Eb Major",
    "C Minor",
    "D# Major"

```

```

    "Bb Major",
    "G Minor",
    "F Major",
    "D Minor"]

const cChangeEveryBars = 4

var cycleIndex = 0; // We cycle round from 0 throu

function applyScaleName(scaleName) {
    var newRuleValue = cAllScaleRules[scaleName]

    mixObjectParameterSet("Scale Rule", 0, "Value",

    var newRuleValue = mixObjectParameterGet("Scale
    wjsLog ("Scale Rule Value (" + scaleName + "(, r
}

function applyRandomTempo() {
    var newTempo = 60 + wjsRandomGetFromTo(0, 60)

    mixParameterSet("Tempo", newTempo)

    var testTempo = mixParameterGet("Tempo")
    wjsLog ("Mix tempo=" + testTempo)
}

function applyProgression() {

    var item = cProgression[cycleIndex]

    // Split into Root, and scale
    var pairOfItems = item.split(" ");

```



```

var newRoot = pairOfItems[0]

mixParameterSet("Mix Root", newRoot)
var testRoot = mixParameterGet("Mix Root")
wjsLog ("Mix Root now=" + testRoot)

// Set scale as well; to a value related to the

var scaleName = pairOfItems[1]
applyScaleName(scaleName)

applyRandomTempo()
}

function startProgression() {
  cycleIndex = 0

  applyProgression()
}

function nextProgression() {
  cycleIndex = cycleIndex + 1
  if (cycleIndex >= cProgression.length) {
    // We've reached the end - go back to the begin
    cycleIndex = 0
  }

  applyProgression()
}

// Check if the specified Scale Rule name exists in the list
function checkForChangeInProgression(bar) {

  // Every 4 bars (or whatever...), change the root
  // ... in the Scale Rule name

```

```
// seen in Chopin's preludes...

if ( ((bar + 1) % cChangeEveryBars) == 0) {

    nextProgression()
}

// Event Triggers

function onWmeStart() {
    startProgression()
}

function onWmeBar(bar) {

    wjsLog ("Mix: onWmeBar(" + bar + ") - Cell")
    checkForChangeInProgression(bar)
}
```

Hyperinstrument

What is a hyperinstrument?

A hyperinstrument can be defined as being an instrument that can have extraordinary, semi-automated response to relatively simple real-time inputs.

Wotja is a hyperinstrument in many ways. For example from simple interaction in real-time through mouse and keyboard, you can have it generate extraordinary, ever-changing music that responds to your inputs. Wotja also directly responds to any real-time MIDI note data fed into it, for example from a MIDI keyboard or other MIDI controller; where you feed MIDI data into Wotja, you will find that Wotja can automatically harmonize its generators with all incoming MIDI note data. You can also configure Wotja to respond in many advanced ways to both MIDI note events and MIDI control events (otherwise known as "*MIDI CCs*").

Wotja can function as a hyperinstrument for 2 main reasons: The WME can real-time harmonies with incoming MIDI note events and control events (otherwise known as "*MIDI CCs*"), and Wotja's generative engine is an instrument that creates more than the sum of your direct inputs with keyboard, mouse, and MIDI. In other words, Wotja's generative engine, MIDI control, scripting and direct MIDI input harmonization all work together to make itself greater than the sum of its parts; a **customizable generative hyperinstrument!**

See the [Hyperinstrument - Quick Start](#) if you want to get started quickly.

How does Wotja work as a hyperinstrument?

You can respond to any [incoming MIDI CC](#) however you want; for example, to change the current scale or adjust a harmony rule in real-time in response to incoming MIDI CC events.

You can also respond to any [incoming MIDI Note on/off event](#) however you want; for example, you could use some notes (such as accidentals

in a scale) to change parameter values. In other words, you can use certain specific notes to trigger various complex responses by Wotja, for example; or to enable/disable the chording parameters only for certain notes (immediately that a note is triggered!); or to change scale; or pretty much whatever you can imagine.

Here is an example of a Generator MIDI In Note trigger script that you could use in your own mix.

