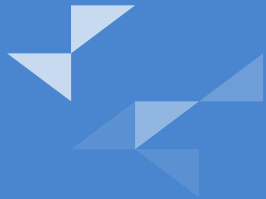


State of the Shell

Carlos Garnacho
Florian Müllner
Georges Stavrakas
Jonas Ådahl
Jonas Dreßler



Input

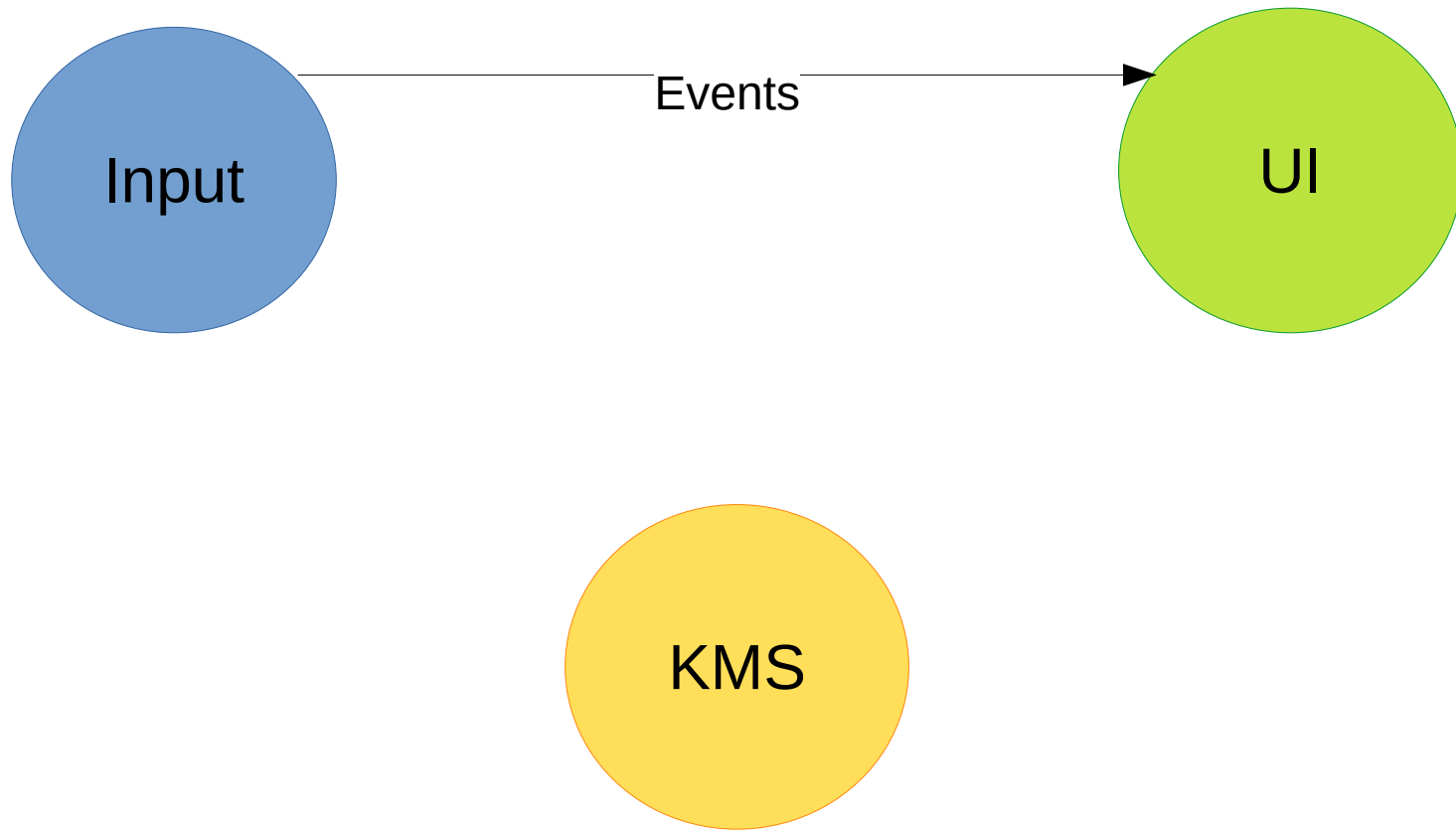


ClutterSeat

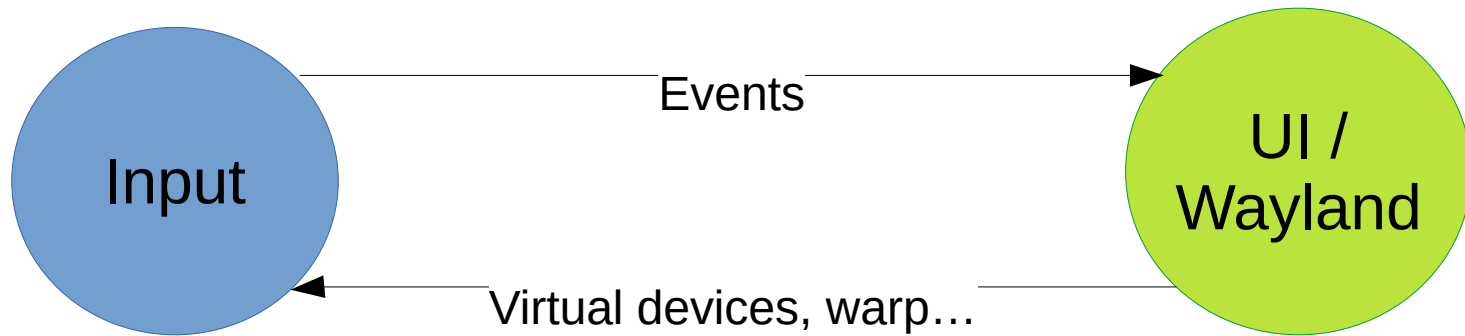
- First step towards input handling refactors
- Owner of devices
- Source of events



