Breathing life back into the terminal

Carsten Haitzler

<raster@rasterman.com>
<c.haitzler@samsung.com>

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What... Err.. Who am I?

Principal Engineer at Samsung Electronics HQ

Graphics Architect working on Tizen

Founder/Leader/Dictator Enlightenment/EFL etc.

Silly Weigugin hanging around in Asia

The future is...

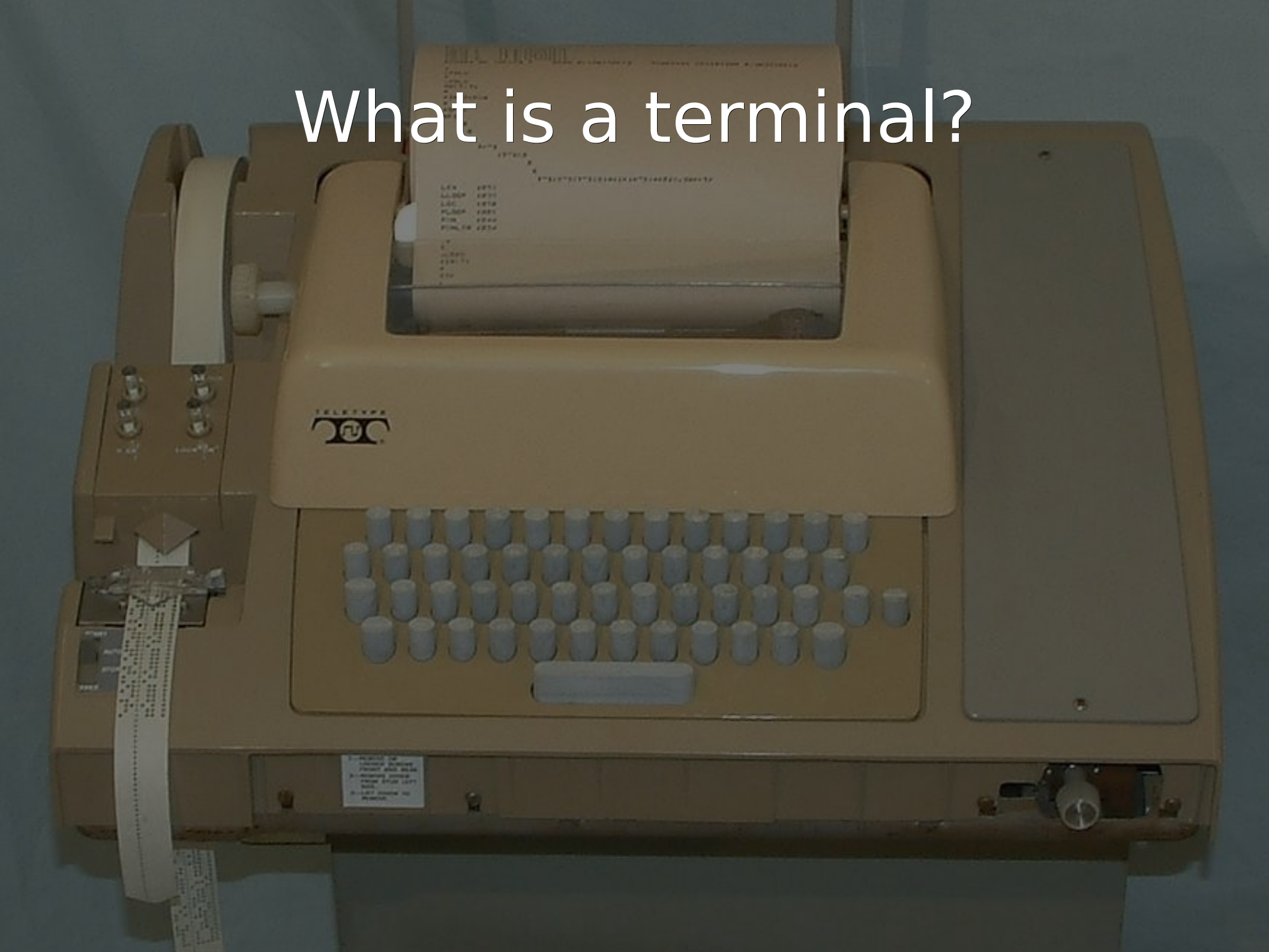
HTML5

Err...

Escape codes!

