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Firefox Wayland post mortem

Martin Stránský
http://people.redhat.com/stransky/

Firefox Wayland state

- Developed on Fedora (Gnome), paid by Red Hat.
- Shipped as stable since Firefox 121.0 (8 months ago).
- 20% of users are on Wayland (XWayland before)
- Fedora, Arch Linux, Ubuntu 22.04+
- Started 10 years ago after switch to Gtk3 (Bug 635134)
- ESR128 / Thunderbird 128 / RHEL
- Mutter (GNOME)
- Kwin (KDE)
- Sway, Weston etc.

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Firefox Wayland pros

- Security (app sandbox)
- HiDPI support, multi-monitor
- Works better on Xwayland (D&D, popups etc.)

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Firefox Wayland cons

- Popups
- Focus
- Testing (Fedora)

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Firefox Wayland state

- Patient is stable
- Fixing protocol corner cases & minor issues

- Issues:
  - Missing automated testing (Nightly)
  - Missing PIP Always-on-top
  - Can’t place/move toplevel window
  - Can’t get toplevel window position
    - Session restore
  - Different focus handling
    - Focus steal / focus transfer

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Main road blocks

- Various Wayland compositor bugs (D&D popup rendering)
  - Different implementations at Mutter, KWin, Sway etc.
- General Gtk3/Wayland integration
  - wl_output, data devices
- Rendering to GtkWidget (Gtk3)
  - wl_subsurface, mContainer
- Multi-thread rendering (WebRender/ Compositor / GtkMain thread events)
  - Offscreen rendering, missing wl_surface (before/after creation)
  - Frame callbacks, VSync
- Clipboard – async/sync
- D&D
- Wayland protocol “freeze" – ping (wayland-proxy), broken pipe
  - Gtk3 event loop issue?

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Wayland popup nigthmare

- wl_subsurface
  - Can be placed anywhere (direct placement)
  - May drift away from screen, invisible
- xdg_popup/xdg_positioner
  - Move-to-rect
  - Strict hierarchy, one parent, one child
  - Can’t be directly moved/resized by Gtk3
    - hide/move/show
  - Popup child/parent must be adjacent
    - Mutter silently fails to show it otherwise
  - Connecting unrelated popups & tooltips
    - Mutter loves to terminate Firefox if there’s any error in popup chain

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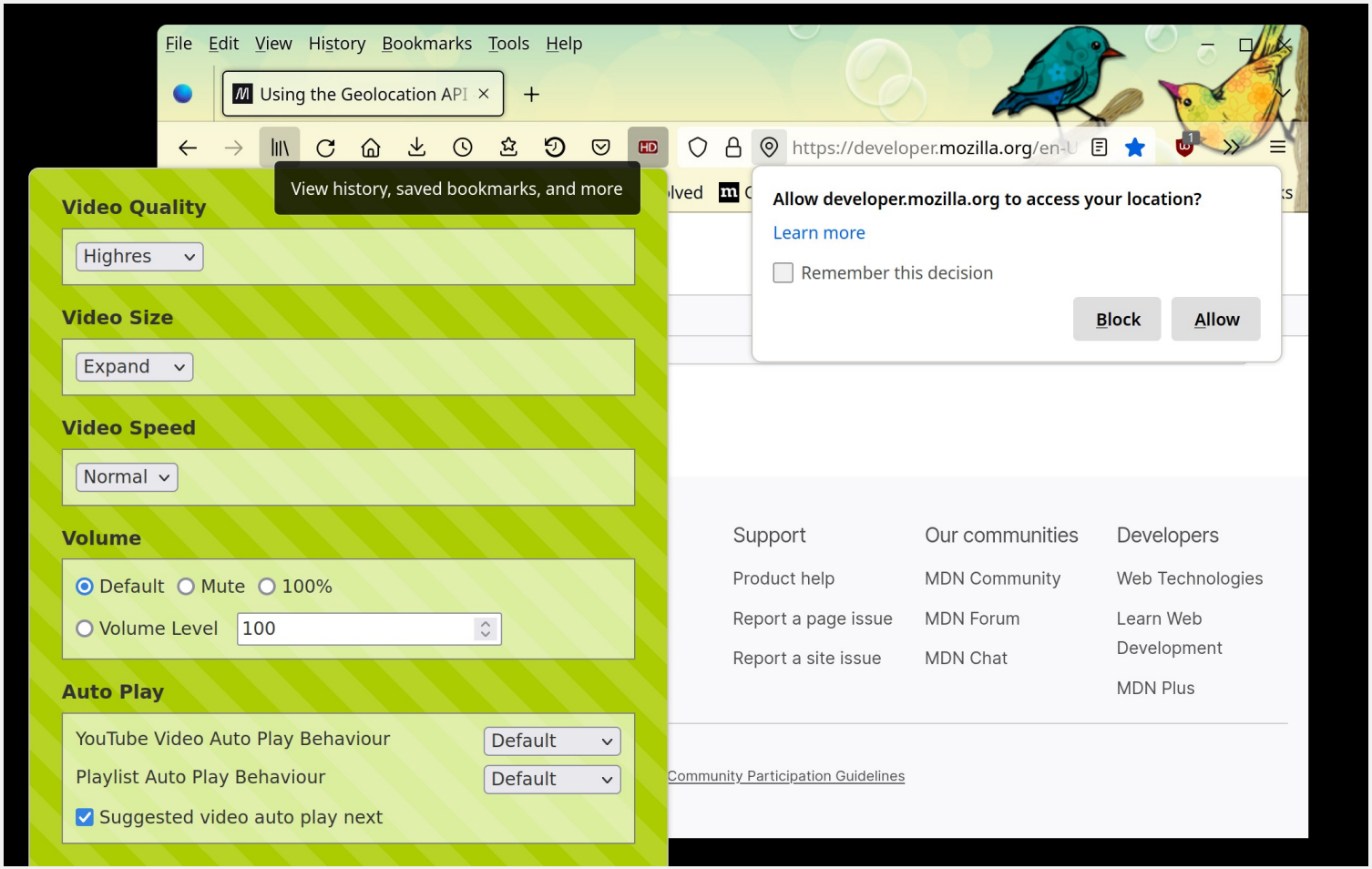

