EigenD System Release Notes

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1 – Introduction

The 2.0 series of EigenD is the first to include the Workbench, a graphical utility for manipulating setups.

The official documentation for EigenD 2.0 can be found on the wiki:
http://www.eigenlabs.com/wiki/2.0/The_Official_Documentation/

Note that there are a series of tutorials that take you step-by-step through the creation of your own setups from scratch with Workbench:
http://www.eigenlabs.com/wiki/2.0/Workbench/

As with the 1.4 release, the core elements of 2.0 are built from the open source EigenD repository which can be found on github:

https://github.com/Eigenlabs/EigenD

Starting from 2.0, we are dropping support for Mac OS 10.4 EigenD now requires Leopard or newer. Make sure that you applied all the Apple updates to Leopard, this is needed for the EigenD installer to work.

Many aspects of EigenD have changed. In the past, quite a few functions depended on the Belcanto interpeter to work. Most of these have been re-architected so that they are more intuitive in a GUI environment, while retaining the ability to configure every aspect of EigenD using Belcanto.

This release contain an initial collection of factory setups and example setups, we will be completing these during the testing phase of EigenD 2.0, leading up to a stable release.

This release introduces a new Fingerer agent which allows groups of keys to be fingered in monophonic fashion, in the same way as valved instruments. It also provides interesting additions that still allow for polyphonic playing. The Fingerer documentation can be found on the wiki: http://www.eigenlabs.com/wiki/2.0/Fingerer/

The Illuminator agent is also new in this release and provides an easy way to set up lighting patterns on the Eigenharp keyboards. Its documentation can also be found on the wiki:
http://www.eigenlabs.com/wiki/2.0/Illuminator/

We are now skipping odd release numbers to allow for intermediate test releases and make it easier for people to build their own releases from the GPL source tree.

In the 2.0 series, we are providing scripts which will update saved setups. If you have an old setup based on a previous factory setup, the script will make changes to it to bring it in line with the current factory setups. Depending on the modifications you have made to your setup, this will be more or less successful. You can access these scripts through the script browser, under the 'Factory Setup Fixes' section.

2 – Bugs fixed in this release

- Release 2.0.60-testing
    - EigenD
        - Fixed some clocking and latency problems.
        - Corrected an issue with importing setups from previous testing versions. Rigs were not always being transferred correctly.
        - Fix to the MIDI clock generation agent which could cause the system to lock up when the clock was started.
    - Workbench
        -
- Release 2.0.58-testing
    - EigenD
        - EigenD now works with user home directories on Windows 7 that have international characters in their name.
        - Stability improvements for AudioUnits destroy at close and EigenD shutdown.
        - MIDI note 0 wasn't sending a note off message.
        - Fix to audio device handling where the current buffer size wasn't always determined correctly, especially with ASIO devices.
    - Workbench
        - Foregrounded wires not foregrounded when drag canvas
        - Cannot create agent (or keygroup output) with previously used ordinal after renaming
        - Wire tooltips should indicate when there are multiple connections
        - Workbench should not allow wire to be dropped onto box to which connection cannot be made
        - Expand button does not always update correctly when a connection is made to a port
        - Wires have a thick, jagged appearance when many wires share part of a route
        - Operations carried out on the selected (red) wire are sometimes executed on a different wire.
        - Port boxes don't re-sort after rename
        - Z-order problems for multi-section trunks on dragging and wire selection
        - Possible to close some dialog boxes with no warning of unsaved changes