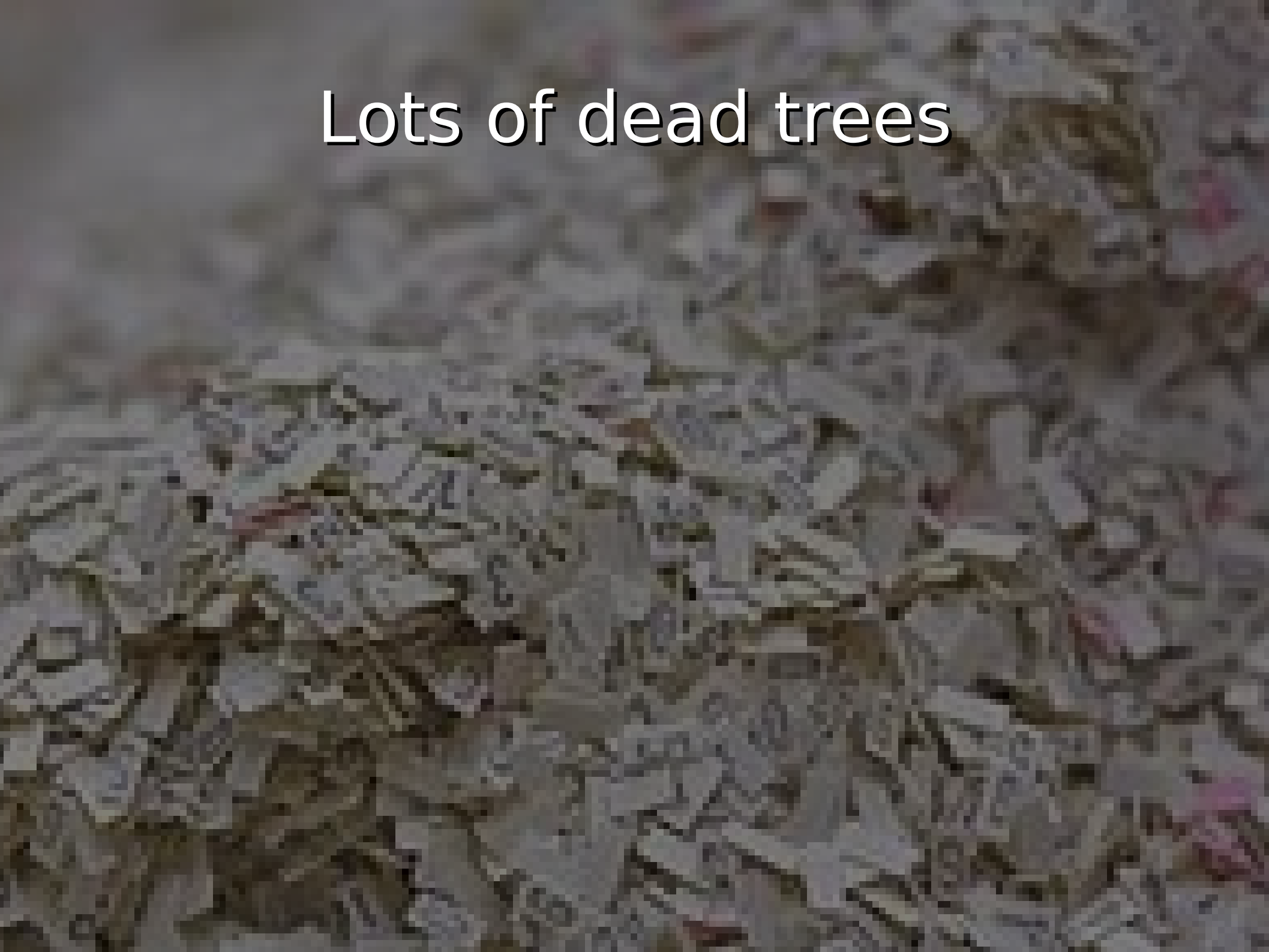
Terminology

What is a terminal?



