

# Stabilizing Chromium's Wayland support

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# Agenda

1. Relevant Chromium architecture
2. History of `ozone/wayland`
3. Current status
4. Moving towards stabilization

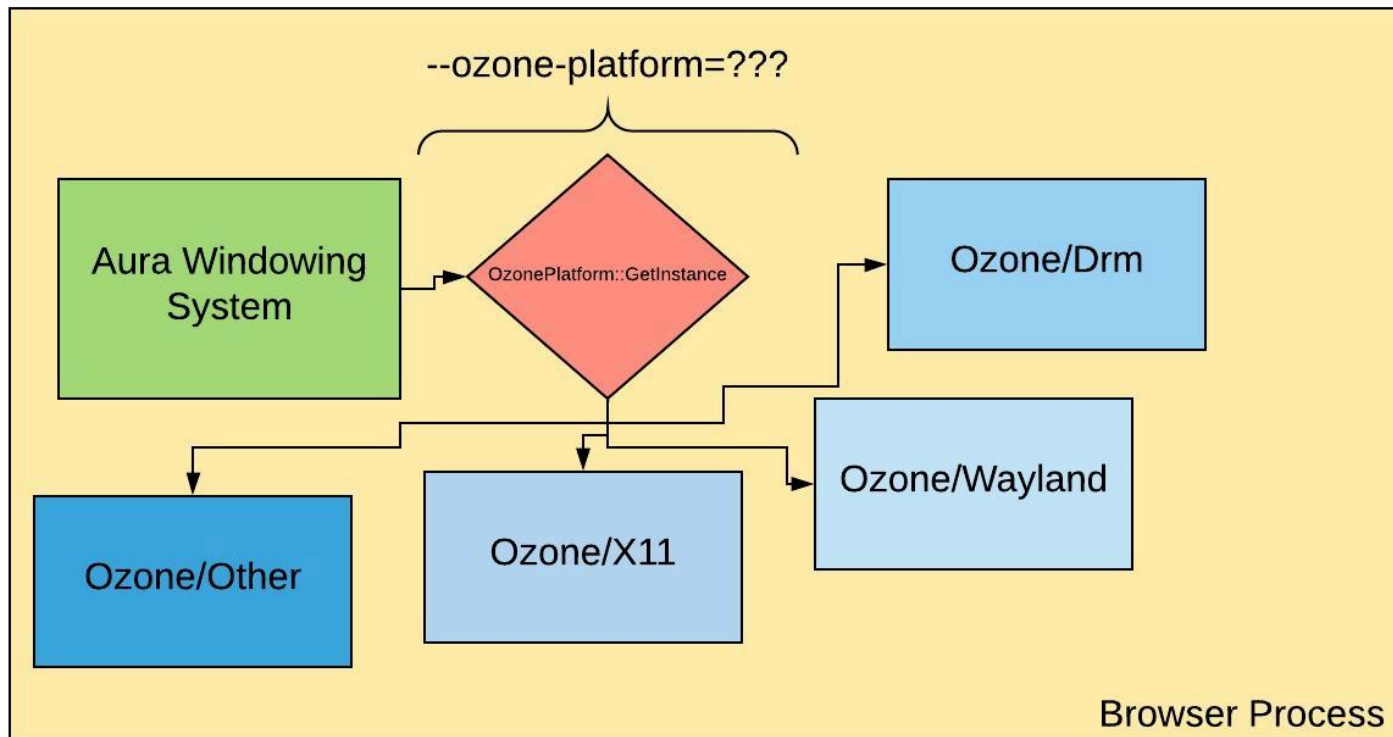
# Relevant Chromium architecture

# Relevant code areas

- `//chrome/browser` - high-level browser code
- `//ui/views` - "Views" desktop UI toolkit
- `//ui/aura` - windowing and event abstraction
- `//ui/ozone` - platform abstraction
- `//ui/platform_window` - platform abstraction glue