- Release 2.0.56-testing
    - EigenD
        - Emergency fix to last release which prevented multiple saves.
- Release 2.0.54-testing
    - EigenD
        - Fixes to factory setups regarding arrangers, recorders and lights.
        - Plumber fix to allows connections from channels to have a dotted filter syntax.
        - Removed now unsupported upgrade checkbox from the load GUI.
        - Certain AudioUnits could crash EigenD when deleted while their GUI window was still open.
        - Changes to connected MIDI devices are now detected after EigenD startup.
        - The Pico mode key lights could sometimes be wrong.
        - Deleting a setup could cause the rigs of others setups to be deleted also.
        - Saving while a save operation was already in progress could create corrupt setup files.
        - Loading a new setup while another setup wasn't finished loading could put EigenD into an inconsistent state.
    - Workbench
        - The mouse pointer is updated correctly when its not over the main canvas and the keyboard shortcuts are used to change tools.
        - The edit dialog is updated when a talker action is canceled via belcanto.
        - The minus button on the instance creation dialog will now allow the ordinal to be reduced if it is possible to create an instance with a smaller ordinal.
        - It is no longer possible to generate unconnected pins (blue dots) by inadvertent rapid clicks of the wiring tool. (Dragging such pins was a cause of instability in previous versions).
        - Reconnected wires no longer sometimes use a previously defined route through hooks and trunks rather than an empty route.
- Release 2.0.52-testing
    - EigenD
        - Fixes to the factory setups for do with scale changing, browsing and recorder control.

        - User setups will not be automatically upgraded anymore to integrate any changes from later EigenD releases. If you want a user setup from 2.0.50 to be adapted with the factory setup fixes of release 2.0.52, you will find a new 'Factory Setup Fixes' category in the included Belcanto scripts. For instructions about running the included Belcanto scripts, please refer to the instructions on the Eigenlabs wiki: http://www.eigenlabs.com/wiki/2.0/Belcanto_Scripts/
        - Reworked agent create verb to stop the inadvertant creation of agents inside rigs.
        - The MIDI routing matrix now doesn't use 0 for the return to origin functionality for the pitchwheel mapping, but uses 8192 instead, which is the rest value for pitch bend.

    - Workbench

        - Stop multiple instances being started.
        - Stability fixes.

- Release 2.0.50-testing

    - EigenD

        - Player agent now properly behaves by providing the controller output data that corresponds to the key data that's being sent out
        - Stability improvements to AU/VST host
        - Stability improvements to Midi Converter
        - Course offsets set through Belcanto weren't saved
        - Regression fix to tap tempo and other trigger controllers
        - Quitting EigenD could sometimes make it unresponsive, warranting a force quit
        - Tempo ranges from 0 to 500 are now accepted in the metronome, as opposed to 30-240 before

    - Workbench

        - Key presses could apply to other tabs than the one that's visible
        - Improvement to default placement of newly created agents
        - Browse and property dialogs could be too large for some screens
        - Stability improvements when changing between setups
        - Expand arrow was sometimes not shown after channel edit
        - Regression fix from 2.0.48 where decimal values were rounded to integers after edit
        - Pins could sometimes not be shown correctly after agent changes
        - Workbench could sometimes crash when deleting the last pair from the

mapping editor

    - Stage
        - Widget updates could come in out of order and prevent the right values to be shown, sometimes resulting in red values

- Release 2.0.48-experimental
    - EigenD
        - Important stability improvements
        - Setting delay agent tempo to 0 crashed EigenD
        - Setting ladder filter agent temperature to 100 made it stop working
        - The Tau factory setup is now loaded by default when a Tau is connected
        - AU/VST unloading could make EigenD unstable
    - Workbench
        - Important stability improvements
        - Changing mapping in mapping editor could crash Workbench
        - Return key press now properly sets the value in string editors
        - When editing bundled connections, they were removed from trunks
        - Automatically moved agent boxes were not exactly returned to previous position, causing them to drift out of position
        - Pasting into text fields didn't enable the adjacent set button
        - Clicking on background sometimes didn't bring everything back to foreground
        - Connections to rigs were not shown when a rig was contracted
        - Rig opening progress bars were always shown on the main tab
        - Changing a channel of a rig created spurious channel entries
        - Agent and port names sometimes overwrote the expand button
        - Boxes could drift out of position when expanding and collapsing them

- Release 2.0.46-experimental
    - EigenD
        - Regression fixes to per-note MIDI CC data and host automation data
        - Fix for keygroup outputs sometimes not being visible after reloading setup
        - Fix for Alpha and Tau sometimes not being detected after loading a new setup
        - Various stability improvements
    - Workbench

        - Fix for agents disappearing when loading a different setup
        - More reliable wire repainting
        - Fixes for various crashes while switching setups