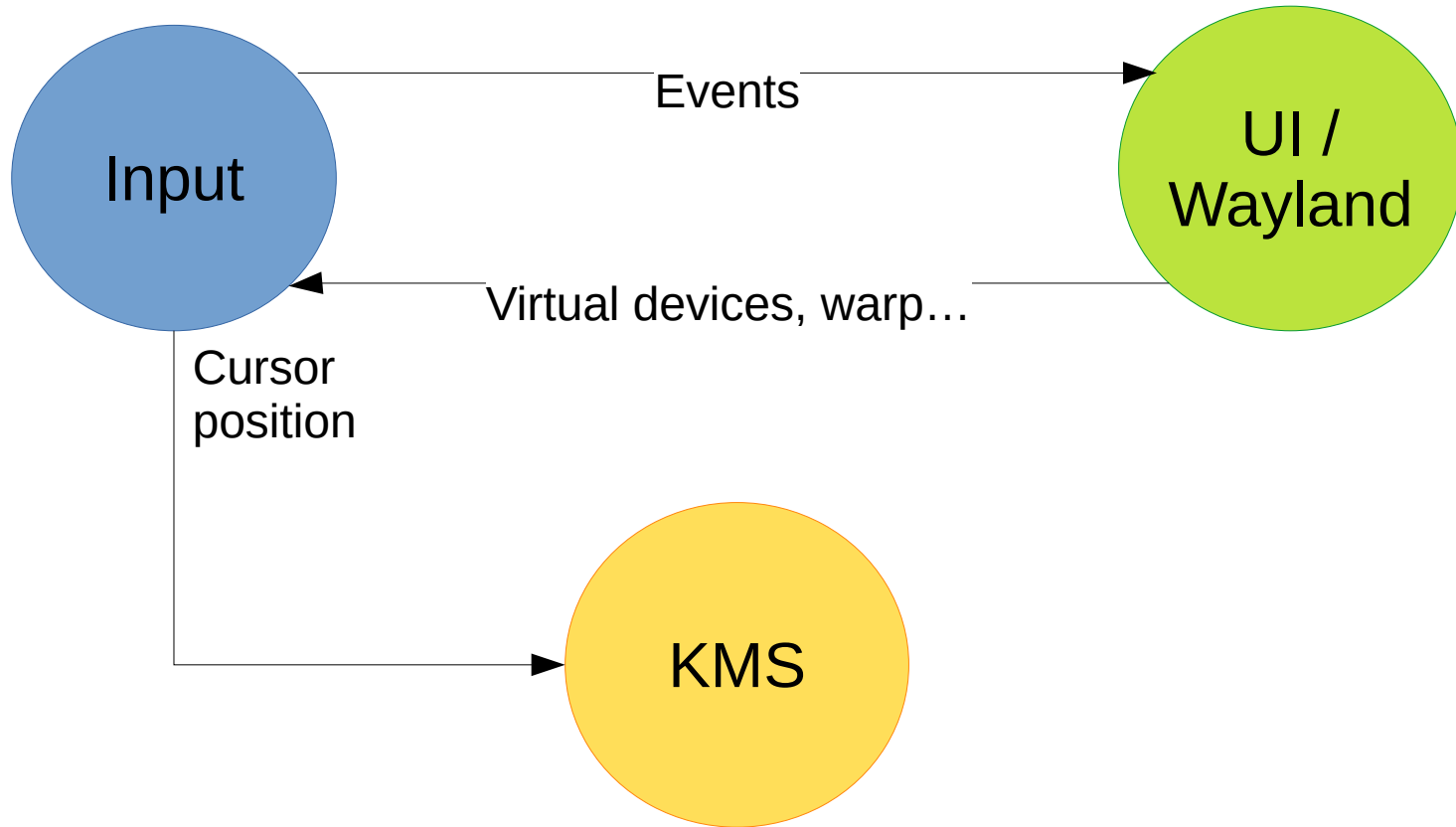
Input Thread



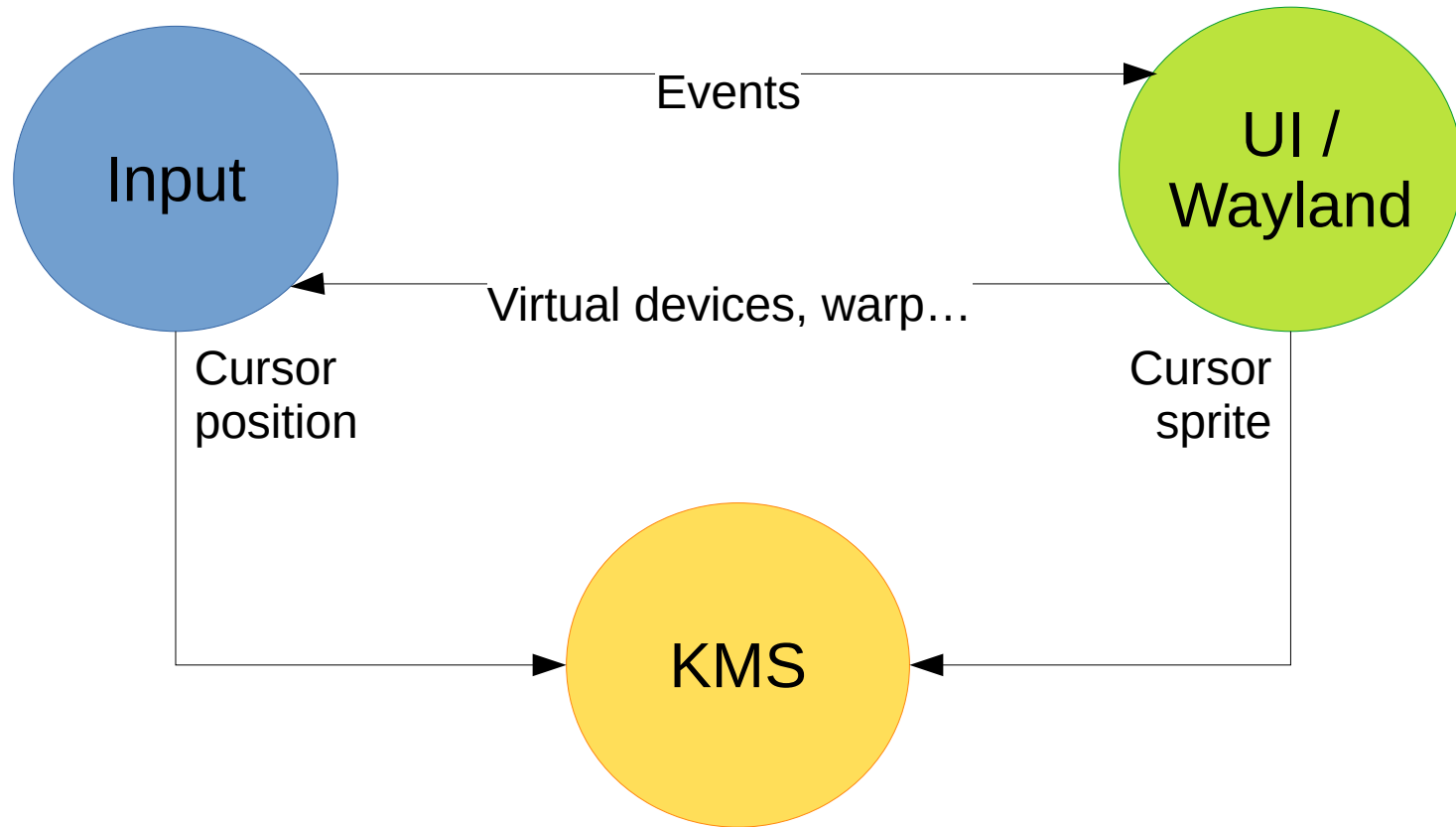
Input Thread



Input Thread



Input Thread



Potential Benefits

- No missed libinput events
- No blocked pointer cursor
- Better handling of high frequency devices
- Reuse of cursor plane (eg. for tablets)



Touch Mode

- Global toggle for touch-only features
 - Onscreen Keyboard
 - Rotation lock
 - ...



Frame Clock



History

- Clutter was originally an application toolkit
 - Each stage draws to a single window
 - A single frame clock driving all the stages
- Worked fine as a X11 compositing window manager
 - Compositing to a single window
 - Not much different from being an X11 application



History

- Enter Wayland and the native backend
 - Quite different from being an application