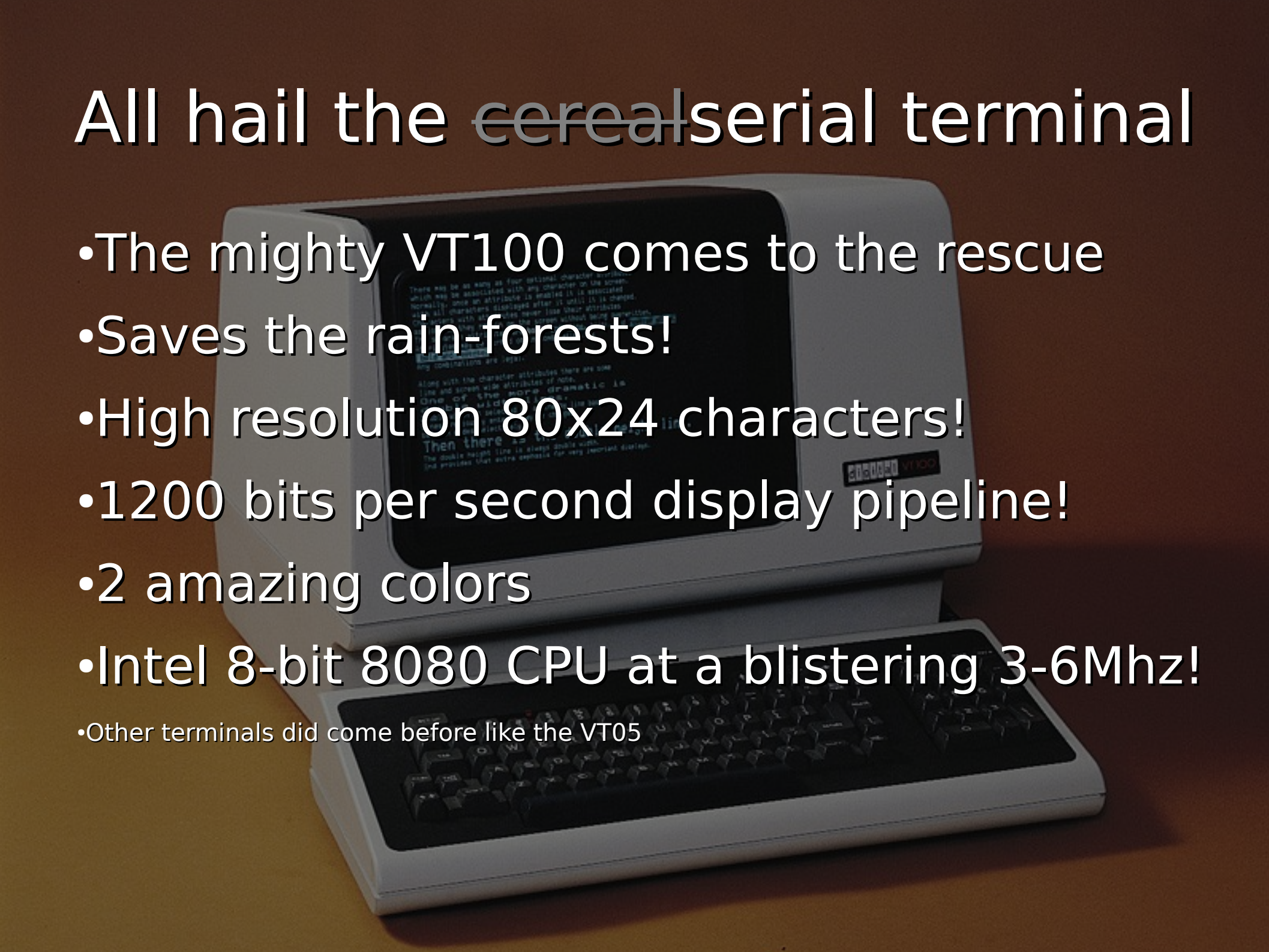
Type + Print

- Type in
  - Simple characters
  - Simple controls
- Printer prints output results
  - Printer-like controls
  - Simple character support (no bitmaps etc.)


Lots of dead trees


All hail the cereal terminal

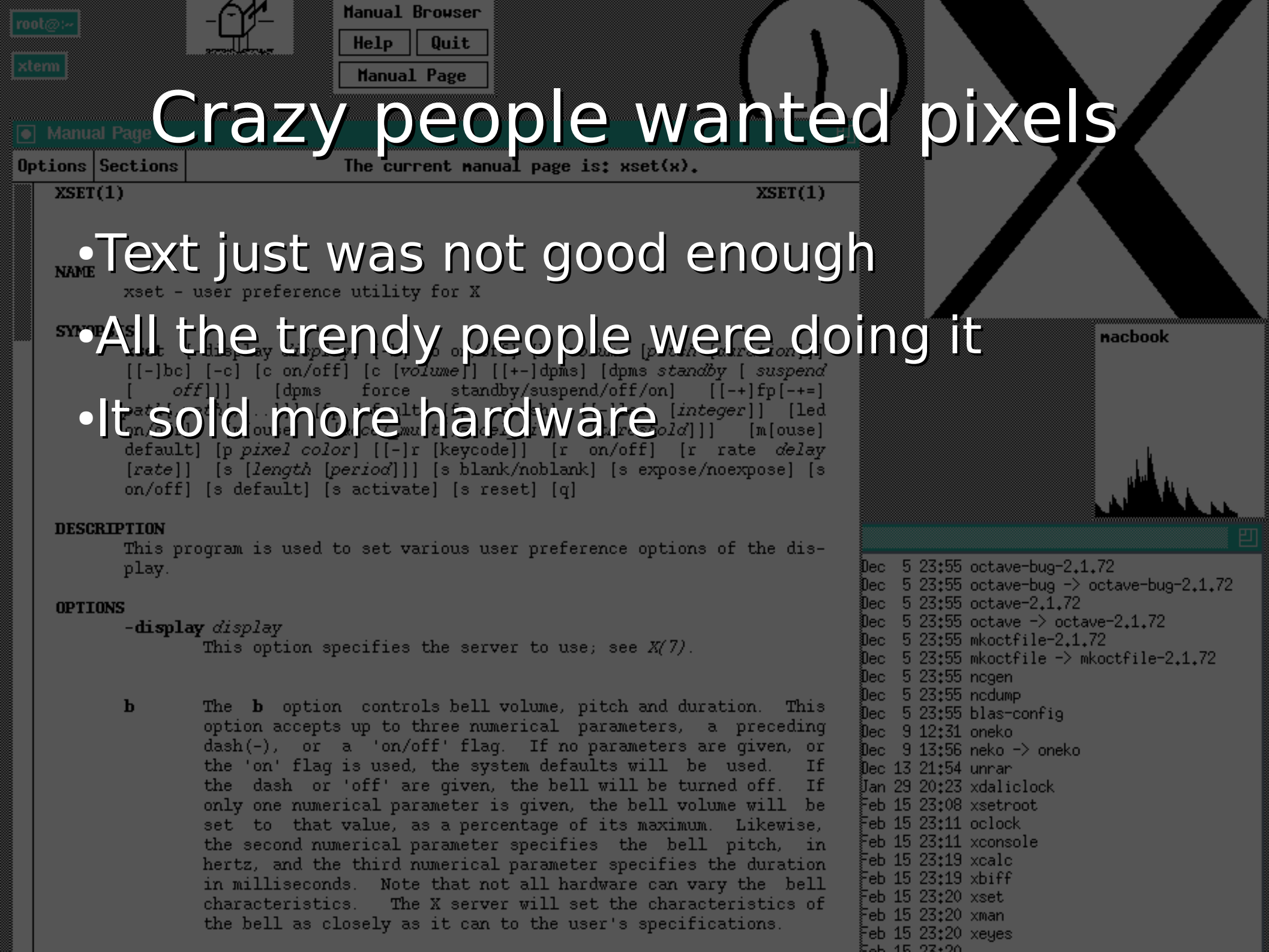
All hail the ~~cereal~~serial terminal



- The mighty VT100 comes to the rescue
- Saves the rain-forests!
- High resolution 80x24 characters!
- 1200 bits per second display pipeline!
- 2 amazing colors
- Intel 8-bit 8080 CPU at a blistering 3-6Mhz!
- Other terminals did come before like the VT05

All hail the ~~cereal~~serial terminal

- Makes for a nice cat carry case!