- Release 2.0.44-experimental
    - EigenD
        - More installer changes
        - Add enclosing rig name to names in EigenD's Window menu
        - Clocking fixes to improve latency
        - Ensure EigenBrowser captions and panes update correctly
        - Tau setup fixes
    - Workbench
        - Stability improvements, especially with respect to switching setups
- Release 2.0.42-experimental
    - EigenD
        - Fixed problem introduced in last release where the interpreter in a new setup (as opposed to a setup loaded from a file) didn't start up properly
        - Fixed the headphone control in the Tau setup
        - Fixed OSC output event end data structure
        - More stability improvements
- Release 2.0.40-experimental
    - EigenD
        - Stability improvements, especially with respect to switching setups
        - Changed installer test to copy better with symlinks and improve Lion compatibility
    - Workbench
        - Stability Improvements.
- Release 2.0.38-experimental
    - EigenD

        - Audio ports couldn't be browser correctly in EigenBrowser and Workbench
        - Keygroup mode key wasn't behaving correctly when relatively positioned
        - Keygroup blink could sometimes not light up all the keys
        - Scaler tonic lights with negative offsets were not displaying correctly
        - The Console Mixer agent could behave wrongly with talkers
        - Effect channels of the Console Mixer agent weren't properly propagating their names
        - Drummer agent wouldn't properly restore
        - Rigs now behave correctly when a dramatic change happens to their channel structure
        - Ultra talkers (talkers changing other talkers) weren't behaving correctly
        - Rigs clean up improvements
        - Keygroup mode key wasn't working when another key was held down
        - Scale definitions weren't always consistently formatted in the Scaler agent
        - Many agent fixes related to the new key data stream format
        - MIDI clock agents wouldn't start running inside Rigs
        - The clocking relationship inside Rigs wasn't correct

    - Workbench

        - Agents could be left in move mode in certain situations
        - Keygroup mapping editor stability improvements
        - Large setups could cause the Workbench layout to not restore on Windows
        - Spurious loose pins (blue dots) couldn't be deleted
        - The position of agents would sometimes not be saved

    - Stage

        - The agent browser would collapse to the first level after creating a widget

- Release 2.0.36-experimental

    - EigenD

        - Fix bug reporter
        - Merge Bug fixes from 1.4.12
        - Various key number stream related fixes. All Agents have now been brought into the new world
        - Expose more setup in a workbench friendly way
        - Talkers and Mode keys were not using the activation thresholds set in the keyboard agent

    - Workbench
        - Stability Improvements
        - Property Editors react to background changes
- Release 2.0.35-experimental
    - EigenD
        - Fix bug reporter
-
    - Workbench
        - Stability Improvements
- Release 2.0.34-experimental
    - EigenD
        - Merged Bug fixes from 1.4 up to 1.4.11
    - Workbench
        - Stability Improvements
- Release 2.0.33-experimental
    - Eigend
        - Various stability improvements
        - Deleting takes from scheduler didn't behave correctly when triggered from recorder
        - Fix to damper pedal in particular with the AHDSR agent
        - Blank agent names were shown in load process
        - Fixes to talkers
        - Fix to set verb
        - The state of console mixer send channels wasn't saved
        - The arranger clear all feature didn't clear the persistent state
        - Connections for Stage widgets are now hidden in Workbench
        - Fixes to creation and deletion of kgroup outputs
        - Fix to recorder take names so that they work correctly with recorders inside rigs
        - Fix to make retargeting of Stage widgets work again

- Workbench
    - Crashes caused by loophole allowing apparent connection of same wire to inputs on more than one agent
    - Crash when delete Kgroup Output
    - Crash when delete main Kgroup
    - Wire becomes invisible when input and output points are exactly vertically aligned
    - Rig renaming does not change tab name
    - Crash after renaming rig and clicking on existing tab for that rig
    - Changing multiple “using” channel numbers in the property editor only changes some
    - Deleting a rig with an open tab should cause the tab to be removed
    - When creating wires they sometimes connect to agent ports which are not near to the mouse pointer
    - Multi-select tool only works on top left corner of agents
    - Agents which move automatically when obscured by expanding an agent move back even when a port is contracted on the obscuring agent
    - Dragging a wire from a reversed connection (a light output for example) requires the drag to start exactly on the pin rather than anywhere in the box as is the case for other ports
    - Show/hide metronome and controller wires setting should be persistent

