Wayland: Choosing a better input method architecture

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What are „input methods"?

Many different things!

{western input methods, RTL input methods, CJK input methods}
X
{desktop, embedded, mobile, IoT, …}
X
{hand-writing recognition, voice recognition, gestures,
virtual keyboard, …}

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What is text input?

Hardware → events → **Input Method System** → text → **Application**

Input Method System components:
- hand-writing recognition
- voice recognition
- XKB
- virtual keyboard

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MALIIT.org

mobile text input
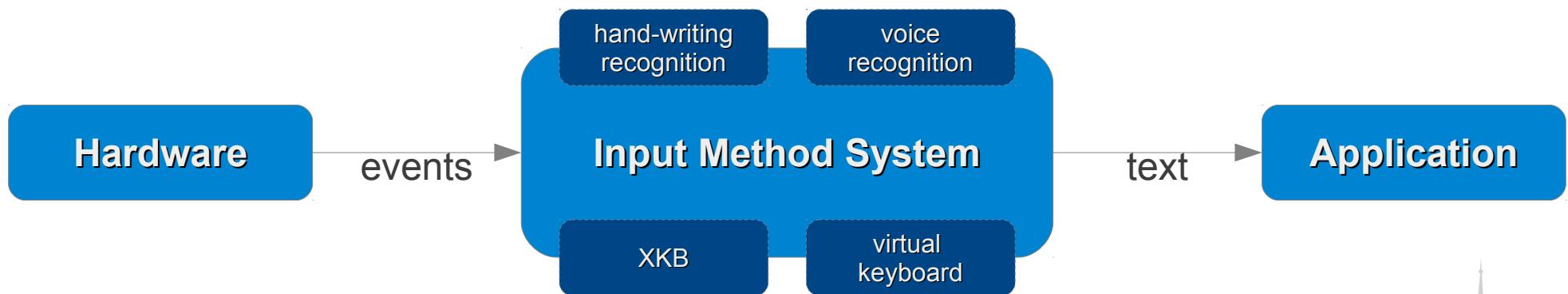
→ Input method developers want a
unified architecture!

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Unified architecture? Just use XIM!

- `http://www.xfree86.org/current/xim.pdf`
- `http://www.xfree86.org/current/XIMTransport.pdf`

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Hey, X11 ain't all that bad!

Worse is better …

„Software that is limited, but simple to use, may be more appealing to the user and market than the reverse." (wikipedia)

XIM evasion:
- http://docs.enlightenment.org/auto/ecore/group__Ecore__IMF__Context__Group.html
- http://doc-snapshot.qt-project.org/5.0/qinputmethod.html
- http://qt-project.org/doc/qt-4.8/qinputcontext.html
- http://developer.gnome.org/gtk3/stable/GtkIMContext.html

Read on, dear friend:
- http://c2.com/cgi/wiki?WorseIsBetter

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But then why Wayland?

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One display server, many platforms