 - Piece by piece looked less like an application toolkit...
 - ... and more like a compositor toolkit
 - Split up stage into per logical monitor “views”
 - Later split up those up even further into per CRTC
 - Lots of other changes

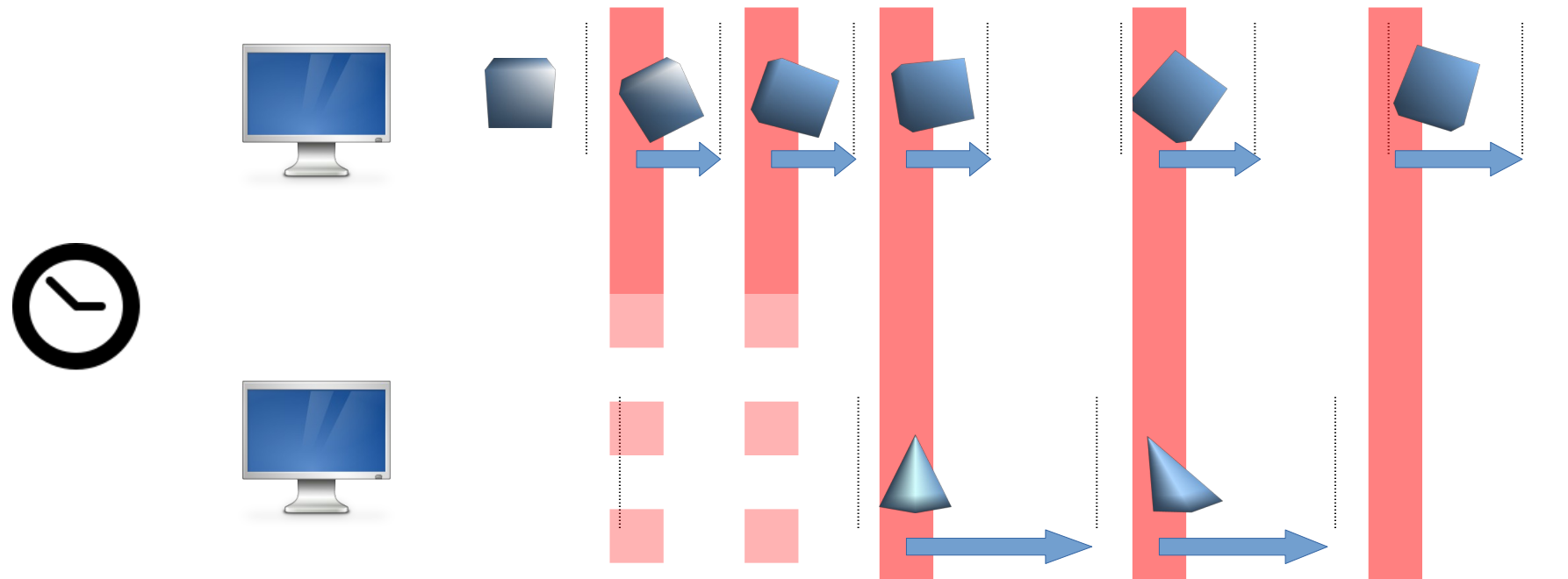


Single Clock Head Aches

- Still using a single frame clock causing issues
 - A monitor is driven by a clock on the GPU that updates at a fixed interval (unless VRR)
 - Multiple monitors clocks not necessarily in sync
 - Different monitors cause the clocks to tick at different speed (60 Hz vs 144 Hz)



Single Frame Clock



Bring out the scissor

- Single frame clock standing in the way for progress
- Monitors waiting for each other to update
- Complicated scheduling mechanisms trying to juggle different clocks and capabilities
- Lets split it up!