3 – Bugs and known issues in this release

- EigenD
    - EigenD should prompt user to save setup before quitting
- Workbench
    - Cannot close tabs other than by deleting rig or restarting Workbench
    - Property editor requires better layout and various improvements
    - Wiring trunks is fiddly
    - Buffer size incorrectly shown as zero
    - Wires reconnected via belcanto sometimes use old route
    - Z-order for hooks and trunks wrong when dragging a group of items
    - Trunks should be hidden if only used by hidden wires
    - Can't make a port on a rig gateway a reverse connection
    - Boxes moved automatically do not remember more than 1 level of position
    - Can't shrink a trunk round a corner in a single drag

4 – Changes and Improvements

- Release 2.0.58-testing
    - EigenD
        - Available MIDI devices are now updated while EigenD is running, it's not necessary anymore to restart EigenD for this.
        - Previously selected MIDI output and input devices are automatically selected when the device is connected even after EigenD has already started up.
        - Improvements to audio interface support on MacOSX, now permitting very small buffer sizes.
        - Added Pico Factory 2 setup, meaning that all factory setups from EigenD 1 are now available in EigenD 2
        - Minor GUI changes to make more space for the setup description panel.
        - Support for increased MIDI pitch bend ranges

          Added a configuration option in the MIDI settings for plugins and the midi converter to allow you to set the range of pitch bend that the device is using. You can use this to allow EigenD to bend notes further. This should be set to the same value that the plugin or MIDI device is using.

          Without this option, fingered AU instruments can't slur properly because the note can't bend a note more than 1 semitone either way. If the AU can be set up with an increased pitch bend range, you can change this value to match which will allow the fingerer to bend notes further.

        - Added experimental Pico Fingerer setup.

          This setup uses the new Fingerer agent.

          The active scale is by default set to chromatic in this setup.

          There are three configured instrument slots:
          - a AU/VST plugin that is by default using the 'tin whistle' fingering
          - a native Clarinet that is by default using the 'simple clarinet' fingering
          - MIDI output that is by default using the 'tin whistle' fingering

        - Added experimental OSC-only setup for each Eigenharp model.

          This outputs forwards all the instrument data over OSC. An Illuminator agent is also included to allow for lights to be controlled. In the Pico and Tau setup the Illuminator is setup by default to colour the lights of the switches and in the Alpha setup it colours the lights of the percussion keys. This is merely to provide structure and visual recognition, no additional functionality has been

added to those keys, their data is also sent out straight to OSC.

The OSC server listens on port 9999.

For OSC data to be sent, you first have to subscribe a listener to the fast data flow. This can be done by sending the '`register-fast`' OSC message to port `9999` with a string and an integer argument, the string has to be '`keyboard_1`' since that's what's connected internally and the integer is the port on which you're listening to the data, for instance '`5555`'.

For example, when using liblo, the following will start EigenD sending out OSC data to port 5555:

```
oscsend localhost 9999 /register-fast si keyboard_1 5555
```

- Workbench
  - You can now click anywhere on an agent box to bring that agent to the foreground, rather than being restricted to clicking on the title bar of the agent box.
  - If you try to make a connection between two agents which cannot be made (ie the plumber does not find any matching ports to connect), a warning dialog is now displayed. Also, the unconnected wire now remains on the canvas, allowing you to connect it to a different agent without having to start again from scratch.
  - Wire drawing has been improved to remove the jagged, thick appearance of wires when a section of the wire route is shared by wires with different overall routes. The thickness of the wires also now zooms in a more satisfactory way making for a clearer diagram when zoomed out.
  - Wire tooltips now indicate when part of a wire is shared by other connections with different overall routes. The selected (red) wire can be cycled through these connections by means of shift-clicking the mouse. The tooltip indicates when this function is available.
  - The way that routing information can be removed from a wire (removing the wire from all the trunks and hooks via which it is routed) has been changed. You now use cmd-click when in the Delete Tool rather than shift-click. Shift-click is now used in several tools for cycling though wires sharing the same route.
  - The delete wire and delete routing information dialogs now display details of which wires will be affected by the action.
  - The expand button updates correctly when a connection is made to a port.
  - Agent boxes are now transparent when dragged to fix a problem with the diagram when dragging a connected agent box over other boxes, trunks and hooks.
  - In the Edit Dialog, strings and names are now set when the textbox looses focus, rather than by pressing a 'set' button.