Shell Extensions

Applications

Shells & Window Managers

Gnome Shell

Unity

Plasma/ Plasma Active

Mutter

Compiz

KWin

Toolkits

Qt Quick Components

ST/Mx

Elementary

Qt/QML

GTK+

Clutter

Evas/Edje

SDL

Display Server

Xorg

Weston

Kernel
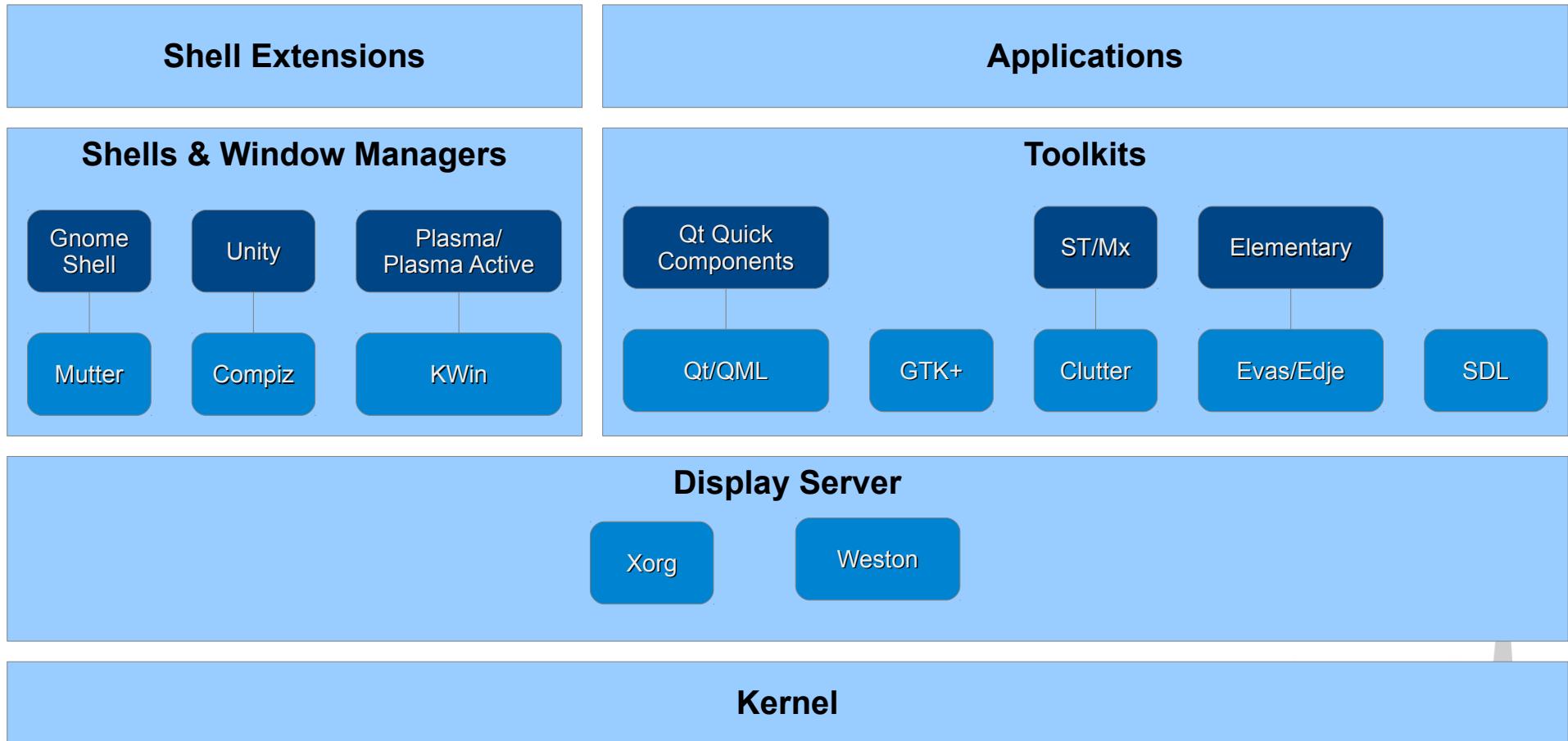
Much better, more detailed:
http://blog.mecheye.net/2012/06/the-linux-graphics-stack/
(Jasper „magcius" St. Pierre)

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Wayland? That's why!

Rapid protocol design:
- text protocol
- input_panel interface (desktop-shell protocol)

Just in case:
- http://www.phoronix.com/scan.php?page=search&q=Wayland

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Wayland? That's why!

Rapid protocol design:
- text protocol
- input_panel interface (desktop-shell protocol)

Just in case:
- ~~http://www.phoronix.com/scan.php?page=search&q=Wayland~~
- http://wayland.freedesktop.org/
- http://wayland.freedesktop.org/faq.html

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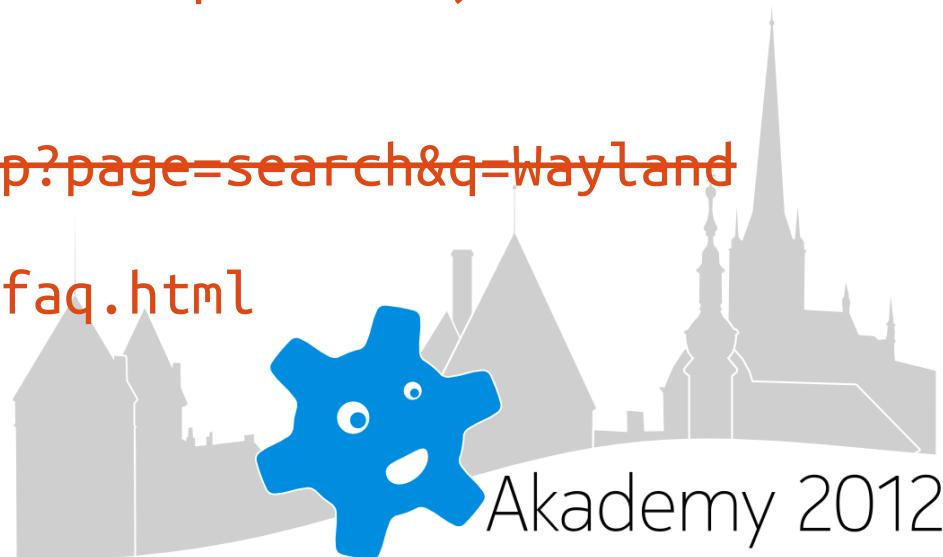
One protocol, three interfaces