```
function onMIDIInNote(channel, noteon, pitch, velocity) {
  if (channel == wmeGeneratorMIDIChannelGet()) {
    wjsLog("onMIDIInNote for our channel!")
  }
}
```

Quick Start - Listening generators / Hyperinstrument

To have a Generator "listen" to incoming MIDI data, you need to follow the instructions below.

1. Set "MIDI Input" to be your MIDI input device.
2. Set the generator you want to listen to MIDI input, such that:
 - the Generator Type is Listen
 - the MIDI In Script is something like this:

```
function onMIDIInNote(channel, noteon, pitch, velocity) {
  if (channel == wmeGeneratorMIDIChannelGet()) {
    wjsLog ("onMIDIInNote for our channel!")
  }
}
```

3. You might want to set your Listening generator to auto-chord with depth of 2 or greater.
4. If you want an different Generator to also make sounds in response to your incoming MIDI note event, set it to FOLLOW the Listening Generator.

[↑](#) Wotja Pak Maker

Create [Zipped Paks](#) for use in Wotja

Audio Paks: Requires [Wotja 23+](#); for older Wotja see [Archived Guide](#)

Wotja in [Pro mode](#) supports use of add-on content that has been zipped - we generically refer to these zip files as "Paks". Paks can include *any kind of supported add-on content*. They can also use folder / sub-folder structures for content organization, too, but see notes below.

We use the zip format for add-on content because it's open (there are many tools that can create zips), it allows content compression, it supports folders for organization, it's a great format for archives (as files in a zip are not overwritten) and it's perfect for distribution!

There are two main kinds of Pak we refer to:

- "**Template Pak**": These generally contain just Wotja [Templates](#), but can include any kind of [supported add-on content](#).
- "**Audio Pak**": As Template Paks, but they ALSO contain a [pak.xml](#) file(s) to let Wotja know how to pitch shift and time stretch any audio samples or loops from them that are used in a mix.

Making Paks is easy and you can put all your zips in a [/zips](#) subfolder in the [Wotja Folder](#), keeping them out of the way of mixes, boxes and playlists.



What can I put in a Pak?

Any content you can select to use in a Wotja mix or for the creation of auto-mixes and that would otherwise get saved to and/or picked up in the top level [Wotja folder](#).

Use of folders is not supported unless otherwise advised.

Supported content (see also [filetypes](#)):

- Wotja Template ([.wotja_tp](#))
- Wotja Schema ([.wotja_sc](#))
- [WAE Sound Network](#) ([.tg](#))
- [WAE FX Network](#) ([.fxm](#))
- SF2 SoundFont ([.sf2](#))
- Audio Sample ([.wav](#), [.ogg](#))
 - Formats: WAV (8/16/24-bit PCM, 32-bit float) and Ogg; Any kHz
 - See [Audio Pak](#)
- MIDI ([.midi](#))

Optional (and not used in a Wotja file):

- License ([.txt](#))

Not supported (should not be included):

- Wotja ([.wotja](#))
- Wotja Album ([.wotja_al](#))
- Wotja Playlist ([.wotja_ls](#))

Pak Types

We note above that a Pak can include **any content you can select to use in a Wotja mix or for the creation of auto-mixes** and that would otherwise get saved to and/or picked up in the top level [Wotja folder](#).

How that content is displayed is governed by the content itself, as noted below. So, mix and match content as you wish!

IMPORTANT: Whilst you can just zip your Pak at its top level (a "flat" Pak!), we *strongly* suggest that you use in the zip a path that gives the Pak a unique name thus ensuring that the content in the Pak will have a unique reference. We use `/intermorphic/wotja/paks/pakname/` but you might use e.g. `/com/mycompany/myname/pakname/`.

Note: Wotja does not support use of zipped Paks (i.e. a zipped collection of Paks which are themselves zipped).

Template Pak

- **Primary Content:**
 - Wotja Templates: `.wotja_tp` (see also [filetypes](#))
- **Other Content:**
 - Include whatever else you want! For display, see other Pak types.
- **Primary Content Display:**
 - [LHS Pak List](#) in the [Template List](#)
