

Compositing after X

KWin on the Road to Wayland

Martin Gräßlin
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Desktop Summit 2011
06.08.2011



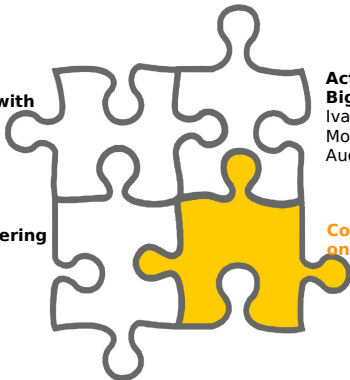
Project Plasma Active

**A new activity based
mobile user interface with
Plasma and Nepomuk**

Marco Martin, Fania Jöck
Mon, 10:20 - 10:50
Audimax

**Plasma Active - Conquering
the Device Spectrum**

Sebastian Kügler
Sun, 09:40 - 10:10
Kinosaal



**Activities - the helpful
Big Brother**

Ivan Čukić
Mon, 14:00 - 14:30
Audimax

**Compositing after X - KWin
on the Road to Wayland**

Martin Gräßlin
Sat, 14:00 - 14:30
Rm2002

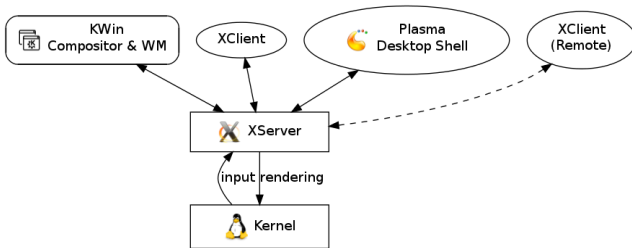


- 1 Architecture of X and Wayland
- 2 State of Wayland and X
- 3 Wayland in KDE Plasma
- 4 Timeline



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Modern Compositing X Architecture

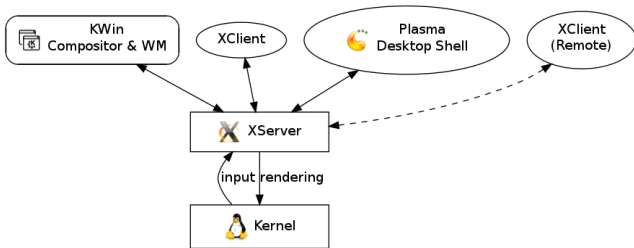


X is just a Proxy

- No direct communication
- WM needs to fix X
- No Input Redirection
- Designed for non-Compositing



Modern Compositing X Architecture

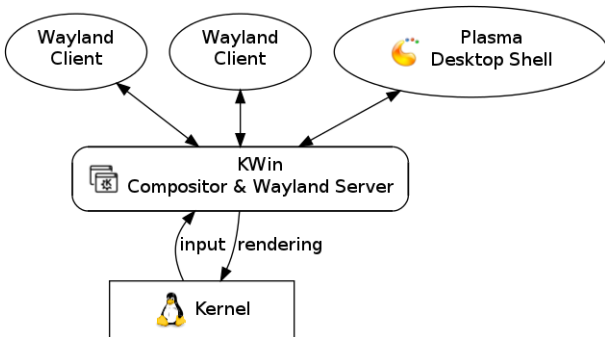


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Let's Remove the Proxy



Wayland Architecture at a Glance

Wayland Server

- Compositor and Window Manager
- Runs on top of KMS
- Handles all Input events
- Renders using OpenGL ES 2/EGL
- Nested Compositors are possible

Wayland Client

- Uses Wayland EGL platform
- Renders into a (GEM) buffer
- Buffers are shared with Server
- Damage events for changes between two buffers
- Protocol to communicate with Server



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The Current State of X

X is what we know

- Most successful software in history
- Extremely flexible through extensions
- Major transitions are possible
- Legacy functionality get's removed
- Non X related functionality moved to Kernel



X has problems

- Slow development
- Missing Input Redirection
- API is like time traveling
- Strong limitations with Compositing



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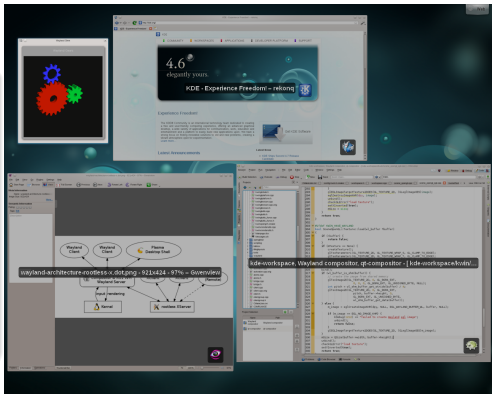
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Current State of Wayland

Proof Of Concept

- Mesa Code is there
- Qt Lighthouse Port
- GTK+ 3.0 (build disabled)
- Clutter (out of date)
- Demo Compositor
- Demo Clients



Strong Support

MeeGo, Qt and Intel are heavily investing in Wayland!