Input method systems

wl_input_method
- send preedit string
- send commit string
- send key event
- send text selection replacement
- landscape/portrait mode
- ...

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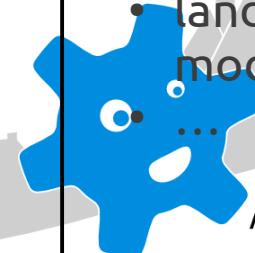
One protocol, three interfaces

Wayland compositor (platforms)

wl_input_panel

- surface (+position)
- visibility
- keyboard focus (wl_seat)
- …

And some bits of wl_text_model & wl_input_method.

Input method systems

wl_input_method

- send preedit string
- send commit string
- send key event
- send text selection replacement
- landscape/portrait mode
- …

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One protocol, three interfaces

Wayland clients (toolkits)	Wayland compositor (platforms)	Input method systems
wl_text_model	**wl_input_panel**	**wl_input_method**
• cursor position • micro focus • surrounding text • preedit string (+styling) • text selection • text direction • …	• surface (+position) • visibility • keyboard focus (wl_seat) • … And some bits of wl_text_model & wl_input_method.	• send preedit string • send commit string • send key event • send text selection replacement • landscape/portrait mode • …

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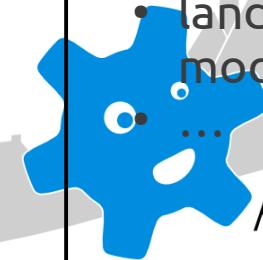
Three interfaces, three processes

Application (Qt 4)

Application (Qt 5)

Application (GTK+)

Wayland &
Wayland text
Interface
(text_model)

Wayland &
Wayland text
Interface
(text_model)

**Wayland
Compositor**

**Input Method
System**

Wayland &
Wayland input method
Interfaces
(input_method, input_panel)