# Ozone

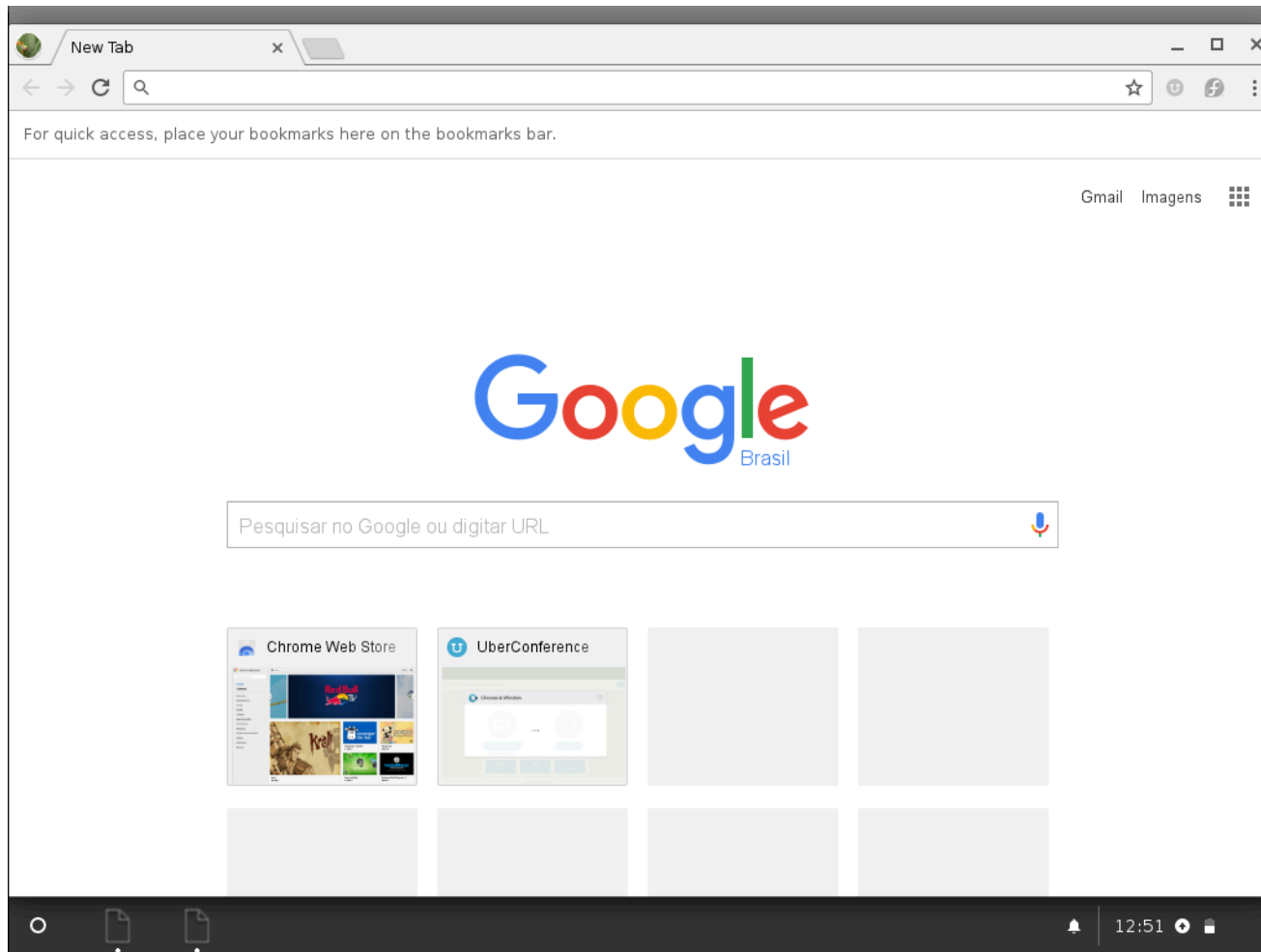
- platform abstraction layer handling low level input and graphics



# History of ozone/wayland

# Timeline

- 2013: Debut of Ozone, Crosswalk, and Intel's downstream `ozone/wayland`
  - WebRuntime that ran natively on Wayland-based systems
  - Good community adoption
- 2014-2015: Tizen EFL
- 2015: Entered maintenance mode circa m49
- 2016: **first upstream `ozone/wayland` commit**
  - Goal: testing proposes of Ash/Chrome on linux desktop