Where are the Obstacles?

- Nobody used it
- Possible Problems still unknown
- Protocol not yet fully defined
- No existing Window Manager
- No real world Application
- Many still not discussed issues
- EWMH for Wayland?
- Driver Support?
- Missing “WaylandGL”



We Need X

- Wayland not yet ready to replace X
- Wayland not supported on all hardware (cf. NVIDIA)
- X11 Network Transparency is a valid use case
- Legacy Software (e.g. Java) requires X11

Dropping X Support is not (yet) possible!



Conclusion so far

- Makes sense on mobile
- GLES hardware has better drivers
- Regressions on feature side are acceptable
- Getting rid of X very important
- Saving resources high priority



Plasma Active is our primary Target for Wayland!

Don't break the Desktop!



Wayland as Mobile Technology

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Options to Evaluate

- 1 Ignore Wayland
- 2 Drop X support and concentrate on Wayland
- 3 Write new Wayland Compositor alongside KWin (X11)
- 4 Incrementally port KWin from X11 to Wayland

No manpower to support/develop two Window Managers!



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“KWin Lighthouse”

- Identify Window Management independent areas
- Get Workspace and Toplevel X free
- Add Window Manager Abstraction

Useable not only for Wayland

- Android
- WebOS
- Microsoft Windows
- ...



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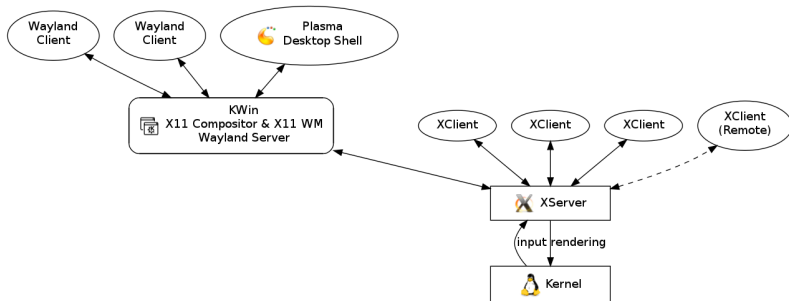
Road to Wayland

- 1 Wayland under X
- 2 Wayland only
- 3 X under Wayland



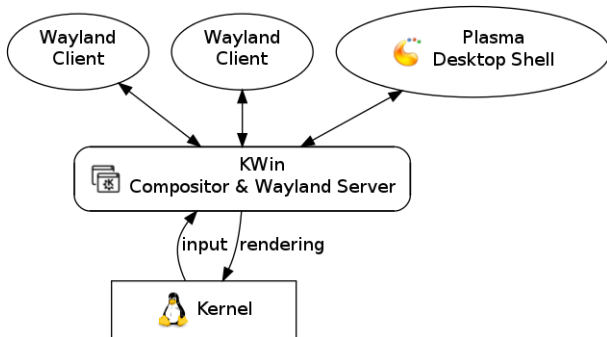
Phase 1: Add Wayland Support

Developer Preview



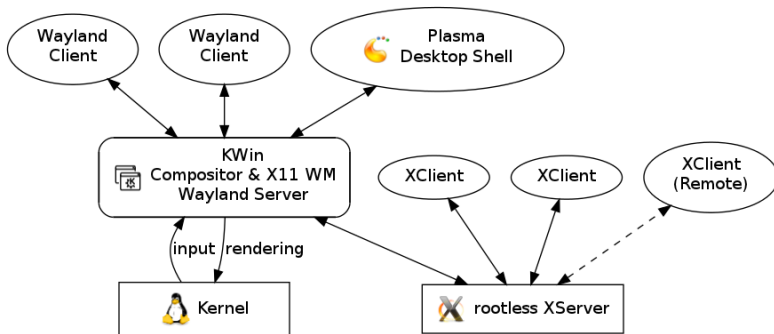
Phase 2: Plasma Active

For our Mobile Offerings



Phase 3: Rootless X under Wayland

For Productive Usage



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We need Help

Timeline depends on You

- KWin Team too small to succeed without help
- Plasma needs adjustments
- KDM needs adjustments
- Software needs to be ported

Start now To Be Ready in Years



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Timeline

Phase 1: Currently being developed

- Branch **kwin-wayland** in kde-workspace
- First Release expected in **Winter 2012** Release

Phase 2: Development could start right now

- Only for Plasma Active and Early Adopters
- First Release expected for **Summer 2012** Release

Phase 3: Can be started after Phase 1 & 2

- Needs work in other areas first (e.g. rootless X-Server)
- **DON'T BREAK THE DESKTOP**
- **It's done when it's done!**



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Plasma and Wayland BOF

Wednesday at 11:00 in 1.204

[http://wiki.desktopsummit.org/Workshops_&_BoFs/
2011/Plasma_and_Wayland](http://wiki.desktopsummit.org/Workshops_&_BoFs/2011/Plasma_and_Wayland)



Questions?

<http://community.kde.org/KWin/Wayland>

