Introduction to Wayland

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What is Wayland?

A compositing display management architecture and protocol

- Rolls window management, compositing, and the display server into a single process
  - Main open source implementation called Weston
- Does not include a rendering API
  - Clients use what they want and send buffer handles to the server
  - Current clients use Cairo, OpenGL, GLES
  - Software rendering fully supported as well through the SHM protocol
- Consolidates experience from the last decade of extending and enhancing X

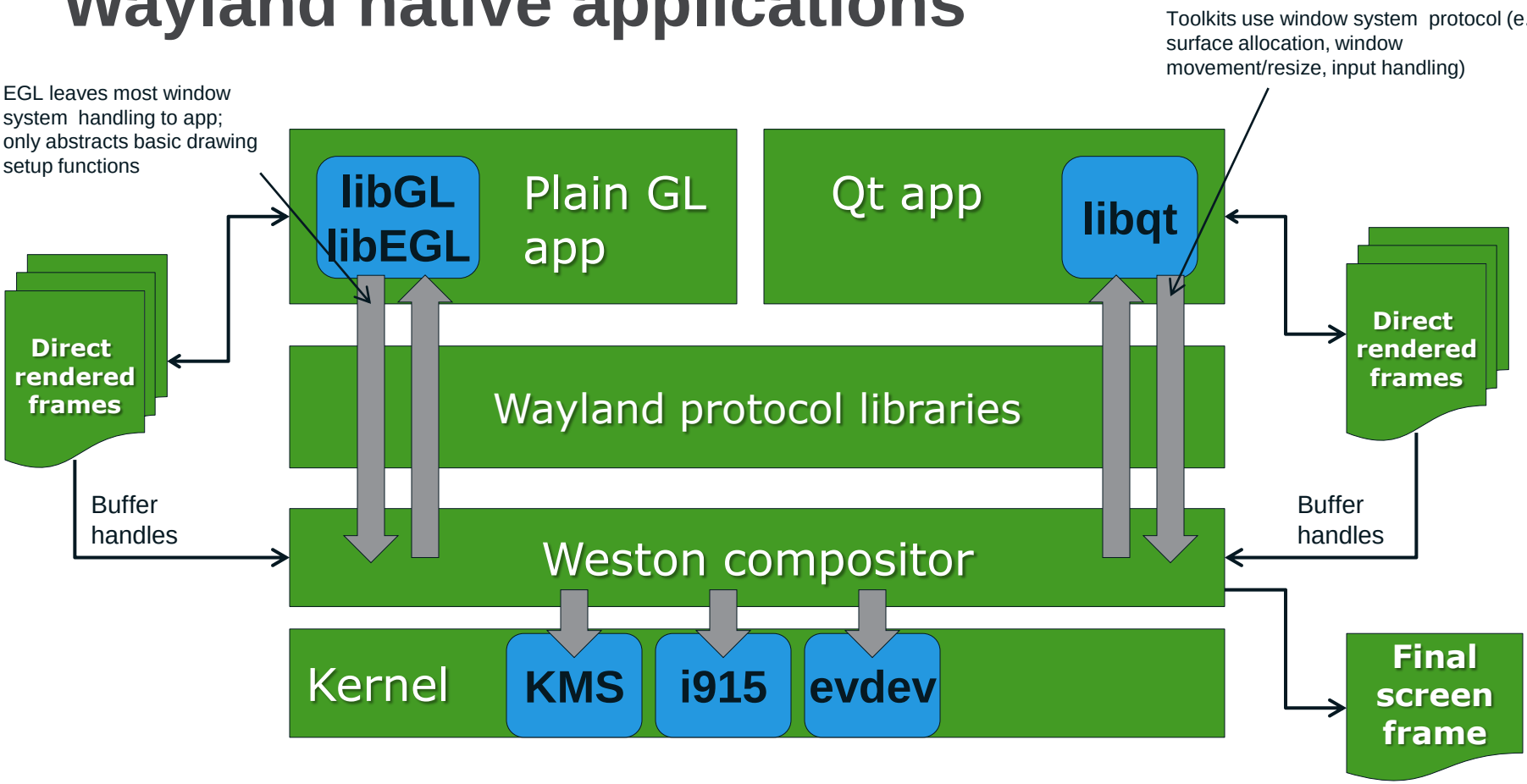
Current status

Basics work today, full desktop support is close

- Qt was the first toolkit; port done by Intel and Nokia for MeeGo related projects
- EGL (with OpenGL or GLES) and Cairo have been supported since the beginning
- Improved Qt support coming in Qt 5
- GTK+ work coming along nicely
  - Many apps can work without any source changes (should even be possible to avoid a recompile in some cases)
  - Client side decorations in development
  - A few missing features like drag-n-drop