# Timeline

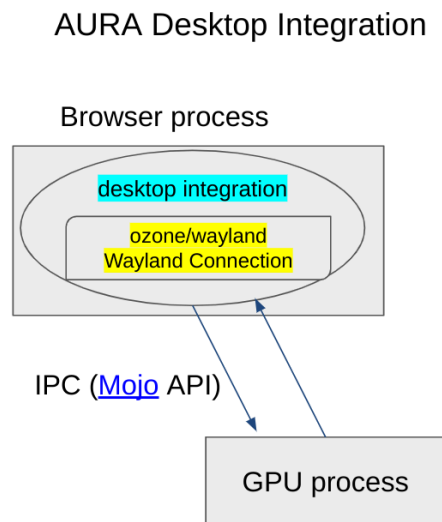
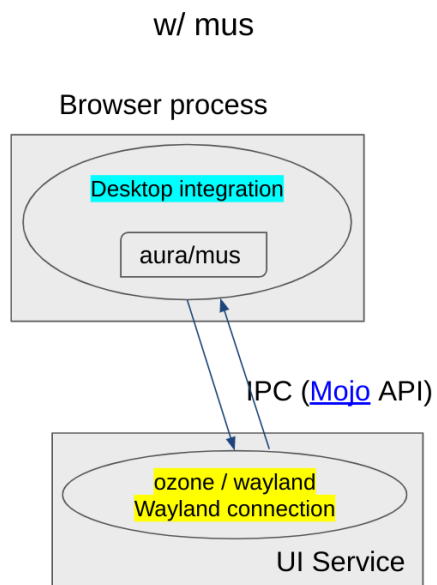
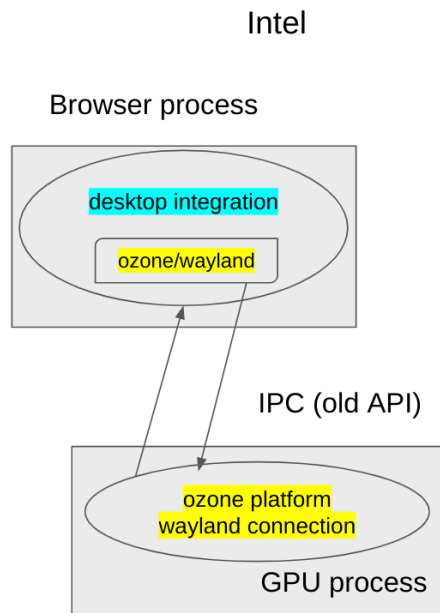
- Mus+Ash
  - New built-in windowing system targeting ChromeOS
    - UI service
    - Legacy IPC -> Mojo
  - Igalia was targeting linux desktop

# Timeline

- 2017: discussions with Google (rjkroege@, reveman@ at FOSDEM)
  - Bring up and prototype (downstream)

# Timeline

- 2018: discussions with Google (sky@ rjkroege@)
  - Rework on top of Aura/Views
  - Begin of upstreaming `ozone/wayland` fork



# Timeline

- 2019: Consolidation of the existing X11 code and `ozone/x11`
- 2019: Wayland/Host and Wayland/GPU
  - refactoring of the `ozone/drm` to share GBM related code
- 2020-2024: Lacros

# Lacros timeline

- goal: decouple browser from window manager on ChromeOS

# Lacros timeline

- 2015: **first Exo commit**
- 2020: start of Lacros?

# Lacros timeline

- what happened between 2020 and 2024?

The image shows two side-by-side browser windows displaying the 'About Version' page. The left window is labeled 'LaCROS' in red text and shows the version information for a Chromium build running on LaCROS. The right window is labeled 'Chromium Wayland' in red text and shows the version information for a Chromium build running on Wayland. Both windows show the same Chromium version (110.0.5419.0) and revision (cf7218af958e1c64af81ac646c8f6c1f0f896b36-refs/heads/main@{#1070962}). The left window also shows the OS as ChromiumOS (Ash 110.0.5419.0) and the User Agent as Mozilla/5.0 (X11; CrOS x86\_64 14541.0.0). The right window shows the OS as Linux and the User Agent as Mozilla/5.0 (X11; Linux x86\_64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/110.0.0.0 Safari/537.36. The Command Line for both is: /home/msisov/code/chromium/src/out/debug2/chrome --user-data-dir=/tmp/lacros-chromes --no-sandbox --no-sandbox --cros-startup-data-fd=5 --crosapi-mojo-platform-channel-handle=6 --gpu-sandbox-failures-fatal=yes --flag-switches-begin --flag-switches-end. The Executable Path for both is /home/msisov/code/chromium/src/out/lacros-linux/chrome. The Profile Path for both is /tmp/lacros-chromes/Default. The Active Variations for both are: 2510663e-3f4a17df df319cb2-27e0e1e8 8963b549-3f4a17df 3e7d7783-f38a9353 586e7649-cc1e01dd e5726113-3f4a17df ba227809-3f4a17df eddd0d82-3f4a17df f2855e3d-de2b6078 870c1db8-3f4a17df ffe207ef-3f4a17df 42f0e0ea-75d6947c 87f33ad6-3f4a17df 2ccd0408-804b6bfb.

**LaCROS**

**Chromium Wayland**



# Lacros timeline

- 2024
  - finch trial
  - users can opt-in
    - lacros support
    - lacros only
    - lacros primarily

# Current status

# Current status

- Wayland support still experimental, must be enabled manually: `--ozone-platform=wayland / --ozone-platform-hint=auto`
- incomplete list of things that were fixed:
  - screen sharing (without audio)
  - basic IME
  - `interactive_ui_tests`
  - window decorations, rounded corners
  - hardware acceleration

**Demo time!**

# Moving towards stabilization

# Stabilization blockers

- areas that still need work:
  - drag and drop
  - (fallback) tab dragging
  - fractional and mixed scaling
  - IME

# Questions?



# igalia