Crazy people wanted pixels

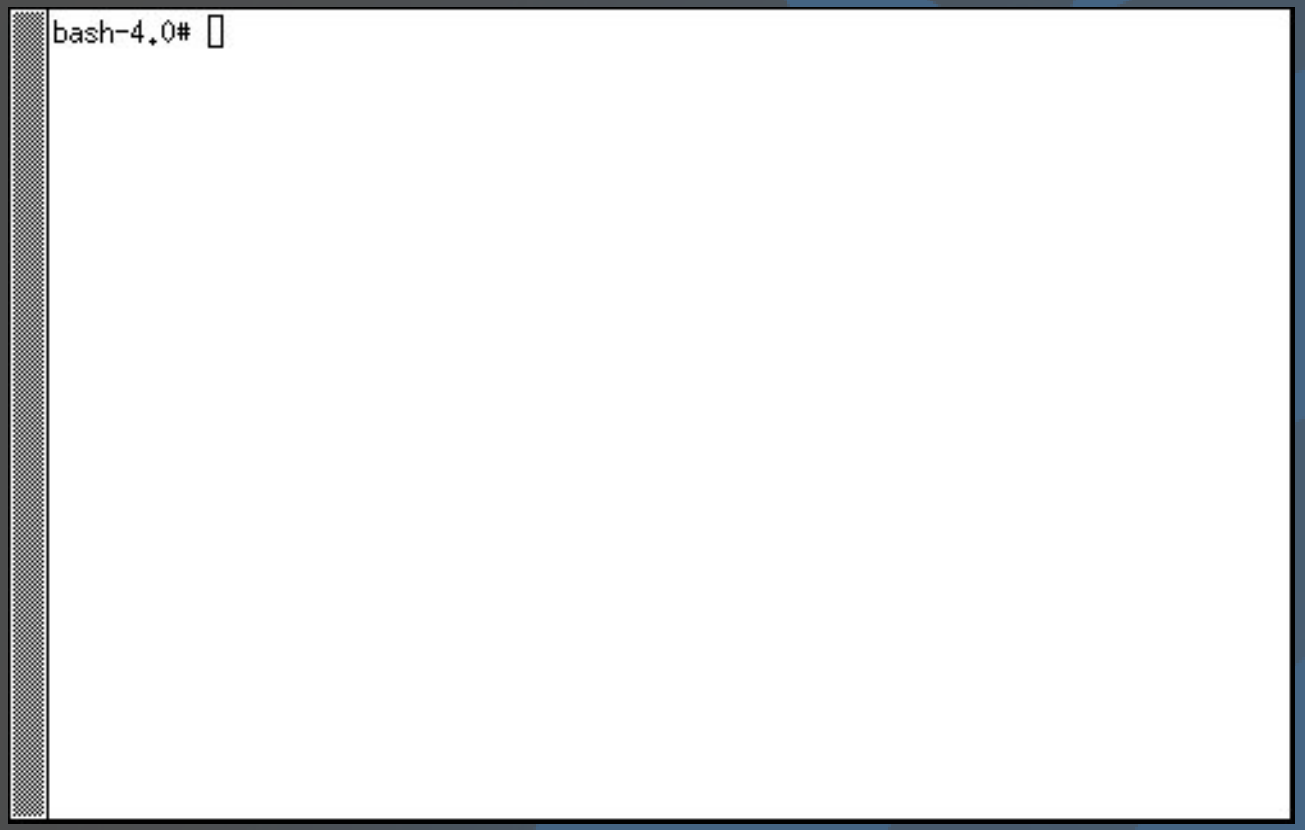
- Text just was not good enough
- All the trendy people were doing it
- It sold more hardware


And was warm enough to sit on

But we still used terminals

- Totally addicted to text
- You can pry my grep out of my cold dead hands
- Massive install-base of command-line software
- Functional and efficient for those that learned the command-line world

Behold ... the XTERM!



The VT100 returns

- Software emulation of the VT100
- Adds other terminal types too
- Almost limitless scrollback support
- Can do... COLOR!
- Doesn't require half your desk to run
- Begins with a cool letter 'X' like X-Men!

Has awesome code

```
/*
 *                              W A R N I N G
 *
 * If you think you know what all of this code is doing, you are
 * probably very mistaken.  There be serious and nasty dragons here.
```