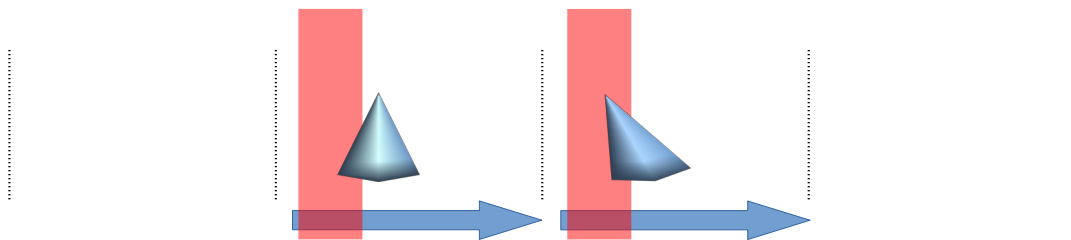
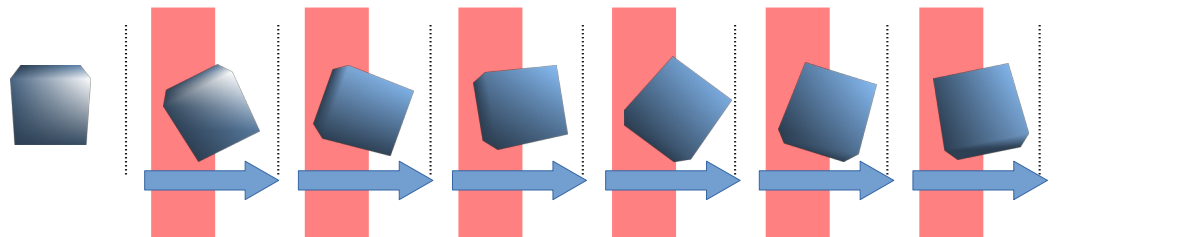


Enter ClutterFrameClock

- Each monitor already represented by a dedicated view on the stage
- Each view gets its own frame clock
- Each frame clock schedules frame for a single monitor



Multiple Frame Clocks



... but that's not enough

- Mutter is not only a compositing toolkit, it's also a compositor GUI toolkit
 - Highly capable animation framework
 - Used extensively by GNOME Shell
 - Assumed a single clock



Making a Connection

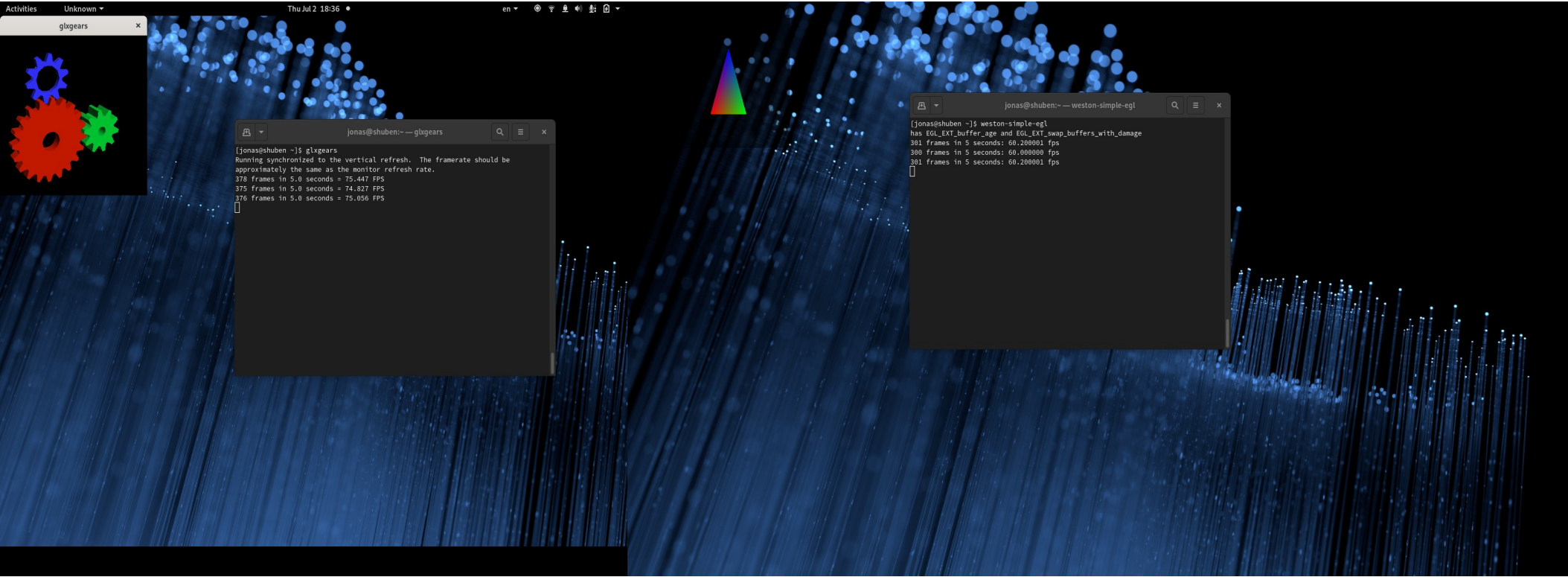
- Each animation in some way tied to an actor
- Each actor tied to a set of stage views
- Each stage view has a clock
- Voilà



Multi-clock GNOME Shell

- GNOME Shell almost completely wraps actor animations as “ease” prototype functions and using `St.Adjustment`
- Making these handle associating an animation with an actor solved the vast majority of multi clock animations transparently
- Very small changes needed to GNOME Shell JavaScript code, likely the same for most extensions





Layout Machinery



Layout Machinery

- Introduced shallow relay layout mechanism (thanks to Daniel)
- Various bugfixes
- Removed ClutterAllocationFlags, which allowed adding an optimization
- Stricter enforcing of Clutters invariants regarding mapped state