 - RHS list will show the content types above.
 - The Template List is accessed via
 - Music Mode [Cell](#), or;
 - [Schema](#) > Templates > Select Templates button.
- **Folder / Sub Folders:**
 - Templates can be in the root folder of the Pak or can be put in sub-folders if required for content organization.

- **Pak Name:**
 - The name of the zip file is used for LHS Pak display/ordering, i.e. *My Pak 1.zip*.
- **Pak List Ordering:**
 - Your Paks will show in alphabetical order *below any included Template Paks, or other IM Paks*.
- **Tips:**
 - All content items included in each Template Pak will show alphabetically in the *right hand Template list* ("Templates").
 - The right side list is alphabetically ordered and no file extensions are shown so if your Template Pak includes multiple content types be careful to name your content accordingly.
 - If you want to use the Pak name to organize your content you will need to put your content in **separate Paks**, e.g. *My Pak 1.zip* and *My Pak 2.zip*.
 - The folder structure you use in the Template Pak for content organization is not important.

Audio Pak ([Wotja 23+](#))

- **Primary Content:**
 - Audio samples: *.wav / .ogg* (see also [filetypes](#))
 - Formats: WAV (8/16/24-bit PCM, 32-bit float) and Ogg; any kHz.
 - *Note:* Be aware that Wotja needs to load into memory (RAM) *ALL* audio samples that are used in a mix.
 - *Tip:* The higher the quality of the samples you use (which does make them larger, however), the better the results you will get from time stretching or pitch shifting.
 - **IMPORTANT:** If you want any of your audio samples to be time stretched or pitch shifted to fit the Wotja mix tempo and root then your Pak **must also include a pak.xml** file. Without a pak.xml file then audio samples can still be added to a mix, but none will be time stretched or pitch shifted (e.g. for foley samples).
- **pak.xml file**

- **TIP:** To see an example of a `pak.xml` that includes Sample Overrides, [download this Pak](#) [↓](#), unzip it and then open its `pak.xml` file.
- The `pak.xml` file is where you specify the "default" tempo and root of audio samples in the Pak
 - e.g. `<pak tempo="90" root="D"></pak>`
- *Sample Overrides:*
 - You can provide in the `pak.xml` overrides for individual audio samples in the top level folder (or sub-folders) that may be different to the default Pak values.
 - These must be placed between the `<pak>` and `</pak>` tags (see example below).
 - *Tip: Where the `pak.xml` default values are NOT "?"* then you only need to include the sample values that you want to override, e.g.
 - `<sample file="myfile.wav" tempo="64" root="A#"/>` overrides both sample tempo & root
 - `<sample file="myfile.wav" tempo="80" />` overrides just the sample tempo (root as pak.xml)
 - `<sample file="myfile.wav" root="F" />` overrides just the sample root (pitch as pak.xml)
 - `<sample file="myfolder/myfile.wav" tempo="64" root="A#"/>` shows use of sample folders
 - If it better suits your content organisation a `pak.xml` file can be included for each sub-folder that includes audio samples, e.g. for audio samples in "My Pak/Folder1/" then "Folder1" could include a `pak.xml` that is concerned only with the audio samples in that folder.
- ?:
 - **Important:** Whenever "?" is used, you MUST provide a pair of values, i.e. `tempo="?" root="?"`.
 - "?" is a special value for tempo or root which is used for sounds that you *do not want* to be time stretched or pitch shifted when added to a mix (e.g. foley sounds), e.g.

- e.g. `<pak tempo="?" root="?"></pak>`
 - Any sample overrides must then specify values for *both* tempo and root.
- `<sample file="myfile.wav" tempo="?" root="?"/>`
- *Optional Text:*
 - You may optionally include any other text you wish to e.g. `source="creatorName"` or `year="2017"` etc. but that text does not affect the operation of the Pak and it **MUST** go at the end of the initial "pak" tag (see below).
- Example (copy text and paste into a text file that you rename as pak.xml)