- Excerpt direct from xterm source

And the beat goes on

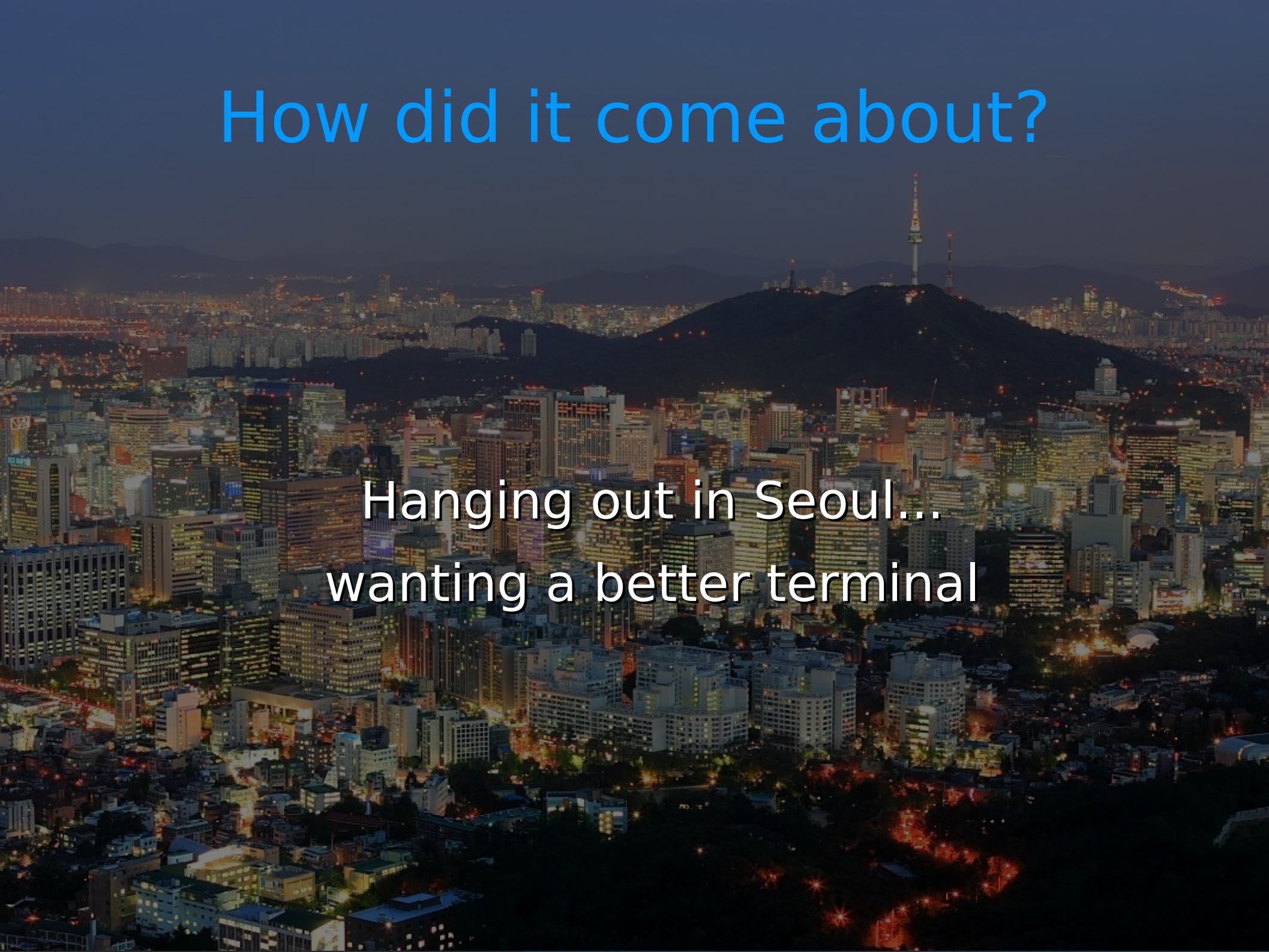
- Lots of other terminals were created
  - Fewer dragons in them
- Rxvt
- Urxvt
- Eterm
- Konsole
- Gnome-terminal
- Terminator
- Xfce-terminal...


But finally the one you all were waiting for...

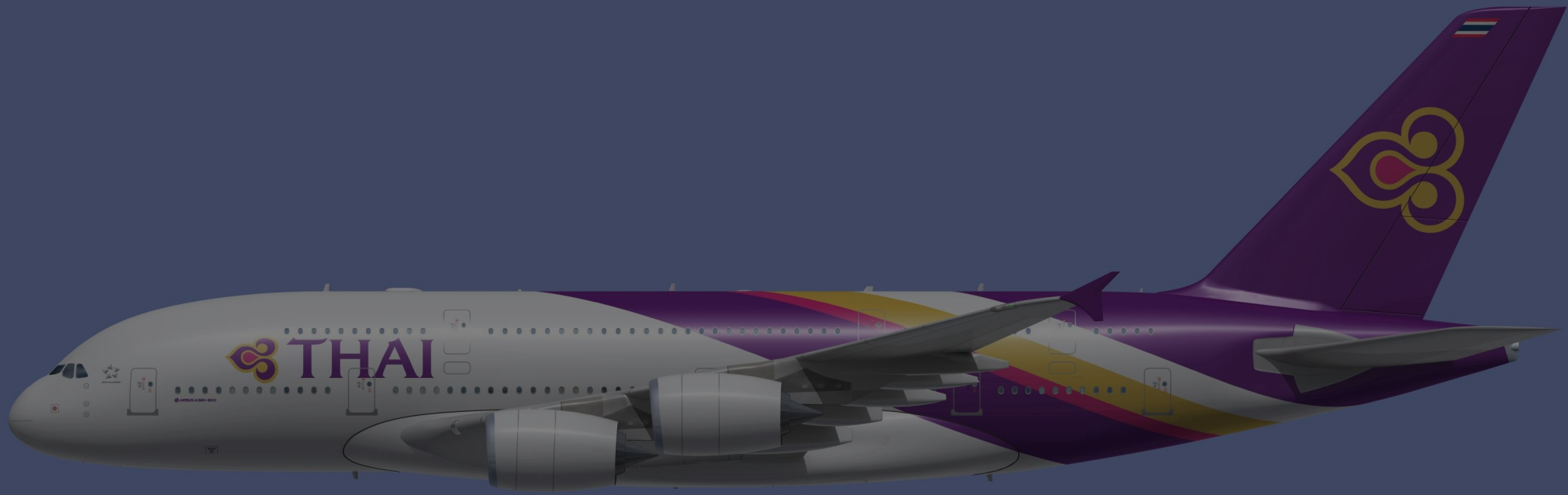
TERMINOLOGY


YAY

How did it come about?



Flew off to thailand...



Hung out on a beach for a week

And on the 7th day…

Why YAY?

This is better said as a demo...

Why YAY?

- First terminal to use modern EFL
  - Eterm definitely does not
- Written-from-scratch terminal emulation
  - No dragons
- 256 colors supported
- Compressed in-memory scrollback
  - Not logged to disk like some terminals

Why YAY?