DMA-Buf Screencast

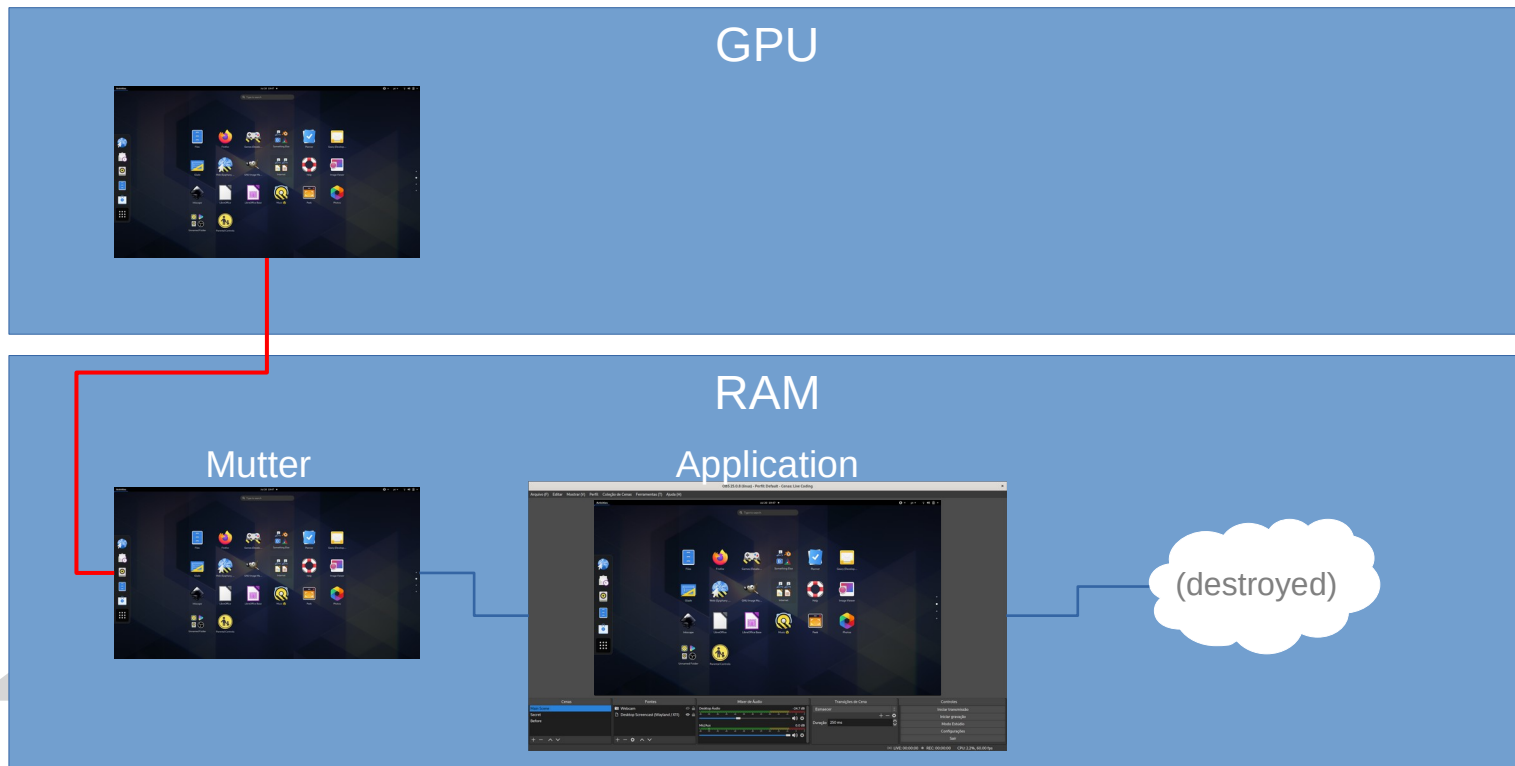


DMA-Buf Screencast

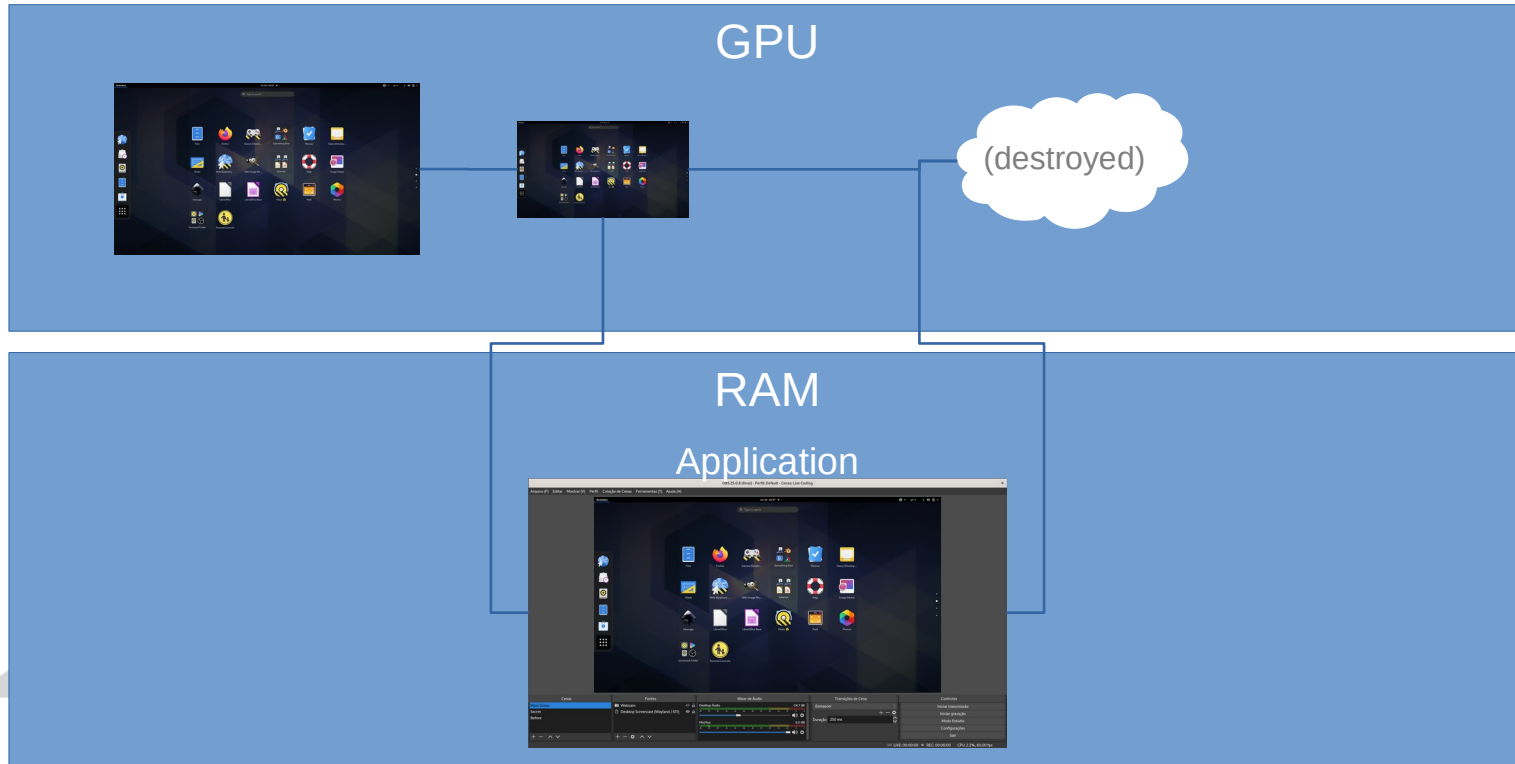
- Avoids downloading buffers from GPU memory to RAM
- Lighter mainloop after rendering
- Smoother screencasting and screensharing experience
- GNOME Shell's built-in recorder now using it too