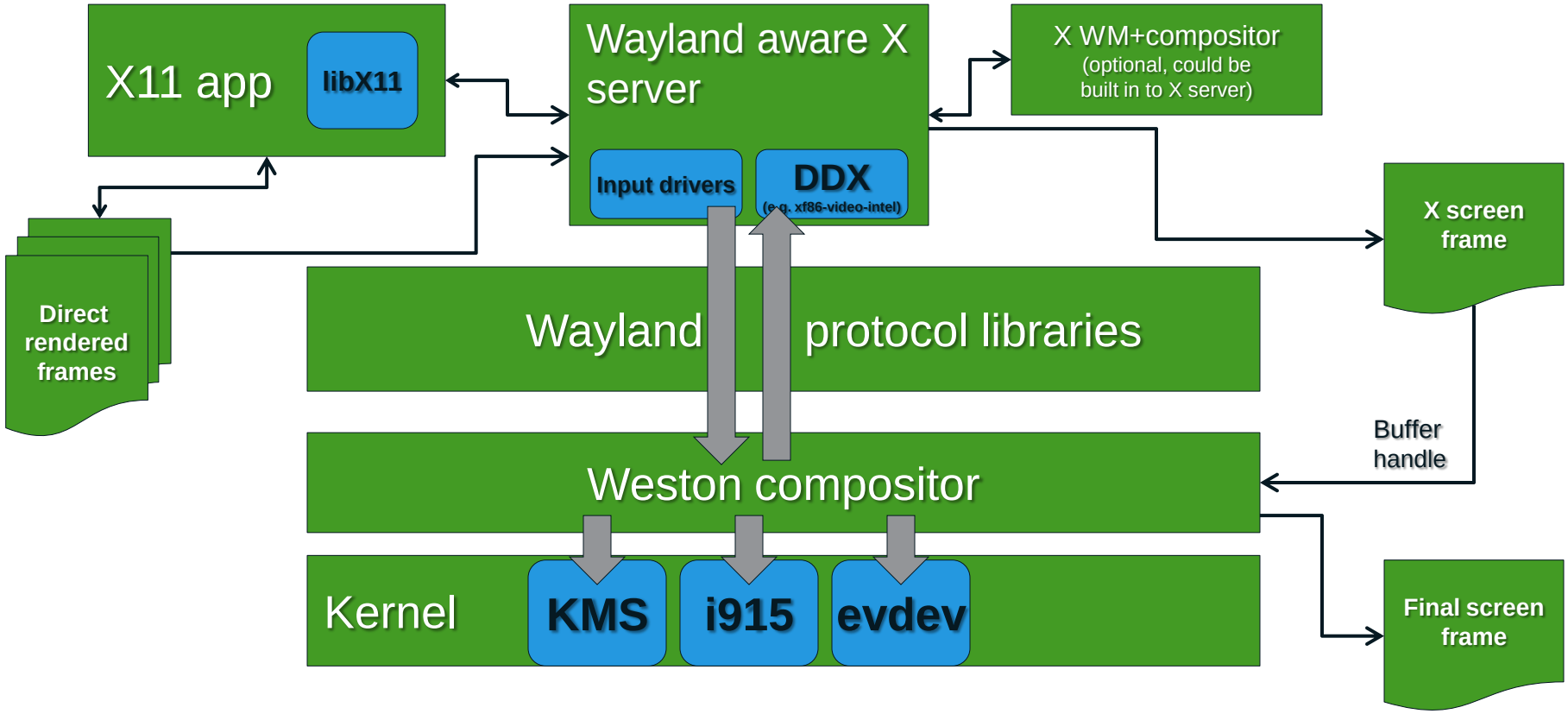
Track progress at http://wayland.freedesktop.org/

Wayland native applications



- Buffer handle passing, not copying
- Toolkits generally abstract windowing system
  - Pure Qt & GTK+ apps just needs a re-compile or loading with a different window system back end
  - Plain GL apps will need some work at the EGL level

Wayland with X11 compatibility



- X server can be started on-demand when X clients connect
- “Rootless” or full screen versions of X possible (just like Mac and Windows X servers)

FAQs

- "Who are these people, why don't they just extend X?" or "These people must not understand X."
  - Founder Kristian Høgsberg responsible for key X improvement of the past few years: DRI2, other core contributors are/were major X contributors as well
  - X not suited by design
- "What are the platform requirements for Wayland & Weston?"
  - Mainly buffer sharing so clients can render and pass a handle to the resulting buffer to the server
  - Short story: if you have a KMS and DRI driver you probably don't need to do much
  - Weston back ends available for DRM, OpenWF, X, and Wayland, others definitely possible
- "How is input handled?" and "Does Wayland support touch/multitouch?"
  - Wayland protocol includes input handling, Weston supports input devices through evdev, and supports multitouch including libmtdev for devices requiring it
- "What about network transparency?" or "OMG they killed Kenny!"
  - Since there is no server side rendering, the problem is much simpler
  - RDP or similar protocols can be provided by a server like Weston, and likely be more efficient than X is today

Schedule

We expect that we can release Wayland 1.0 this year:

- 0.85, developer snapshot, protocol changes planned (already out)
- 0.90, starting beta, protocol frozen
- 0.9x, release candidates
- 1.0, first stable release
  - Marks beginning of stable protocol and API
  - Not world domination
  - Somewhere in first half of 2012
  - Will include 1.0 of Weston compositor as well

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