```
<pak tempo="90" root="D"
source="creatorName"
year="2017"
>
  <sample file="myfile.ogg" tempo="81" root="C"/>
  <sample file="myfile.wav" tempo="64" root="A#"/>
  <sample file="shift-root-only.wav" tempo="?" root="A#"/>
  <sample file="shift-tempo-only.wav" tempo="92" root="?" />
  <sample file="foley/myfoley.wav" tempo="?" root="?" />
</pak>
```

- **Other Content:**
 - Include whatever else you want! For display, see other Pak types.
- **Primary Content Display:**
 - As [Template Pak](#).
- **Folder / Sub Folders:**
 - Audio samples can be in the root folder of the Pak or can be put in sub-folders if required:
 - See [pak.xml](#) and "[Sample overrides](#)".
- **Pak Name:**
 - As [Template Pak](#).
- **Pak List Ordering:**

- As [Template Pak](#).

- **Tips:**

- As [Template Pak](#).

MIDI Pak

- **Primary Content:**

- MIDI files: `.midi`

- **Other Content:**

- Include whatever else you want! For display, see other Pak types.

- **Primary Content Display:**

- As [Template Pak](#).

- **Folder / Sub Folders:**

- MIDI files can be in the root folder of the Pak or can be put in sub-folders if required for content organisation.

- **Pak Name:**

- As [Template Pak](#).

- **Pak List Ordering:**

- As [Template Pak](#).

- **Tips:**

- As [Template Pak](#).

Synth Preset Pak

- **Primary Content:**

- Synth Preset: `.tg`

- **Primary Content Display:**

- Sound (Synth) Preset Paks are displayed/used via:
 - [SFX Editor](#) > [Synth Preset List](#), or;
 - [Schema](#) > WAE Network Presets > Synth Presets (TTM Templates) button.

- **Pak Folder Structure:**

- Must be the following:
 - `/sounds/GroupName/PresetName`
- "sounds" must be lower case

- e.g. `/sounds/Bells/Bells1`.

- **Tips:**

- The Sound Preset list is sorted alphabetically so the GroupName you choose determines where in the list you will see it.
- The Pak file name is not important, i.e. `Any name.zip`.

FX Preset Pak

- **Primary Content:**

- FX Preset: `.fxm`

- **Primary Content Display:**

- Sound (FX) Preset Paks are displayed/used via:
 - [SFX Editor](#) > [Sound Preset List](#), or;
 - [Schema](#) > WAE Network Presets > FX Presets (Mix FX) button.

- **Pak Folder Structure:**

- Must be the following:
 - `/fx/GroupName/PresetName`
- "fx" must be lower case
 - e.g. `/fx/GroupName/PresetName`.

- **Tips:**

- The FX Preset list is sorted alphabetically so the GroupName you choose determines where in the list you will see it.
- The Pak file name is not important, i.e. `Any name.zip`.

Schema Pak

- **Primary Content:**

- Schema: `.wotja_sc`

- **Primary Content Display:**

- Schema Paks are displayed/used via:
 - [Flows](#) > [Schema File Select button](#).

- **Pak Folder Structure:**

- Must be the following:
 - `/AnyOldName/SchemaGroupName/SchemaName`
- "AnyOldName" is required in the path but is not used
 - It can use any case e.g. `/anyOldname/My Group/My Schema 1`.

- **Tips:**

- The Schema list is sorted alphabetically, but it first displays any custom Schema found in any non-included Schema Groups so the "SchemaGroupName" (your Schema are listed alphabetically in that).
- The Pak file name is not important, i.e. *Any name.zip*.

SF2 Soundfont Pak

- **Primary Content:**