DMA-Buf Screencast



DMA-Buf Screencast



Paint Nodes

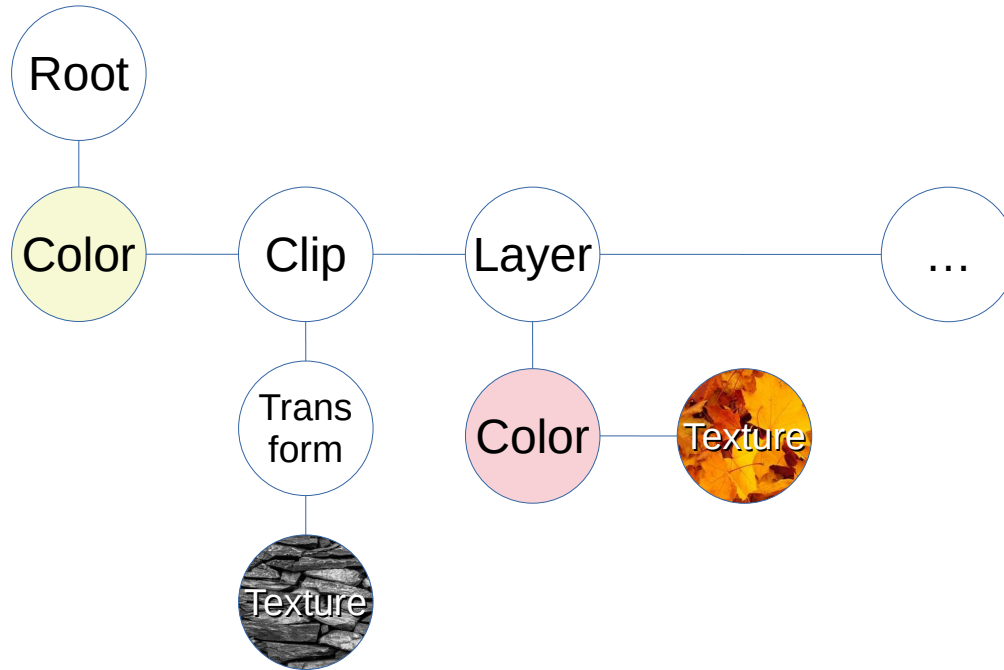


Paint Nodes

- Also known as: Clutter 2.0
- 2-step rendering process:
 1. Collect paint nodes
 2. Recursively paint



Paint Nodes



Paint Nodes

- ClutterEffect fully ported
 - Offscreen effects
 - Shell's unlock screen blur effect
- Next steps:
 - Profiling of subtrees
 - Port GNOME Shell entirely



New Lock Screen





Georges Stavrakas

Benha



Notificação de alarme do Evolution



Customizable App Grid



🔍 Type to search



Files



Firefox



Games (Develop...



Something Else



Planner



Geary (Develop...



Glade



Web (Epiphany ...



GNU Image Ma...



