

Lumina Rising: Challenging Desktop Orthodoxy

Ken Moore
<ken@ixsystems.com>

Ohio Linux Fest
Columbus, OH
September 29-30



Key Questions

- What is a desktop?
- How is a desktop assembled?
- How does a desktop integrate with the operating system?
- How is Lumina 2 any different?



What is a desktop?

Common Answers:

- A complete graphical system with a collection of various utilities for common tasks. Examples: KDE, GNOME, and XFCE.
- An interface with application shortcuts and manages graphical windows. Examples: Plasma, Lumina, and WM + dock.
- Only the window manager.



What is a desktop?

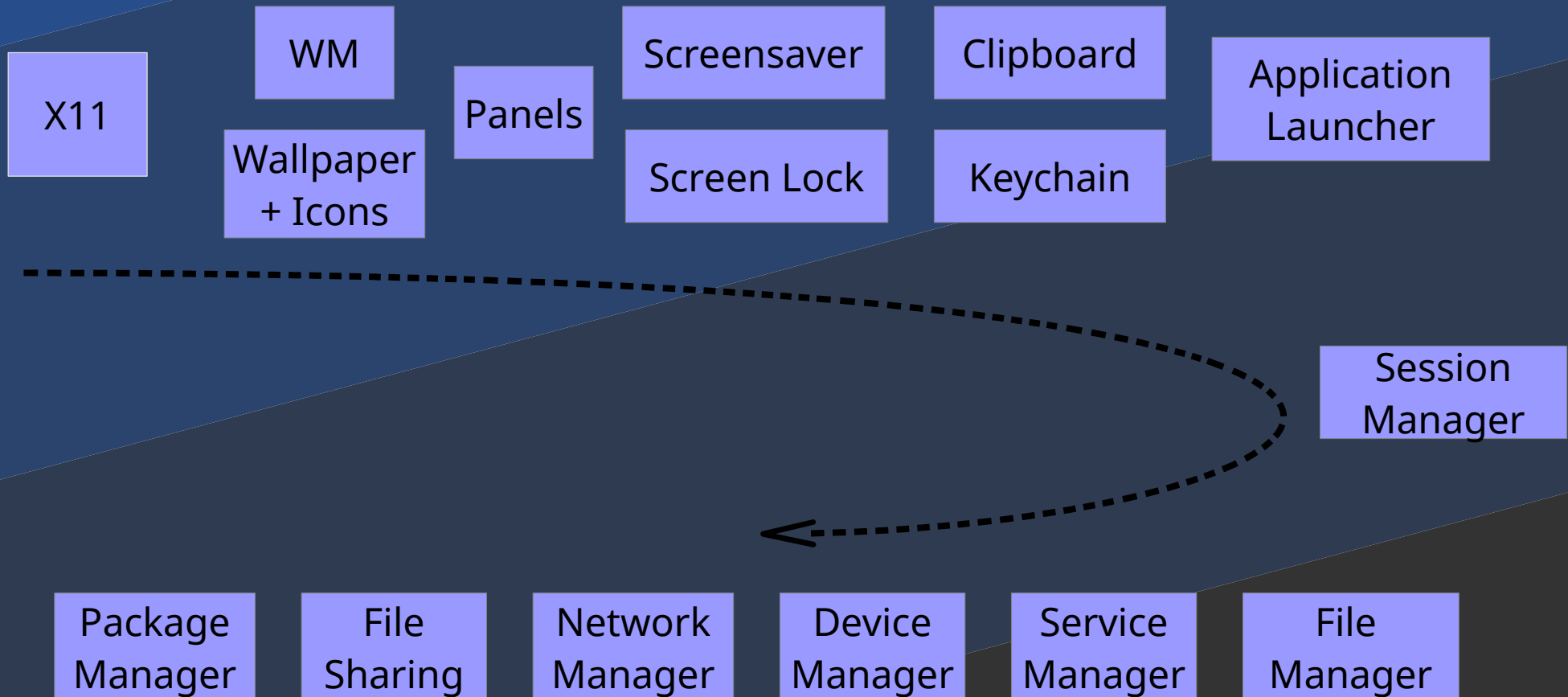
Proposed Answer:

- A graphical interface to an operating system which supports industry standards for application interactions and controls.
- Examples:
 - Window Management: ICCCM and EWMH
 - Application Registration: XDG desktop menu and entry specs
 - Theming Specs: Icons, cursors, and color schemes (debatable)