- SF2 Soundfont: *.sf2*

- **Primary Content Display:**

- Soundfont SF2 Paks are displayed/used via:
 - WAE [Wavetable Unit](#).
 - They are shown in the left side of the Wavetable Unit and are sorted *alphabetically* according to the SF2 name (*not* the Pak zip name).
 - They will be displayed *below the last of the included SF2* (i.e. *IM NT3-MT7*) and *below MDB* if installed.

- **Pak Folder Structure:**

- SF2 Paks do not require a special folder structure but you might still wish to use one if you want to retain the structure of the content grouping on your Mac/PC (perhaps you have licenced a loop or SF2 collection from a 3rd party and you don't want to change the organisation of it).
 - e.g. say have the following collection of SF2 files on your PC/Mac:
 - *mySF2Collection1/drones/drone1.sf2*
 - *mySF2Collection1/pads/ambient.sf2*
 - *mySF2Collection1/synths/buzzer.sf2*
 - You can zip the Pak like that BUT, as noted above, the SF2 will display in the left side list in alphabetical order irrespective of folder/subfolder structure or naming, e.g. in the order of "ambient.sf2, buzzer.sf2, drone1.sf2"

- **Tips:**

- The Pak file name is not important, i.e. [Any name.zip](#).
- Tip: If you want to create your own SF2 files then you may wish to check out [Polyphontics](#), [Polyphone](#) or even [Awave Studio](#).

Zipping your Pak

IMPORTANT: Whilst you can just zip your Pak at its top level (a "flat" Pak!), we *strongly* suggest that you use in the zip a path that gives the Pak a unique name thus ensuring that the content in the Pak will have a unique reference. We use `/intermorphic/wotja/paks/pakname/` but you might use e.g. `/com/mycompany/myname/pakname/`.

macOS and Windows 10 have in-built zipping capability:

- **macOS:** Right click on the folder (e.g. "fred") and select "Compress 'fred'".
- **Windows:** Right click on the folder (e.g. "fred") and select "Send to" then "Compressed (zipped) folder".

If you prefer you can use your preferred Zip file utility to create your Zip.



Pak Installation

Once you have created your Pak then:

- Copy or move it to the [Wotja Folder](#); if you wish you can put all your Pak zips in a `/zips` subfolder under that.
- Restart Wotja and your Paks should be ready and available for use!

Note: If you create, save and share mixes that reference the content in your Paks then, provided the recipient also has your Pak installed in the Wotja Folder, they should play exactly as intended!

↑ Wotja 23 App Bundles

- **Wotja Variants:** FREE App Bundles for Apple, Windows and Android (Amazon, Google)
- **Feature Set:** Wotja 23 has the [23 Feature Set](#)
- **Included content:** Hundreds of generative templates + many SF2 & SFX Presets
- **Modes:** **Lite** and **Pro**
- **In-App Purchases (IAP):** Different for each App Bundle
- **Updates:** All App updates are FREE
- **Support in 2023:** active [Subscription \(SUB\)](#), [30 Day Unlock \(30U\)](#) <30 days old or [One Time Buy](#) for the [current major version](#)
- **Availability:** Download via relevant App Store

Apple Devices

App Store: [Apple App Store](#)

Wotja App Bundle (includes):

- **App** with support for AUv3 [Plug-in Hosting](#) (iOS, macOS)
- **AUv3 Plug-in** (iOS, macOS)