Internet



Help



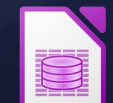
Image Viewer



Inkscape



LibreOffice



LibreOffice Base



Music 🎵



Peek



Photos



Unnamed Folder



Parental Controls

Dialog Redesign

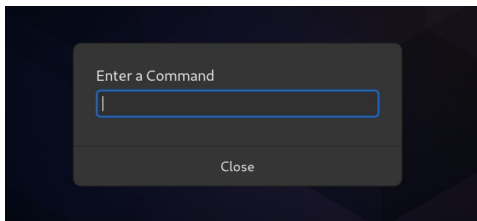


Dialog Redesign

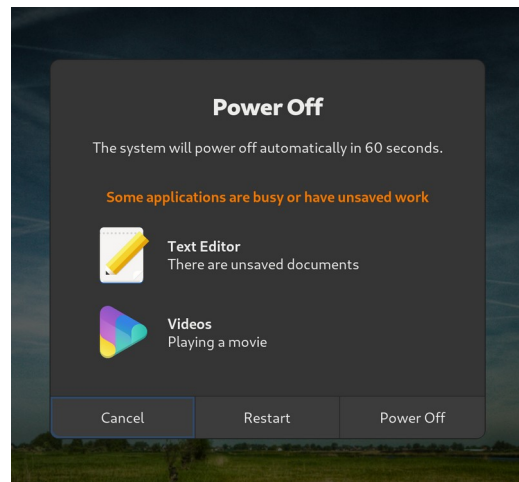
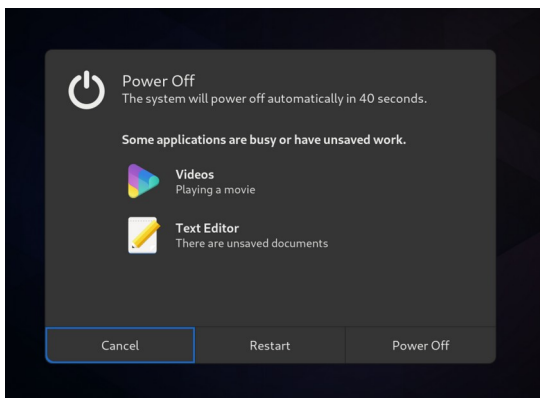
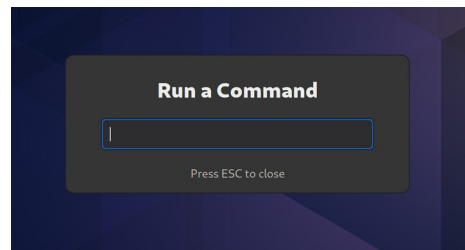
- System dialogs were inconsistent
- Open issue on Gitlab about redoing them
- Design Team did mockups for every dialog (thanks!)
- Landed in GNOME 3.36



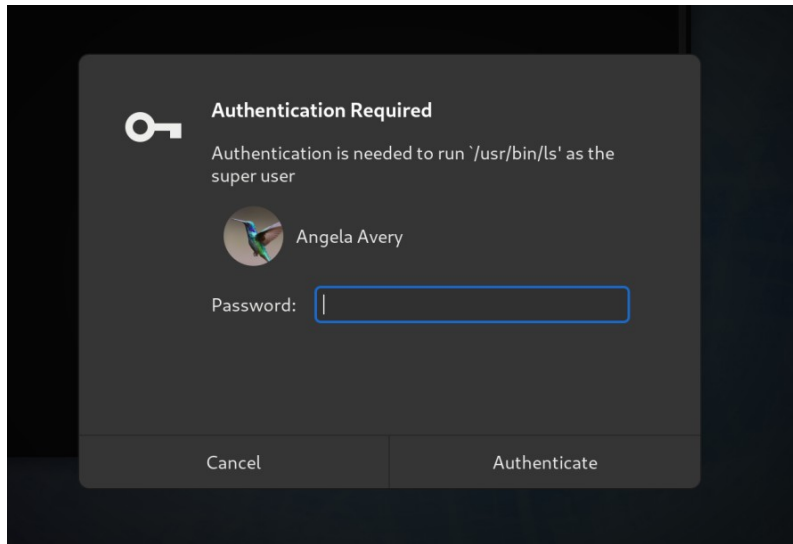
Old



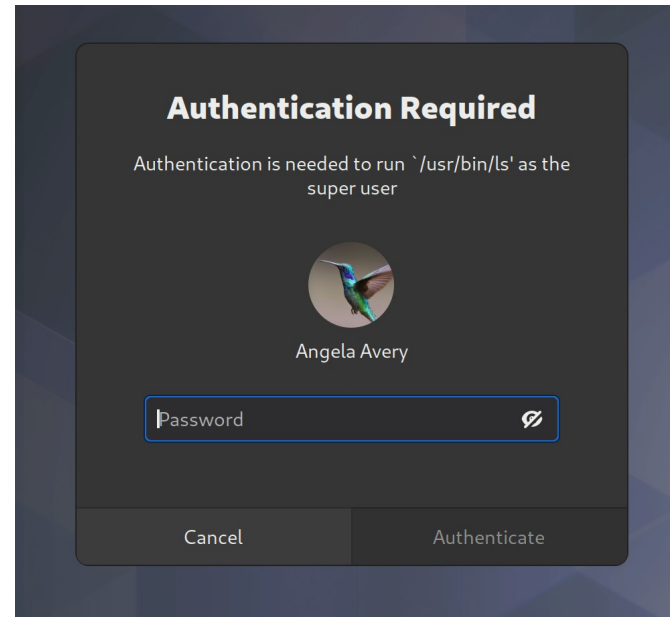
New



Old



New



Workspaces



Workspaces

- Window overlays were positioned statically
- Lead to a few “interesting” bugs with the window titles
- Now positioned using ClutterConstraints (bugs are hopefully gone)