- Release 2.0.54-testing
    - Workbench
        - If any agents are selected (brought to the foreground) only foregrounded wires are highlighted in red. This makes wire selection easier and means that wires in which you are not interested are not highlighted in preference to the foregrounded wires.
        - The version of JUCE has been updated to match that used by EigenD. This should fix some stability issues experienced by some windows users.
- Release 2.0.52-testing
    - EigenD
        - The Alpha Factory setups 2 and 3 with keyboard splits are now available for EigenD 2.0
        - The belcanto to create an agent in a rig has been changed. It was easy to inadvertantly create an agent in all rigs. To create an agent in a rig, use:

          ```
          eigend hey illuminator in rig 1 create
          ```

        - Added create verb to Rigs
        - Minor factory setup improvements
        - All included Belcanto scripts have been adapted for the new factory setups
    - Workbench
        - Mousewheel zooming can now be disabled.
- Release 2.0.50-testing
    - EigenD
        - The previous approach of using negative numbers for coordinates that are offset from the opposite end of the geometry has been replaced by dedicated 'end relative' flag. When set to on, the coordinates are calculated from the opposite side
        - Added create verb to Rigs
        - Minor factory setup improvements
    - Workbench

        - When EigenD finds it's impossible to connect/disconnect certain wires, this is now reported by Workbench
        - Property editor UI improvements
        - Tooltips are now displayed for text boxes in the property editor
        - Changing the headphone volume limit displays a safety warning
        - Improvement to Workbench shutdown when EigenD disappears
        - Names in Workbench can now only be valid Belcanto names

- Release 2.0.48-experimental

    - EigenD

        - Switched around the naming of columns and rows
        - Improved number handling so that lists of numbers can be expressed in Belcanto. Extended the scale manager to allow scales to be expressed as lists of numbers as well as names. The net result of all this is that you can say something like:

          synth rig scaler hey scale to 0 , 2 , 5 , 4.6 , 12 set
          main keygroup scale to 0 , 1 , 4 , 6 set

        - Added new 'identify' verb. Use this in commander to explore the system and test out parts of belcanto sentences. For example:

          all talker identify

          will show the results of 'all talker'

    - Workbench

        - More sensible number of decimal places are now displayed in the numeric editors
        - Agent creation errors are now reported back to the user
        - Find dialog UI improvements
        - Rig open button UI improvement

- Release 2.0.46-experimental

    - EigenD

        - Separate enabling of tail time idling from the actual idling timeout. A new port, 'tail time enable' controls whether idling is enabled

- Release 2.0.40-experimental

- EigenD
    - HTTP support in the new Illuminator agent, full details in the wiki: http://www.eigenlabs.com/wiki/2.0/Illuminator/

- Release 2.0.38-experimental
    - EigenD
        - Fully functioning factory setups are now included for Alpha, Tau and Pico
        - Example modular synth setups for Alpha, Tau and Pico
        - New Fingerer agent
        - New Illuminator agent
        - Keygroup outputs can now be individually enabled or toggled through Belcanto
        - Alpha and Tau debouncing system is now configurable:
          The default is 20000 us.
          This seems to cause missing key presses quite easily with stickier keys (ie, coefficient of friction between finger and key is high) The same effect seems to happen on other keyboards, to greater or lesser extent. For instruments with maple keys, setting this to 25000 or higher should help. The maximum is 31500 (31.5ms). Below is a Belcanto example to change the debounce delay:

