Freedom #0
for everybody, really?

*We may be failing by 10-20% actually*

*Well, 100% actually...*

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Slides available on [http://brl.thefreecat.org/](http://brl.thefreecat.org/)

[http://liberte0.org/](http://liberte0.org/) liste@liberte0.org (french/english?)
Color blindness: 8% male, 0.5% female
Introduction to accessibility

Technological overview

The problem is *not* really technical actually

Discussion

More details available in LSM videos

Links on http://brl.thefreecat.org/

Notably LSM 2010, “How to make applications accessible?”
What is accessibility?

AKA a11y

Usable by people with specific needs

- Blind
- Low vision
- Deaf
- Colorblind
- One-handed
- Cognition (dyslexia, attention disorder, memory, ...)
- Motor disability (Parkinson, ...)
- Elderly

See Accessibility HOWTOs

- You

“Handicap” depends on the situation and is not necessarily permanent
Hardware

- Braille input/output
- Speech synthesis
- Joysticks
  - Basically replace mouse
- Press button
  - On-screen virtual keyboard
- Eye-tracking
- ...
Don't focus on one technology

Even for a given disability

- Braille is not perfect
  - A lot of blind people can't read braille
  - Braille devices are very expensive (several k€)
- Speech synthesis is not perfect
  - Noisy environments
  - Tedious for spelling issues
Dedicated software?

- e.g. edbrowse, a blind-oriented editor/browser
- Generally a bad idea!
  - Oriented to just one disability
  - Lack of manpower
    - e.g. Web browser
      - javascript/flash/table/CSS support?
    - e.g. An office suite
      - MSOffice/OpenOffice compatibility?
  - Disabled & non-disabled working together
    - Better use the same software

→ Better make existing applications accessible
Status in a few words

- Text mode is generally quite well accessible
  - But not so well suited to beginners
- Gnome quite accessible
  - Gnome 3 was however almost a restart-from-scratch
- We're late compared to the Windows world
  - We started less than a dozen years ago
  - They started a couple of decades ago
- We're Stone Age compared to the Apple world
  - Really good and integrated support
Overview

Accessibility device

Accessibility bus

Registry

Screen reader

Application

Abstract representation

Visual Rendering
X accessibility, AT-SPI

X server

Orca

braille, speech, ...

text

AT-SPI

(gonobo/dbus)

pango

gtk

atk

gedit

pixmap
Technically speaking

- A lot of applications are already technically accessible
  - Console
  - GTK
  - KDE4 ("Real Soon Now")
  - Acrobat Reader

- A lot are not
  - KDE3
  - Xt
  - Self-drawn (e.g. xpdf)
In practice

- A lot of technically-accessible applications actually aren't really usable
  - A visually-organized mess of widgets...

<table>
<thead>
<tr>
<th>First name:</th>
<th>Foo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last name:</td>
<td>Bar</td>
</tr>
<tr>
<td>Password:</td>
<td>baz</td>
</tr>
</tbody>
</table>

→ Screen reader “Script” for each application
Don't try to make applications accessible, just make accessible applications

Quite often just a matter of common sense from the start

Not a reason for not fixing your existing apps of course, it will just be a bit harder :)
Opening the discussion with a few items
This is all about freedom #0

“The freedom to run the program, for any purpose”

What about being able to use the program?

- RMS said a11y was just a “desirable feature”.
  - “Desirable” only, really?

- RMS said “this is free software, you can modify it” (freedom #1)
A question of freedom

“The freedom to run the program, for any purpose”

What about being able to use the program?

- #0 only a legal freedom?
- #0 only a technical freedom?
- #0 rather about people freedom?

30 years of GNU has pretty much given us legal and technical freedom, what about focusing on people for the next decade?
Why is accessibility so hard?

- Vint Cerf asked in Communications of the ACM November 2012:
  
  “Why is accessibility so hard?”