- ARGB Transparency supported
- Bitmap and outline fonts supported
- Unicode UTF8 supported out of the box
- Input methods for complex languages
- Single or multiple process model
- Tabs
- Splits

Why YAY?

- Background images/animations/video etc.
- Inlined images/video/animations etc.
- Inlined thumbnails
- Built-in popup of media files
- URL/path highlighting
- Auto fetch of http/ftp content
- Themes

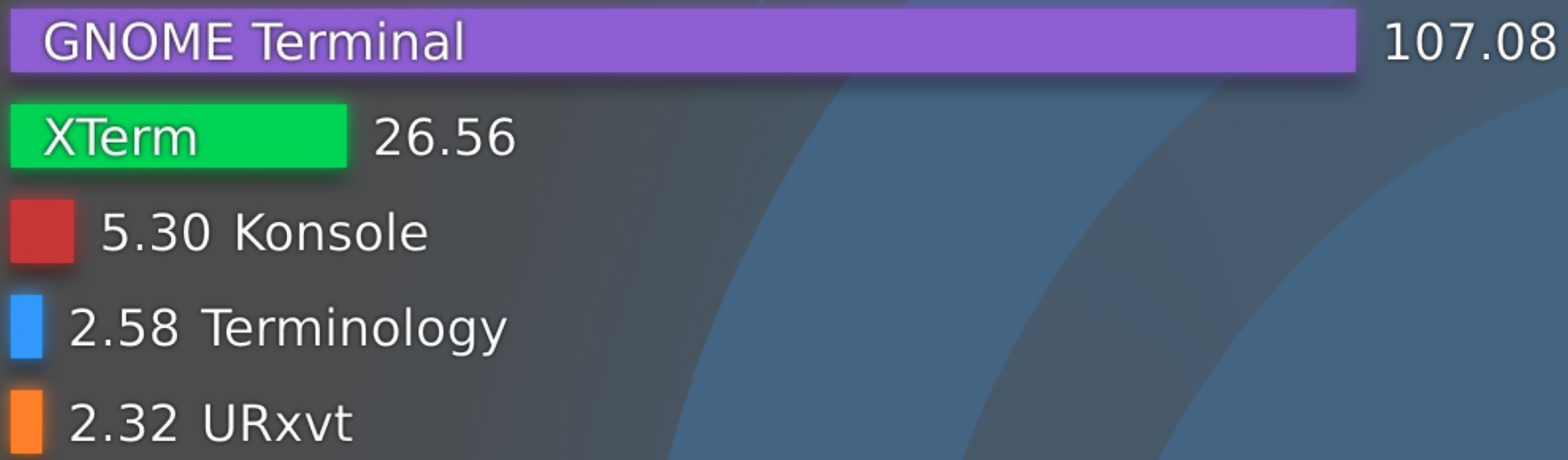
Why YAY?

- Wayland already supported
- Works in raw framebuffer without X11
- Should work in Tizen already
- Built in config UI
  - No command-line or text files needed
- Pretty theme by default
- OpenGL(ES) rendering already possible

Why YAY?

- Speed
  - Almost as fast as urxvt (fastest terminal)
  - Beats almost everyone despite fancier display
    - 10x - time cat pg100.txt

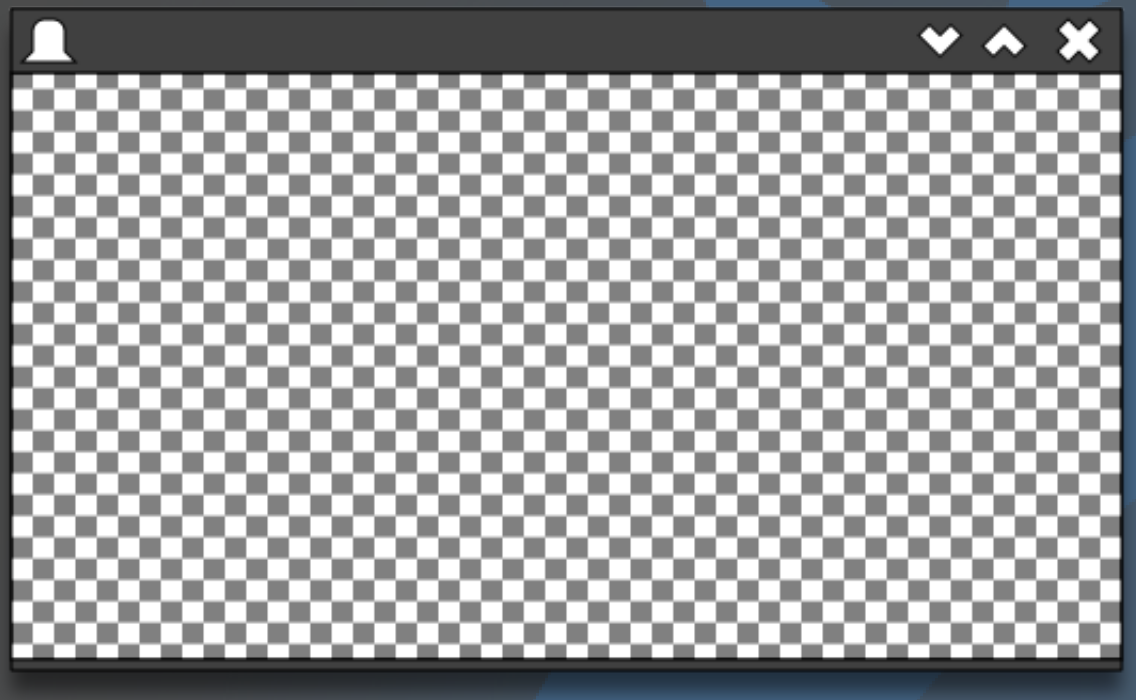
* N.B. These times vary based on driver (below on intel)



But why should that matter?