          ```
          keyboard 1 debounce to 25000 set
          ```

        - The note player has been extracted from the Recorder agent into a new Player agent
        - Improvements to Recorder agent auxiliary port name linking
        - Added a fixed Controller Input to the Recorder agent
        - Port cleanups and naming improvements to Ranger, Shaper, Arranger, Audio, Stringer agents
        - Controller agent now automatically discovers its feedback input
        - Generic dialog handler for Return and Escape keys
        - Alpha, Tau and Pico startup behaviour is more efficient
        - Added a modifier input to the scaler which is acting as a fixed range pitch bend, currently used by the Fingerer agent
        - Added support for strip controllers to prototype OSC Output agent
        - EigenBrowser could sometimes fail to display its data
    - Workbench
        - More consistent naming of channels and filters
        - GUI layout improvements

        - Increased the maximum dimensions of the Workbench window

    - Stage

        - The widget increments are now useful by default

- Release 2.0.36-experimental

    - EigenD

        - Testing and experimental releases no longer update the top level EigenD link in Applications on the Mac
        - EigenD now allows agents to coin their own words
        - New save button to save over the current setup, if it's not a factory setup
        - Now useless activation signals have been removed
        - StringEnum data type for small fixed choices, with dropdown support in Workbench
        - Factory setups and Example setups are now separated into different top level menus
        - Connect verb now has channel support

          The connection properties exposed by workbench can now be set in the belcanto connect verb

          This is part of ongoing work.

        - Improved key group mapping

          The key group now maintains completely separate mappings
          for musical and physical keys. Workbench supports this with a specialised editor

    - Workbench

        - Keyboard shortcuts for tools

          There are now keyboard shortcuts for the various workbench tools

        - Improved key group mapping

          The property editor dialog for key groups now has a special editor for working with key group mappings

- Release 2.0.35-experimental

- EigenD
    - Key stream from keyboard now has keys arranged in one musical course instead of the courses mirroring the physical layout
    - Changed Kgroup to Keygroup
    - Agents now occupy relocatable directories
    - EigenD includes enough headers and import libraries to build Agents without needing the full source
    - Reference build scripts included for building Agents

- Release 2.0.34-experimental
    - Workbench
        - Sticky Hooks. Hooks can now be made 'sticky' by clicking on them again with the Hook Tool. Wires between two sticky hooks are considered to be under tension and follow a straight line. You can toggle a hook between sticky and normal behaviour with the Hook Tool

- Release 2.0.33-experimental
    - Eigend
        - Rigs can be connected up at the top level. It is no longer necessary to wire up all the ports individually
        - There is now a geometrical and a musical layout for kgroups. The talkers are tied to the geometrical layout and not to the musical. By defining courses you change the order of the musical layout and the geometrical layout adapts by taking the bounding shape for each row. This means that if you keep a keygroup of the same surrounding shape, you can rearrange the keys in any order and the talkers will remain at the same spot
        - Light signals are now also coordinates and can be either geometrical and musical
        - Plumber does not rely on names of ports to determine what to connect
        - Added a chooser port to Kgroups. Setting the value of this port to the number of a course allows the Kgroup to be switched into choose mode from Workbench
        - Changing the name of an auxiliary input (or auxiliary output) on a recorder changes the name of the corresponding output (or input)
        - Default talker key colour exposed, so that it can be set in Workbench.
        - Plumber refactored to allow controller connections to be made across rig boundaries
        - Updated example setup
        - Implemented re-do on talkers
        - Included example modular synth setup

        - Kgroup slaving is now done explicitly by connecting the 'enabled' port for each output as opposed to previously connecting kgroups as a whole. This means that the order and name of outputs can change without losing the slave relationship
        - Kgroup course offset values less than 5000 are now interpreted as steps, above they're interpreted as notes, starting from 10000 as a baseline
        - Initial implementation of scaler a light output that highlights the tonics of the active scale in green, this will be improved upon and become configurable.
        - Post load operations on rigs are now done at the end of the entire setup load instead of at the end of the rig load
        - AU/VST and MIDI routing matrix parameter 16 isn't a special 'key number' parameter anymore. Any parameter input can behave as such by simply connecting a key signal into it
        - Added missing names container ports so that they appear correctly in Workbench

    - Workbench

        - Wire hit detection speeded up
        - Delay after moving connected agents or groups of agents removed
        - Whether a port is displayed as an input or an output is no longer determined by the name of the port, so the red and green pins don't move or change colour is you change the name of a port
        - The Alpha Keyboard no longer also appears as a port of the Alpha Manager