- **Player** (tvOS, watchOS)
- **Safari App Extension** (iOS, macOS)

IAP via [In-App Store](#):

- [Pro \(Subscription\)](#)
- [Pro \(30 Day Unlock\)](#)
- [23 Pro \(One Time Buy\)](#)
- [T1-T3 \('Love it!' Tip\)](#)

Windows Devices

App Store: [Microsoft Store](#)

Wotja App Bundle (includes):

- **App** with support for VST3 [Plug-in Hosting](#)
- **VST3 Plug-in**

IAP via [In-App Store](#):

- [Pro \(Subscription\)](#)
- [Pro \(30 Day Unlock\)](#)
- [23 Pro \(One Time Buy\)](#)
- [T1-T3 \('Love it!' Tip\)](#)

Android Devices

App Store: [Google Play](#)

Wotja App Bundle (includes):

- **App**
- **Player** (Android TV)

IAP via [In-App Store](#):

- [Pro \(30 Day Unlock\)](#)
- [23 Pro \(One Time Buy\)](#)

Android Devices

App Store: [Amazon Appstore](#)

Wotja App Bundle (includes):

- **App**
- **Player** (Fire TV)

IAP via [In-App Store](#):

- [Pro \(30 Day Unlock\)](#)
- [23 Pro \(One Time Buy\)](#)

- T1-T3 ('Love it!' Tip)

- T1-T3 ('Love it!' Tip)

23 Feature Set (23 FS) [23.14.0]

[What is a Feature Set?](#) | [What are Lite & Pro modes?](#)


All features subject to change | [See Wotja Licensing](#)

23 FS: Wotja 23 Apps	Lite (FREE)	Pro
 Auto-Timeout: 23 FS Album or Schema file ('Flow')	30 mins	None
 Auto-Timeout: 23 FS Mix or Template file	2 mins	None
Multi-channel MIDI Out/In	Ch 1 only	16 Channels
Mix Record to Audio/MIDI	No	Yes
Hosted Plug-in data saved to Mixes	No	Yes
Create Playlists	No	Yes
Edit Schemas (Flows)	No	Yes
Edit Albums	No	Yes
Export Flow to Mix/Album file	No	Yes
Export Mix from Album	No	Yes
Export/Import/Merge Cells (Templates)	No	Yes
Export/Import Sequence Generator & some Text related data	No	Yes
Remove Wotja watermark (full/display screen)	No	Yes
Sleep Timer	No	Yes
Custom Mix FX Override	No	Yes
AUv3 [AKA AU3] Plug-in Hosting (macOS/iOS)	Yes	Yes

23 Feature Set (23 FS) [23.14.0]

[What is a Feature Set?](#) | [What are Lite & Pro modes?](#)

All features subject to change | [See Wotja Licensing](#)

VST3 Plug-in Hosting (Windows)	Yes	Yes
Load SF2/DLS/ZIP (i.e. Pak) files from file system	Yes	Yes
iCloud for Wotja Folder (iOS/macOS only)	Yes	Yes
Inter-App Audio/Audiobus/ Ableton Link (iOS App only)	Yes	Yes
Play Schemas	Yes	Yes
Create/Edit/Play/Save/Export/Import Mixes	Yes	Yes
Create/Play/Save/Export/Import Albums	Yes	Yes
Create/Edit/Save/Export/Import Synth & FX Networks	Yes	Yes
12 Track Mix Editing	Yes	Yes
Access to all Editors - Mix , Text , Display , Plug-gins & Engines (WME , WAE)	Yes	Yes
Wotja Script Editing (WSE)	Yes	Yes
Save Text Rules & Text to Mixes	Yes	Yes
Import Text/Rules	Yes	Yes
Many, many, many other features & capabilities...	Yes	Yes
23 FS: Wotja 23 Plug-ins	Lite (FREE)	Pro
 Auto-Timeouts (All 23 FS files)	2 mins	None
Mix File/Session Saving	No	Yes
Mix Record to Audio/MIDI	No	No

23 Feature Set (23 FS) [23.14.0]

[What is a Feature Set?](#) | [What are Lite & Pro modes?](#)

All features subject to change | [See Wotja Licensing](#)

Support for Plug-in hosting	No	No
In-App Store IAPs	No	No
23 FS: Engines	Lite (FREE)	Pro
Wotja 23 WME (Music Engine)	Yes	Yes
Wotja 23 WAE (Audio Engine)	Yes	Yes
Wotja 23 WSE (Script Engine)	Yes	Yes
Wotja 23 WTE (Text Engine)	Yes	Yes
23 FS: Wotja 23 Add-on Paks See PAK EULA	Lite (FREE)	Pro