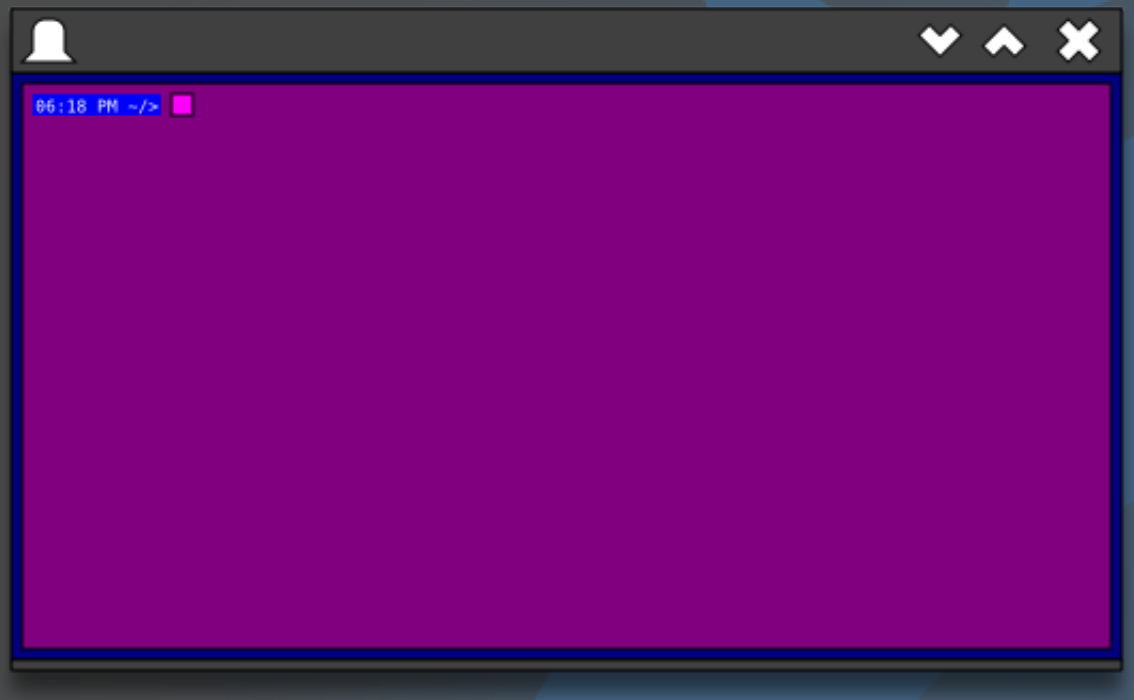
- All of these features with a small codebase
  - ~21,000 Lines of code only for everything
- EFL brings most things for free
- Memory footprint kept reasonable
- You KNOW you want cat gifs as a terminal wallpaper
- Structure & development are simple

All things start with a window



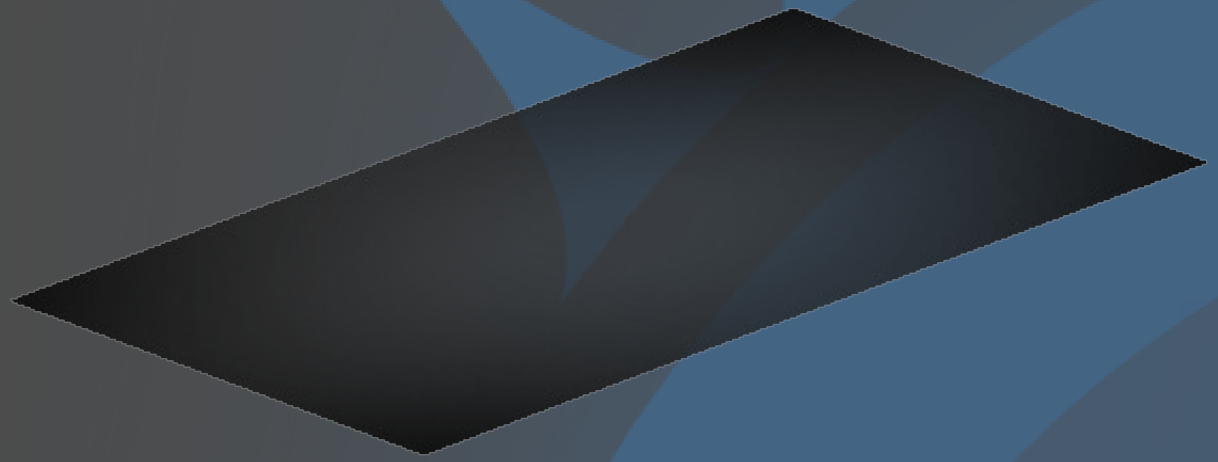
- WM provides frame (except Wayland)
- Check area provides by application

All things start with a window



- All window content made up of objects
- Each object in the scene graph as properties and content of its own