Connecting unrelated popups to popup chain

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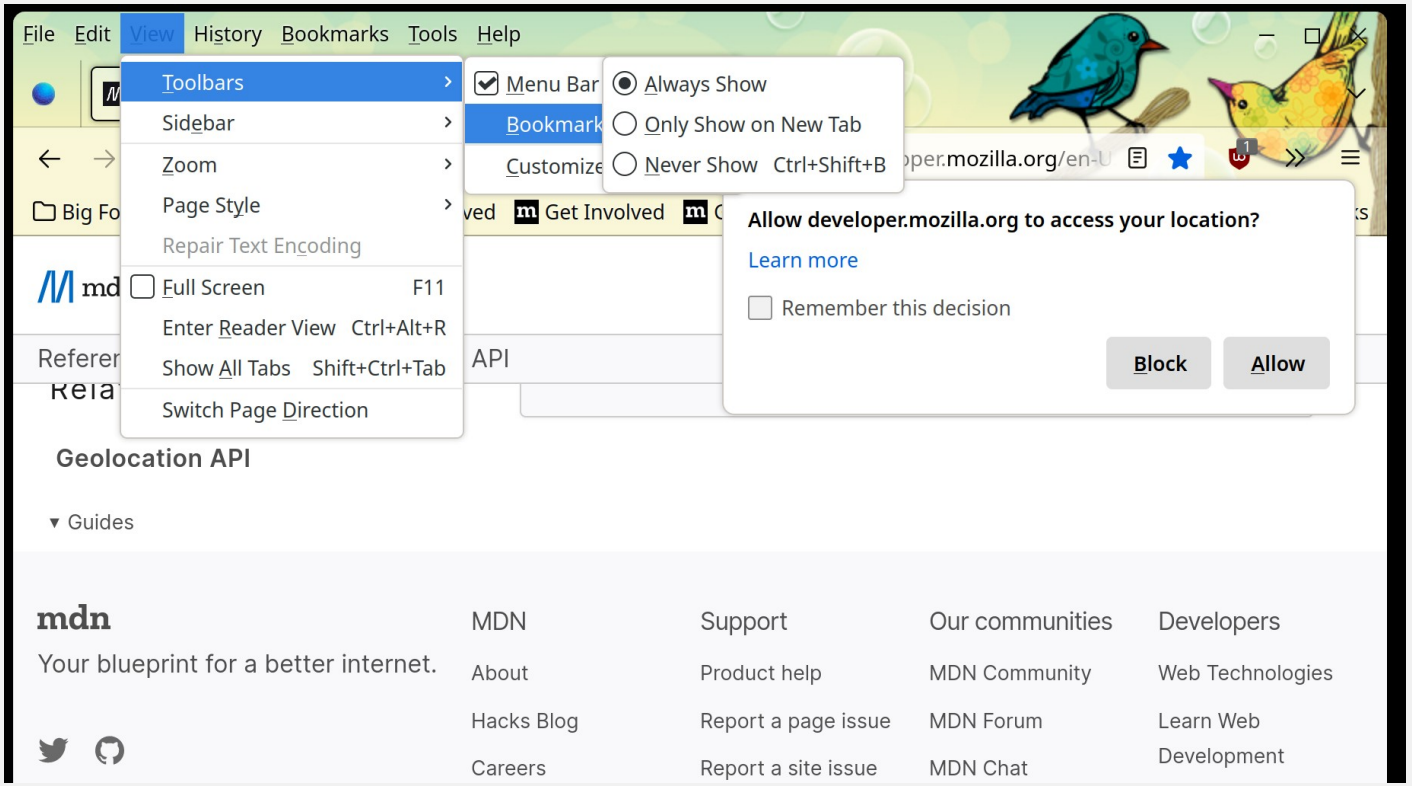