Pro Paks FREE and licensed for use in specified version(s)	Not licensed	Yes
23 FS: Wotja 23 TV Player App	Lite (FREE)	Pro
 Auto-Timeout: 23 FS Schema Files	30 mins	None



Wotja 23 Licensing

Wotja Licensing | See [EULA](#)

**Lite
(FREE)**

Pro

Use of Recordings of Wotja Output made in [Lite or Pro mode](#)

Personal

**Commercial
(and Personal)**

See [EULA exceptions](#) & [FAQ](#)

[Live Use \(LU\)](#) of Wotja in [Lite or Pro mode](#)

Personal

**Commercial
(and Personal)**

See [EULA exceptions](#)



Wotja 23 Requirements

Macbook, MacBook Pro etc.

- **OS:** macOS 10.13+ (High Sierra+)
 - *TTS (Text to Speech):* macOS 10.14+
 - *AUv3 Plug-in and Plug-in Hosting:* macOS 10.15+
 - *Safari App Extension:* Safari 15+
- **CPU:** 64-bit only Intel, ARM, M1/M2 etc.
 - Wotja is a universal binary and runs as a 64-bit application only
- MIDI Out/In
 - App: CoreMIDI, Virtual MIDI
 - AU3 [AKA AUv3]: CoreMIDI, Virtual MIDI
- 250 MB hard disk space, 512MB RAM
- [macOS Accessibility](#)

iPhone, iPad, iPod touch

- **OS:** iOS/iPadOS 12+
 - *TTS (Text to Speech):* iOS 13+
 - *AU3 Plug-in and Plug-in Hosting:* iOS 14+
 - *Safari App Extension:* Safari 15+
- **CPU:** 64-bit only
 - Wotja for iOS/iPadOS is a universal binary.
- MIDI Out/In
 - App: CoreMIDI, Virtual MIDI
 - AU3 [AKA AUv3]: CoreMIDI only
- [iOS Accessibility](#)

Apple TV

- **OS:** tvOS 12.2+
 - **TTS (Text to Speech):** tvOS 13+
- **CPU:** 64-bit only
- Apple TV and Apple TV 4K, 4th Generation or later

Apple Watch

- **OS:** watchOS 5.3+
- Apple Watch Generation 1 or later

Windows Device (Desktop, Laptop, Tablet etc.)

- **OS:** Windows 10+
- **CPU:** 64-bit only Intel, ARM, M1/M2 [e.g. Parallels].
 - Wotja runs as a 64-bit application only
- MIDI Out/In
 - App: Windows MIDI services
 - VST3 Plug-in: Windows MIDI services
- 250 MB hard disk space, 512MB RAM
- [Windows Accessibility](#)

Android Device (Phone, Tablet etc.)

- **OS:** Android 6.0+
- **CPU:** 64-bit or 32-bit
- MIDI Out/In
 - Support for MIDI Out/In requires appropriate device support and hardware interface on Android. If you really do need MIDI Out/In then - before purchasing the paid-for version - first try to see if you can get it working on your device with the free version of Wotja.
- Note: The Google Play version can also run on Intel or ARM Chromebooks that support the running of Android Apps.
- Note: The Amazon versions require the [Amazon Appstore](#) to be installed and that you are logged into your account.
- [Android Accessibility](#)

Amazon Fire TV

- **OS:** Fire OS 6+
- **CPU:** 64-bit or 32-bit

- Fire TV Stick (Lite/4K etc., 3rd generation or later with 1.7+ GHz quad-core processor); Fire TV Cube; Fire TV (3rd generation or later)
- Amazon Appstore
- [Android Accessibility](#)

Android TV

- **OS:** Android TV 6+
- **CPU:** 64-bit or 32-bit
- Google Play Store 19.7+
- [Android Accessibility](#)

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Intermorphic [↗](#) is a brother team with a 30+ year passion for developing powerful generative music apps, engines & tools.

We ❤️ our customers and ❤️ making apps to help aid creativity & relaxation.

Wotja

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