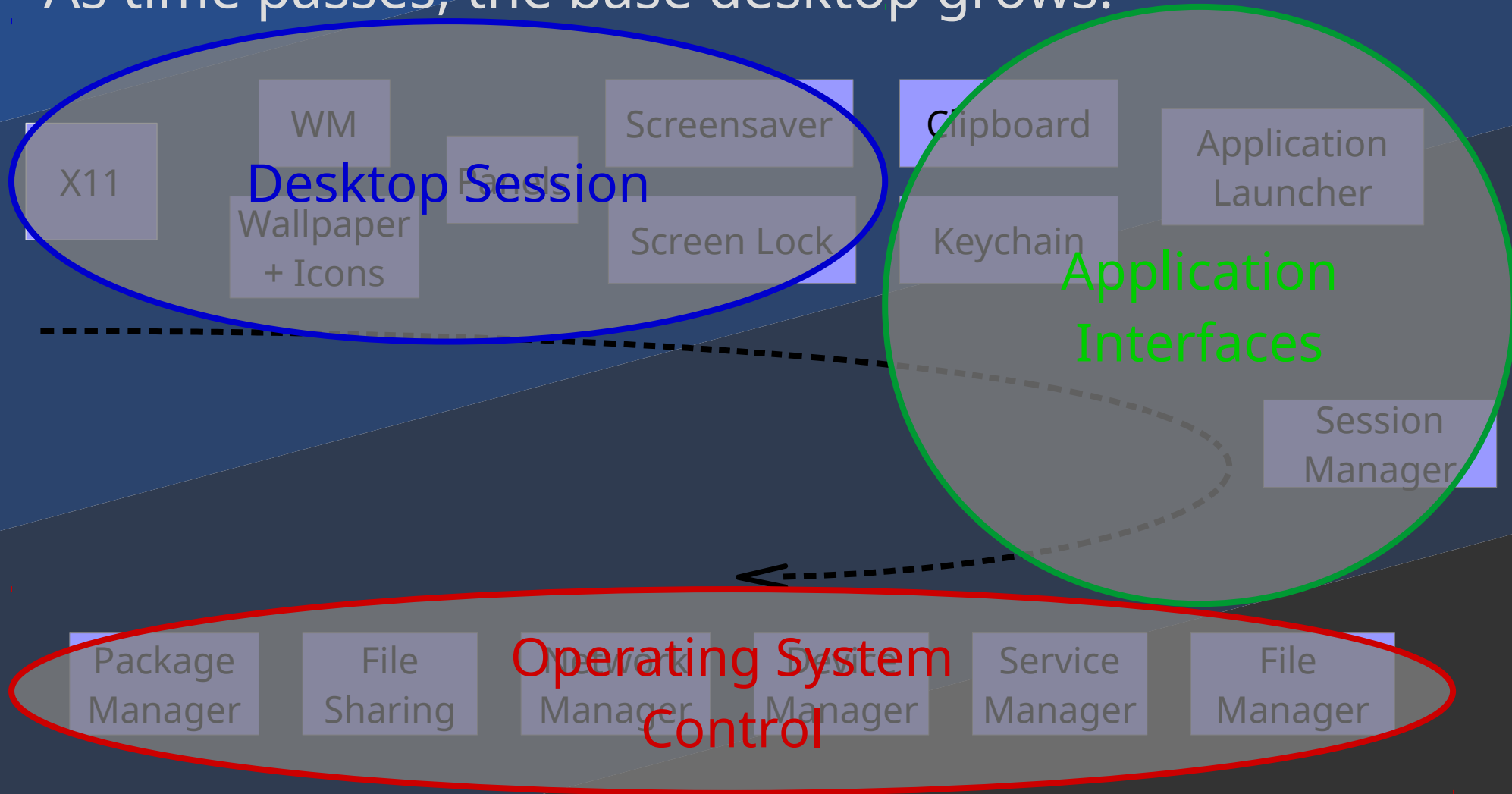
How is a desktop assembled?

- As time passes, the base desktop grows:



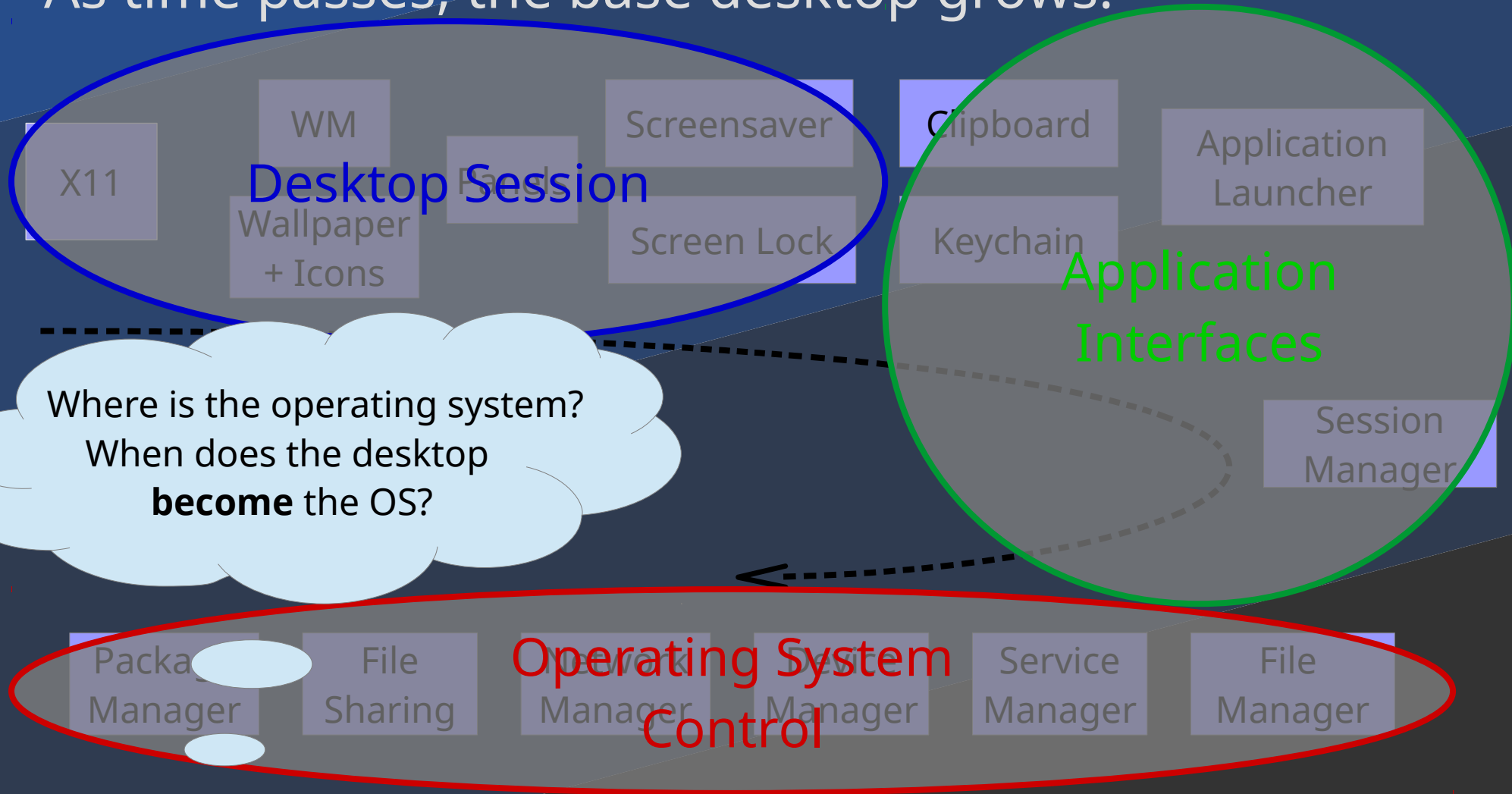
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How does a desktop integrate with the operating system?

- The OS provides a “system console”
 - Keyboard Only
 - Users/Groups
 - Networking
 - Services
 - Filesystems
 - Shells
 - Hardware drivers
 - Standard C libraries
- The desktop provides a “graphical console”
 - Keyboard optional
 - Multi-user
 - Multi-application
 - Visualization of the OS
 - X11/Wayland libraries



How does a desktop tie into the operating system?

- Recent trends in OS “intrusion” by desktops
 - Filesystem interference: GVFS and inotify
 - Bypass user restrictions: policykit and dbus
 - Bypass removable device management: hald, automount, and autorun
 - Bypass shared network protocols using alternate libraries, tools, or versions
 - Bypass hardware management: upower
- Desktops try to enforce standardized OS interactions, but fail. Desktops need an API!



How is Lumina Different?