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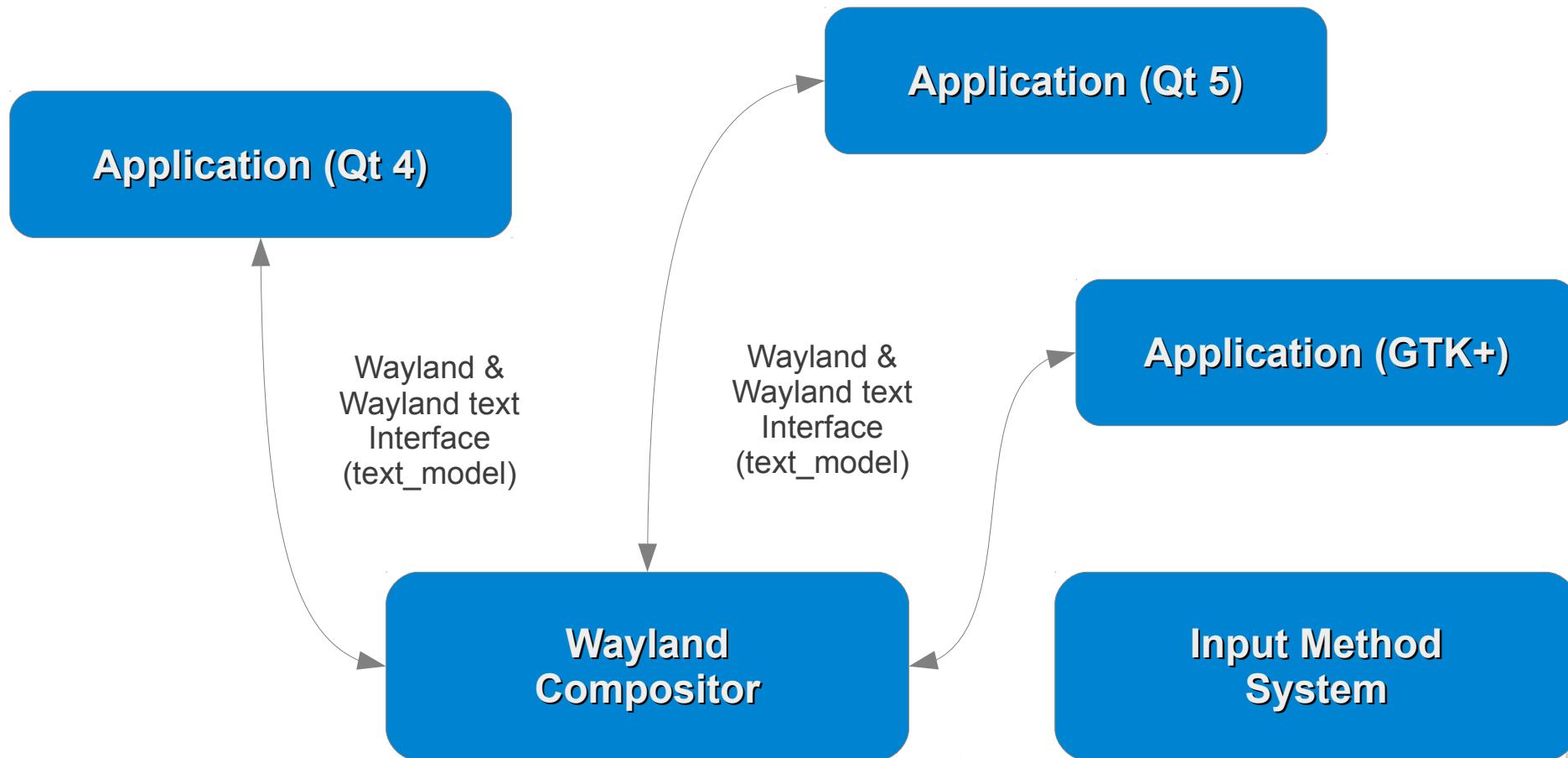
https://wiki.maliit.org/Wayland_Input_Method_System_Proposal

Demo! (nah, video only)

- http://jpetersen.org/videos/wayland-ims-prototype.webm
- http://jpetersen.org/videos/wayland-ims-prototype.mp4

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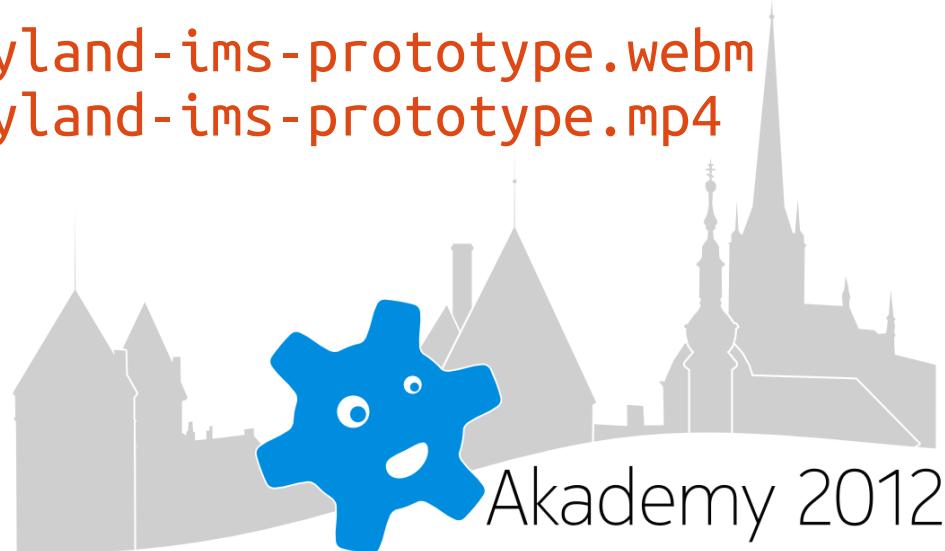
Kudos to Jan!

„Everything X" (now Wayland) guy in Maliit project:
- http://blog.jpetersen.org/2012/06/20/text-input-method-support-in-wayland/
- http://blog.jpetersen.org/2012/01/25/compositing-in-maliit/

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Don't believe the hype.

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