

Making HAIKU[®] accessible

François Revol
revol@free.fr



Haiku

- Free Software Operating System
- Not a GNU/Linux distro
 - Our own kernel
 - Our own GUI
- Pros
 - We control the whole stack
- Cons
 - We have to implement everything ourselves



Boot process

- Custom bootloader
 - Text menu on keyboard shortcut
 - Shortcut not discoverable
 - No braille device support (yet?)
- Some MultiBoot support (GRUB)
 - Forwards to our own loader
 - But does not recognize boot partition yet
 - Must still select it in the menu



Where's the console?

- No console
 - Well, actually there is one, but just for debugging
- No `brlTTY` support 😊
- Many applications are GUI-only anyway



GUI issues

- Window Manager integrated into `app_server`
 - Non-discoverable window actions (shortcuts)
- Some weird keyboard shortcuts
 - Menu key bound to Deskbar Menu
 - Context menu not accessible by keyboard
- Not all applications use system colors & fonts
 - Need high-contrast and color-blind themes
- Other support tools not sufficient (Magnify...)



Input

- Separate input_server
 - Generates BMessage objects
- Addons
 - Devices
 - Filters
 - Methods (Canna, ... T9... Speech Recognition?)



Screen Reader

- Existing screen readers not usable as-is
 - They need to integrate into the toolkit
 - This part is toolkit-specific
 - But we don't use GTK or Qt or win32...
- BeOS GUI scripting interface
 - Allows GUI controls introspection
 - `hey Terminal get Title of Window 0`
- Speech synthesis: festival & espeak ported



BMessage (C++ class)

- Flexible data container
 - 'what' code (4CC)
 - Name-type(4CC)-value triplets
- Used for all GUI events
- Specifiers: narrows down the message target
 - Stack of name+value(int/string/...)
 - “View Foo of View 2 of ...”



Multithreaded toolkit classes

- BLooper (abstract event loop)
- BHandler (possible BMessage target)
- BApplication (BLooper): main event loop
- BWindow (BLooper): separate event thread
 - BView (BHandler) hierarchy
 - BControl, BList...



Scripting Interface (demo)

- Self-describing scripted GUI interaction
 - `hey getsuites ...`
- Discover but also control
 - `hey set Value of Button ... to 1`
- Some ported apps don't implement it
 - They use their own toolkit and just draw on a BView
 - Must implement custom bridges (LibreOffice...)



Scripting Interface

- Not much used though; probably still buggy
- Some ported apps draw their own toolkit on a single BView
 - Needs specific bridge code
- Doesn't yet indicate which control has focus
 - Shouldn't be too hard to expose
`BWindow::CurrentFocus()`
- Also needs some notifications to avoid polling



References

- Haiku
 - <http://www.haiku-os.org/development>
 - <https://dev.haiku-os.org/>
 - <http://cgit.haiku-os.org/>
- FLOSS Screen readers
 - NVDA (Windows): <http://www.nvaccess.org/>
 - Orca (Gnome): <https://wiki.gnome.org/Projects/Orca>



Conclusion

- Lot of work
- But it's possible
- We accept **bug reports** and **patches** 😊
- Questions?