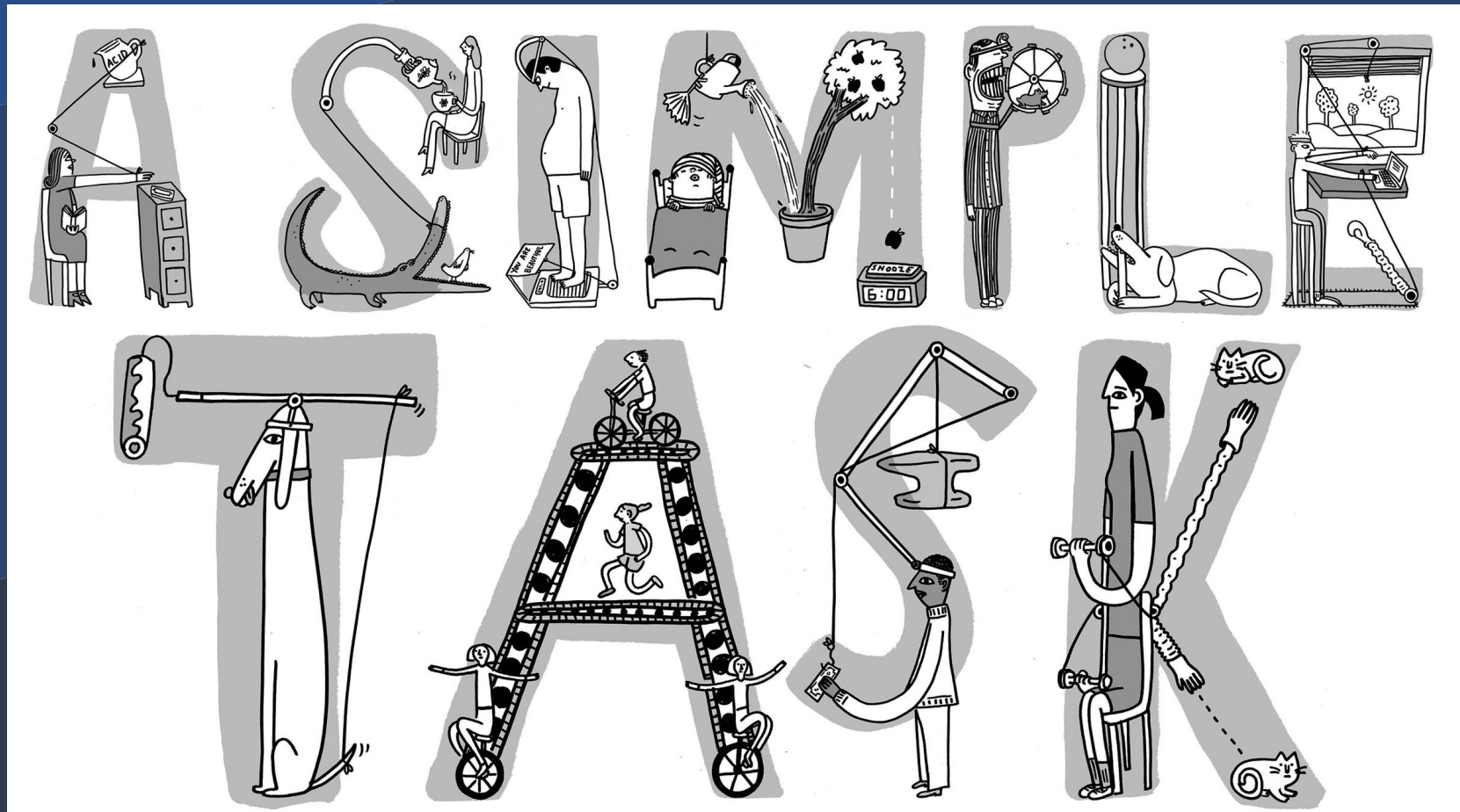
What is the desktop?

- Other desktops
 - KDE/Plasma, GNOME and derivatives
 - The “all-in-one” approach
 - Lots of dependencies
 - XFCE, LXQT, and Lumina 1
 - More modular and independent from applications
 - Primarily just the “interface”
 - Still require several runtime processes
- Lumina 2
 - Interface only
 - No OS services required, modular OS interaction framework
 - Requires Qt5/X11 libraries only
 - Completely independent from applications



How is Lumina Different?

What is the desktop?



How is Lumina Different?

How is the desktop assembled?