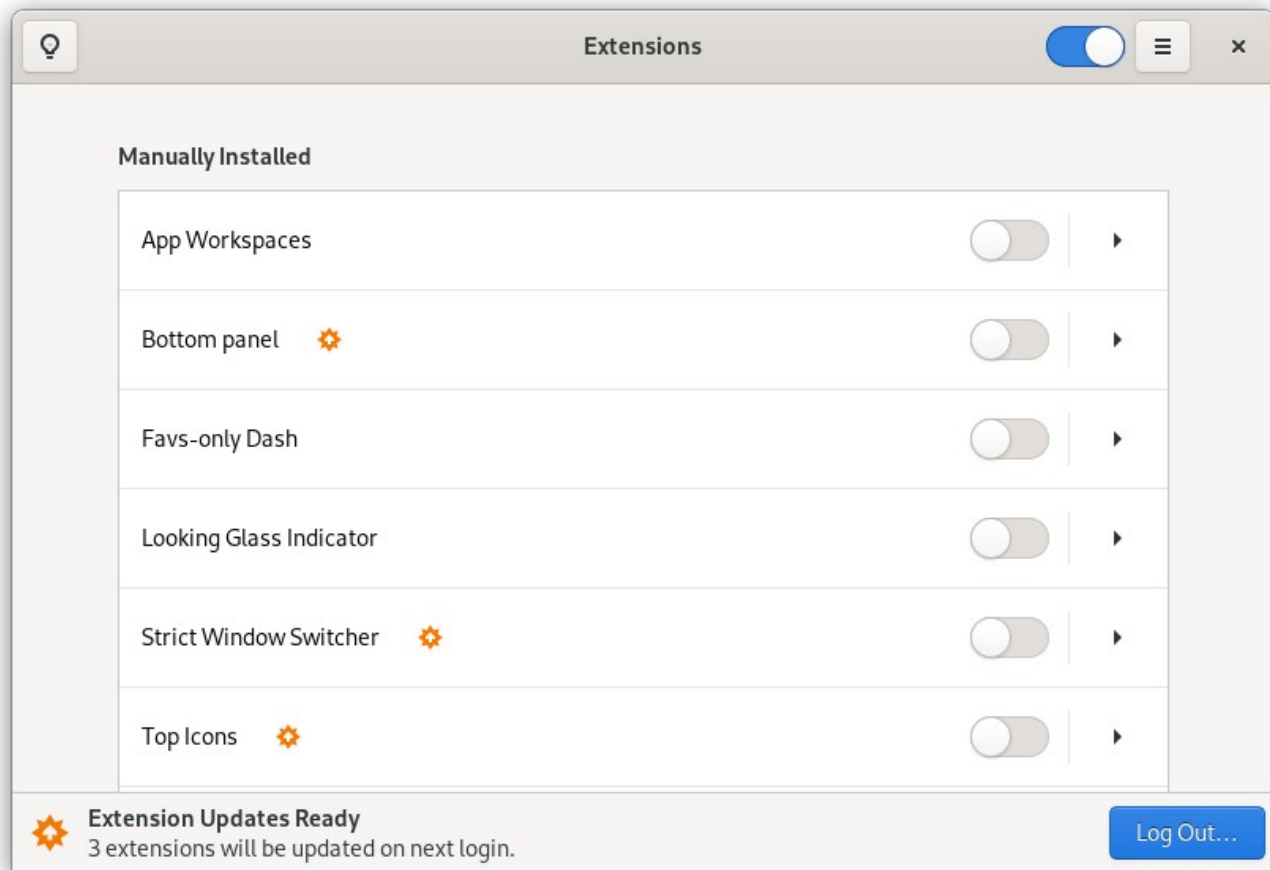
Workspaces

- Window in the overview were also positioned statically
- Quite complicated and old code
- Now positioned using a ClutterLayoutManager
- More separated code, parts of it can be reused elsewhere



Extensions






Extensions


- Built-in updates support
- “New” Extensions app
- New CLI tool
- Available in GNOME 3.36





Calendar Drop-down




 **Damion La Bagh** 35 minutes ago
gnome-shell | BUG Regression: gnome-shell no lon...

 **Reminders** 6 hours ago
Q2 CY20 Company Meeting Wed 07/22/2020 05:00...

 **Reminders** 7 hours ago
Tech Talk Wed 07/22/2020 04:00 pm (1 hour) *oke...

 **Reminders** 7 hours ago
Interview with Kevin Myers Wed 07/22/2020 03:00 ...

 **1 Application Updated** 11 hours ago
GNOME Fonts has been updated.

Wednesday
22 July 2020

July

M	T	W	T	F	S	S
29	30	01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	01	02
03	04	05	06	07	08	09

July 24

GLBTQ+ Paaarty
00:00






GUADEC conference
01:00

World Clocks

Boston	17:26	-6
London	22:26	-1
Coordinated Universal T...	21:26	-2
Bucharest	00:26	+1
Sydney	07:26	+8


Weather

Malaga

00:00	01:00	02:00	03:00	04:00
				
24°	23°	23°	23°	23°

Do Not Disturb ☐

Clear

 GNOME™

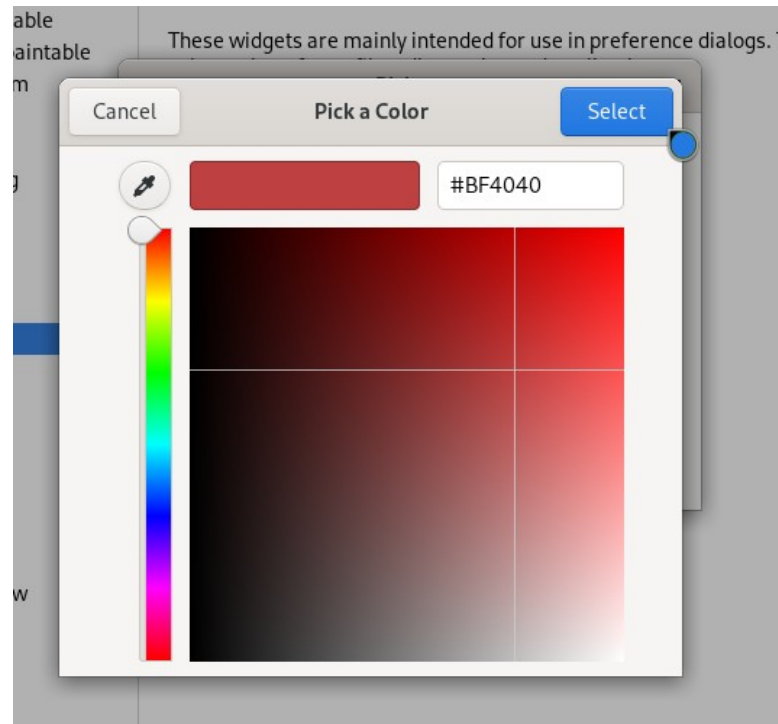
Calendar Drop-down

- Calendar backend improvements (thanks Milan!)
- Separate Events section
- Refined Weather section
- More to come (Hi Mariana!)



...there's more

- Systemd user session improvements
- Parental Controls support
- Color Picker previews
- ...



Q&A



GNOMETM

We Have a Blog!

- blogs.gnome.org/shell-dev/
- Fresh news directly from those who make it!
 - Monthly development summaries
 - Extension developers can benefit from reading it
 - Read, share, and follow!



Thank You!



State of the Shell

Carlos Garnacho
Florian Müllner
Georges Stavrakas
Jonas Ådahl
Jonas Dreßler