Connecting natural popup chain & independent popup

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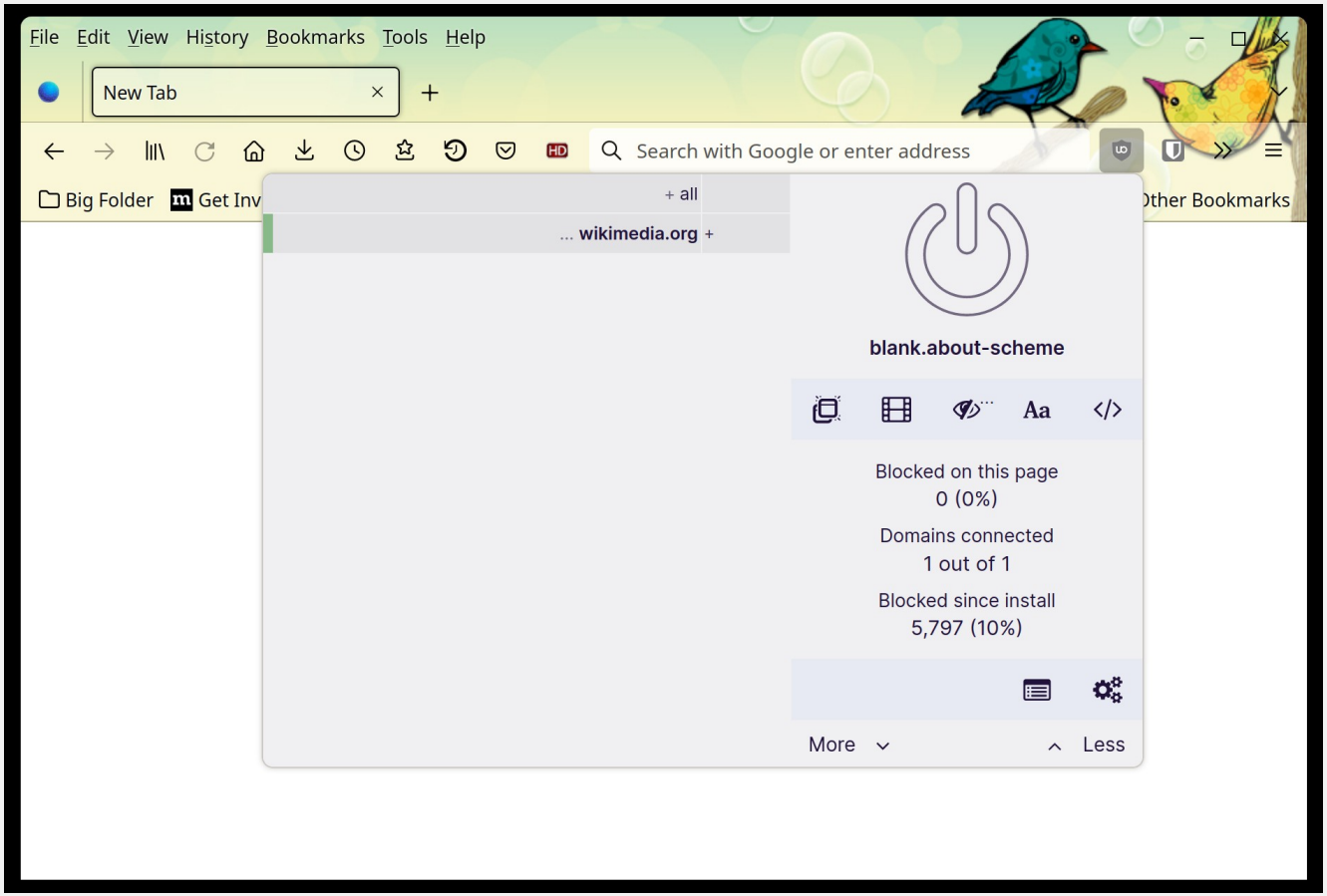

xdg_positioner popup resize

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Further development

- Gtk3 limitations (missing direct rendering, popups resize/move)
  - Move to Gtk4 or backport to Gtk3
- Update automated upstream testing
- Fix proxy to process pings

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