- Other desktops

- Lots of binaries/processes
- Uses dbus as IPC “glue”
- Moving toward “Apps-as-services”
- Highly fragmented core, desktop-dependent extra applications

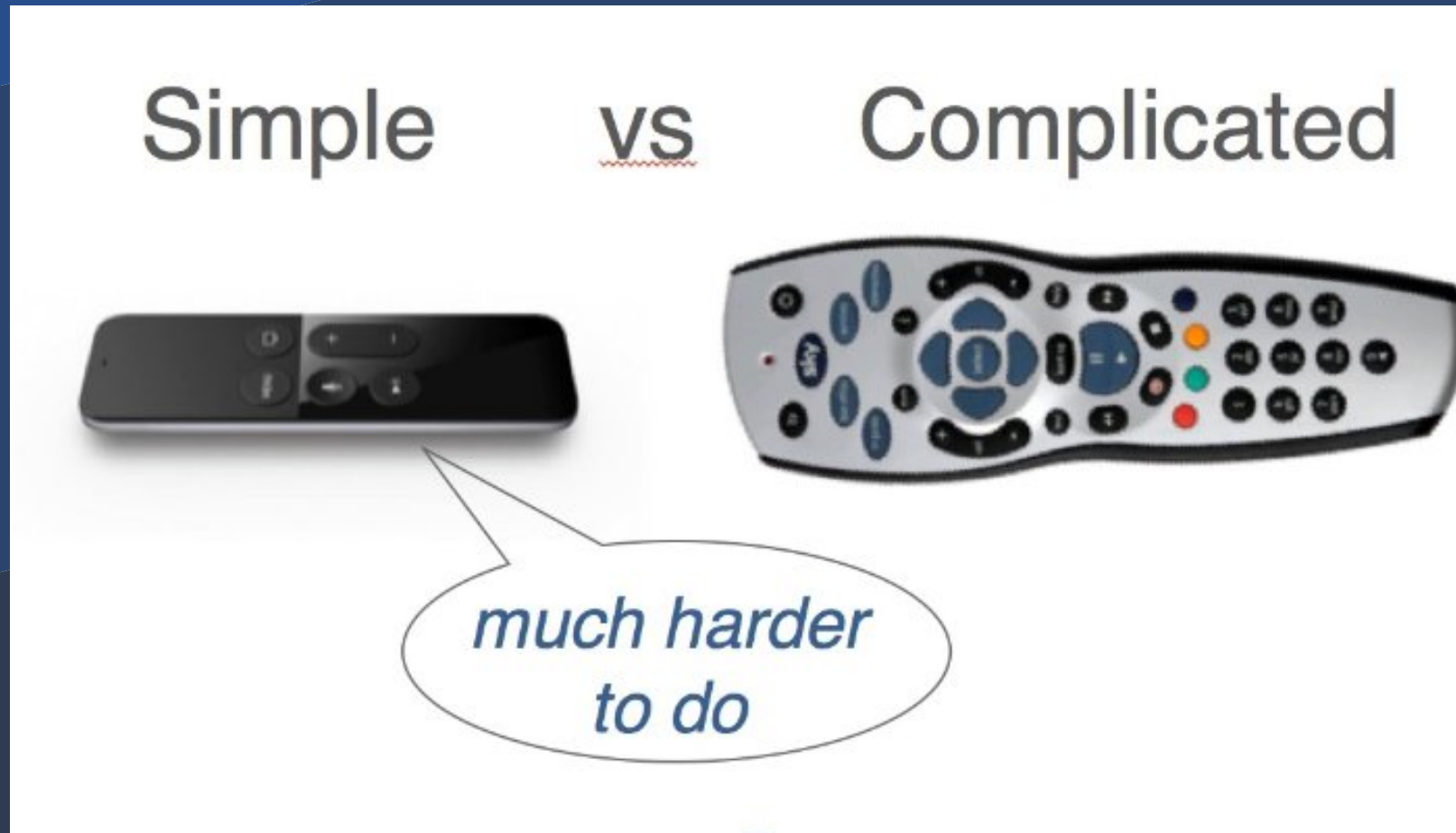
- Lumina 2

- *One* binary/process
- Formalized JSON API
- Transient applications
- Unified core, independent extra applications



How is Lumina Different?

How is the desktop assembled?



How is Lumina Different?

Desktop and OS Interactions

- Other desktops
 - Linux-centric. Backend services/tools must be ported to a non-Linux OS first.
 - Attempt to “control” OS capabilities. The desktop is dominant.
 - Provide a multitude of utilities for OS tasks
- Lumina 2 is:
 - OS-agnostic. Optional internal mapping for OS interactions.
 - An “interface” for any OS capabilities. The OS is dominant.
 - Minimal. OS control utilities are installed by the OS.



How is Lumina Different?

Desktop and OS Interactions



Conclusions

- Open-source desktop developers are at a crossroads. Do we follow the example of Windows and become a central component of a single operating system? Or, do we create and use operating standards for desktop/OS interaction?
- The Lumina project is forging ahead with goals of portability, simplicity, and standardization.



Questions?



Slides Available at:

<https://www.slideshare.net/beanpole135>