  - Issues are mostly *not* technical, actually
A question of priority

- Should be prioritized
  - Just like internationalization
  - A “should” or “must” in the GNU Coding Standards?
  - Evaluated on integration into the GNU project?
  - …
A question of who doing it

- Concerns only a small fraction of population
  - Already a hard time using computers...
  - Almost nobody with both disabilities and programming skills
  - Almost nobody with awareness and programming skills either
    → “This is free software, you can modify it” can not work.

- Support has to be integrated
  - Distributed among maintainers themselves
  - Not borne by the tiny a11y community
Making applications accessible?

• Extremely diverse needs
• Generic screen reading interface
  – Already supported by toolkits like gtk
  – Requires logically built applications
• Do not make applications accessible, make accessible applications
  – From the start!
• Usually benefits everybody in the end
  – Better overall design
  – Nicer for all users: colors, contrast, tab, ...
“How to make accessible applications?”

- Very-few to many communication
- Just documentation?
  - A HOWTO already exists, but mostly unknown
- Talks at conferences?
- Integrate in standard procedures?
- Testing?
  - Doesn't actually really require hardware
  - Can only be partial, but still a very good start
• You all know that
• Even more difficult when disabilities come into play...
• Don't even know/understand what they are supposed to “see”
• Patience, discussion, finding intermediary, ...?
Graal: accessibility everywhere

- Using a computer at the library, the airport, the university practice room, etc.
  - First ask admin to install & configure software?!

→ Installed by default, ready for use
  - Requires very close integration
  - E.g. support in Debian Installer
What to do?

- accessibility@gnu.org mailing list
  - Petered out quickly
  - Revive?
- Raise awareness?
- Document?
- Integrate?
Discussion

- Accessibility everywhere, goal of next decade?
- A question of priority
- Usually benefits everybody in the end
- A question of who doing it
- Making accessible applications?
- Accessibility of accessibility...
- Developer/user communication issues
- A question of freedom #0
- What to do?
Backup slides
Linux Console accessibility
Text applications

- Usually work really great for braille output
- Always provide such equivalent of graphical applications, e.g. based on same shared lib
  - Useful for servers via ssh too!
- The default output of screen readers is what the cursor is on
  - Works great with shell, editor, etc.
  - Doesn't work so great with semi-graphical apps

➔ Put the cursor appropriately!
  - Even when invisible, e.g. mutt, aumix
Graphical applications

• Design your application **without** gui in mind first
  - Logical order, just like CSS 😊

• Use standard widgets
  - e.g. *labeled* text fields
  - Avoid homemade widgets, or else implement atk yourself for them
  - Always provide alternative textual content for visual content

• Keep it simple!
  - Not only to make screen reading easier, but to make life easier for all users too!
Some pitfalls and advices
(from the accessibility howtos)

- Shouldn't *have* to use the mouse for anything
- Care of contrasts, configurable colors
- Avoid timing-based actions, or make them configurable
- No 2D organization, logical organization
- Keep it simple and obvious
- ...
About bugs

• Take users suggestions into consideration
  – E.g. bracketed links in text web browsers

• Be patient with disabled people
  – It's not easy for them to use your software
  – It's even more difficult for them to explain their problems in an understandable way
    • e.g. “braille doesn't follow”

→ Discuss!
About bugs (2)

- Try to keep in mind their disability and their consequences
  - Yes, blind users don't care that the framebuffer doesn't show up properly!
- You could even contact your local institutes for disabled people, to discuss directly with users
Test it yourself! (textmode)

BrLtty + gnome-terminal

- see doc on http://brl.thefreecat.org
Test it yourself! (guis)

Accerciser

- Check that the tree of widgets looks sane and is complete
Conclusion

• Accessibility is a concern for a lot of people
  – 10% have major concerns
  – 20% have minor concerns
• Dealing with it usually boils down to common sense
• It very often actually also helps other users
• But we need to raise awareness of this