Basic application layout



- Add a base with shading
- Can see through to windows below

Add some cats

- No app complete without fluff
- Fluff is independent – can animate alone

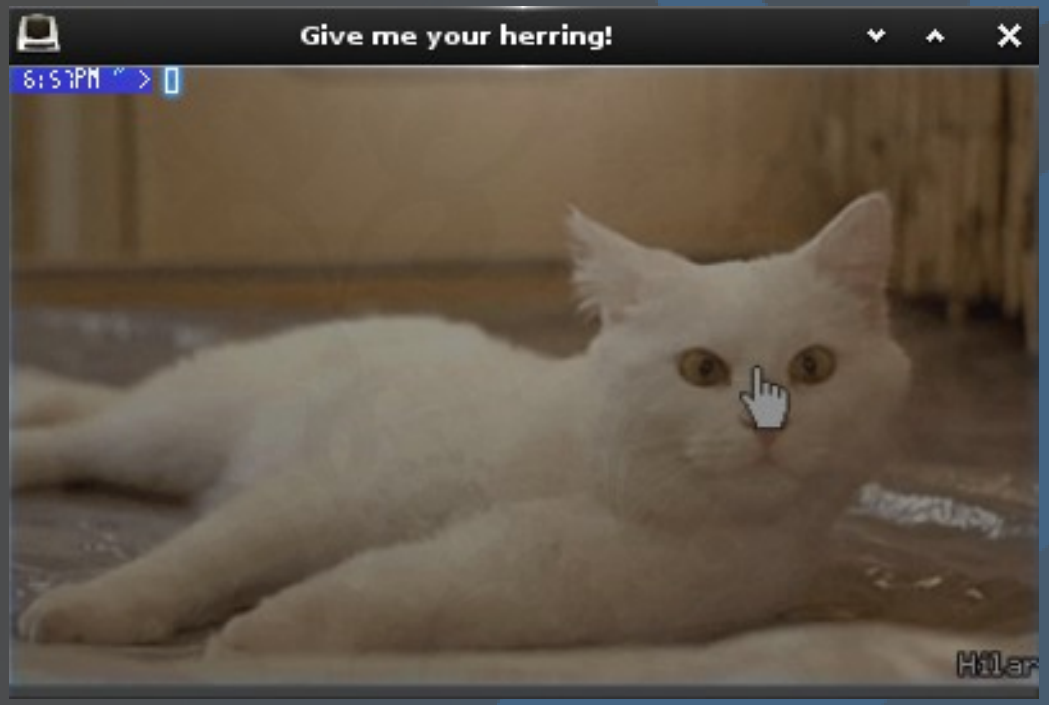
The terminal object goes in

- Is a grid of text chars that mirror terminal
- Simply layers/overlays on what is under

Add some shine

- Alpha channels allow lighting effects
- Are composited at runtime by Evas

Coming together

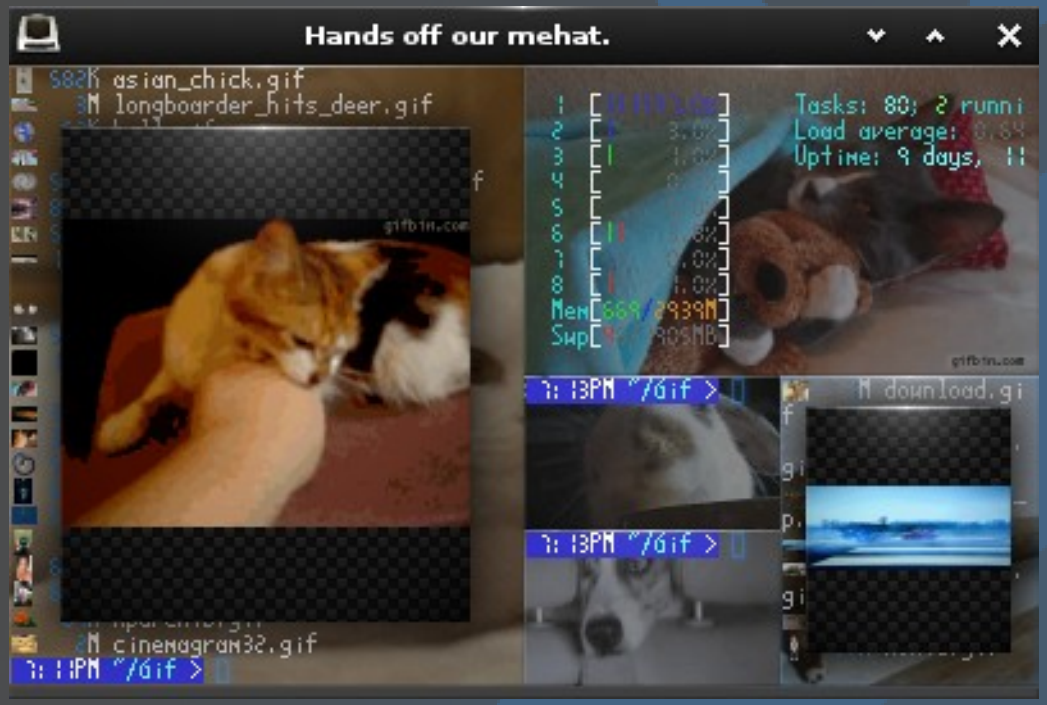


- All the layers and elements make up the UI
- All objects/layers are independent

Coming together

- Same media objects re-used for popups
- Re-used for inline media too

Coming together



- Smart objects act as “classes” to save work
- Pre-made smart objects like emotion give you video and audio

Easy to use to learn EFL

- About half of code directly related to terminal emulator, not “UI”
- Any specific UI feature only between 220-1300 Lines of C each
  - Self-contained UI units
- Acts as a good example of using EFL in apps
- My cat approves of its code

Where?

#e, #edevelop on irc.freenode.net

http://www.enlightenment.org

http://www.enlightenment.org/p.php?p=about/terminology

http://git.enlightenment.org/apps/terminology.git

Terminology 0.4 Alpha release + EFL 1.8 Alpha + E 0.18 Alpha

https://phab.enlightenment.org/phame/live/3/

Q&A

Flames, Grills and Happiness

:)