

Servo 2023

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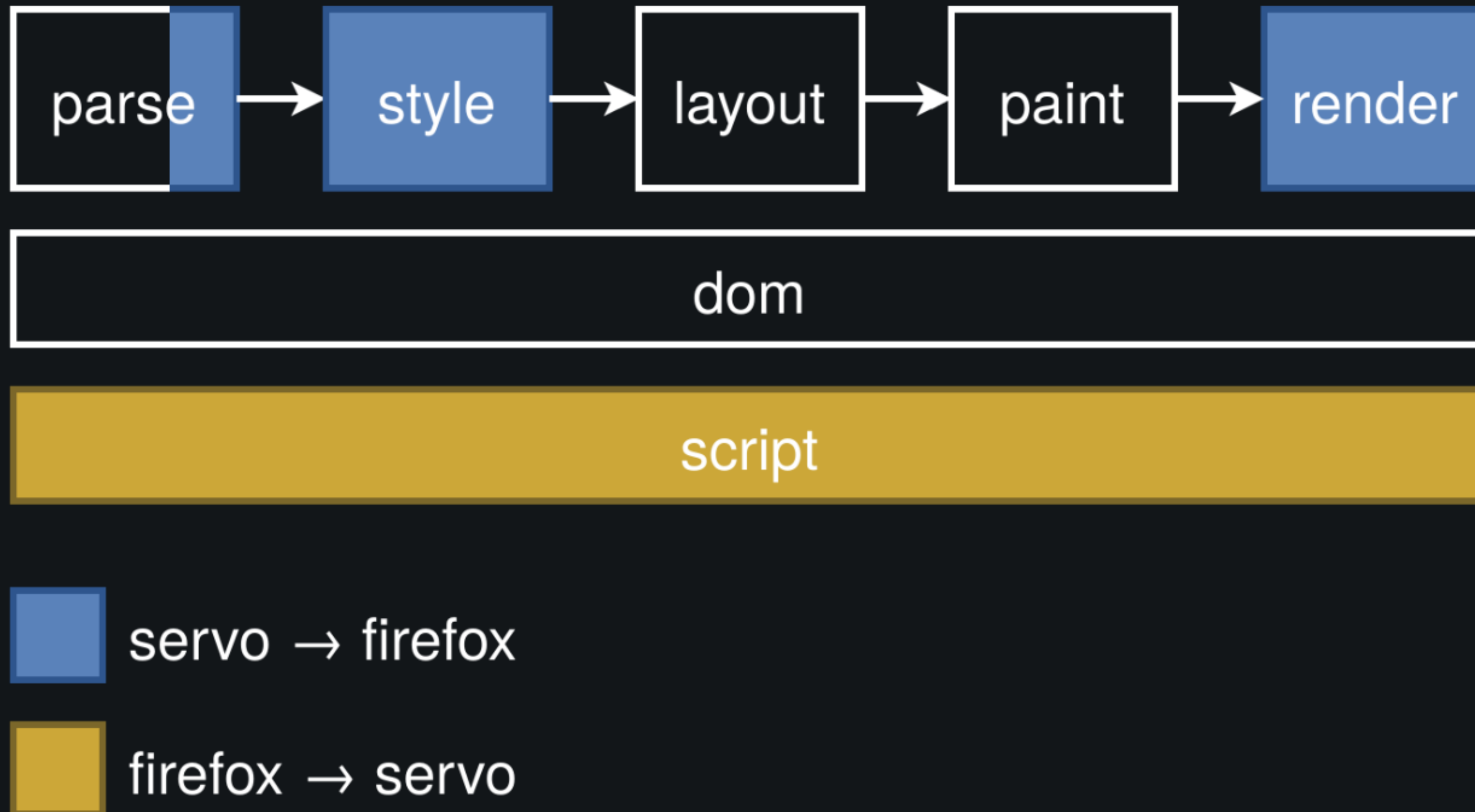
June 2023



Quick recap

- Started in 2012 by Mozilla as a research project
- Since then, Servo has been a vehicle for
 - developing the Rust language
 - experimenting with parallelism
 - taking those lessons back to Firefox
- ...and then the layoffs happened

Servo and Firefox



What now?

- Servo is...
 - an *independent* web engine
 - written (almost) entirely in Rust
 - with parallelism in style and layout
 - designed for modularity from the start
 - designed to allow embedding in the future
- What can we do with that?

Servo <3 embedded

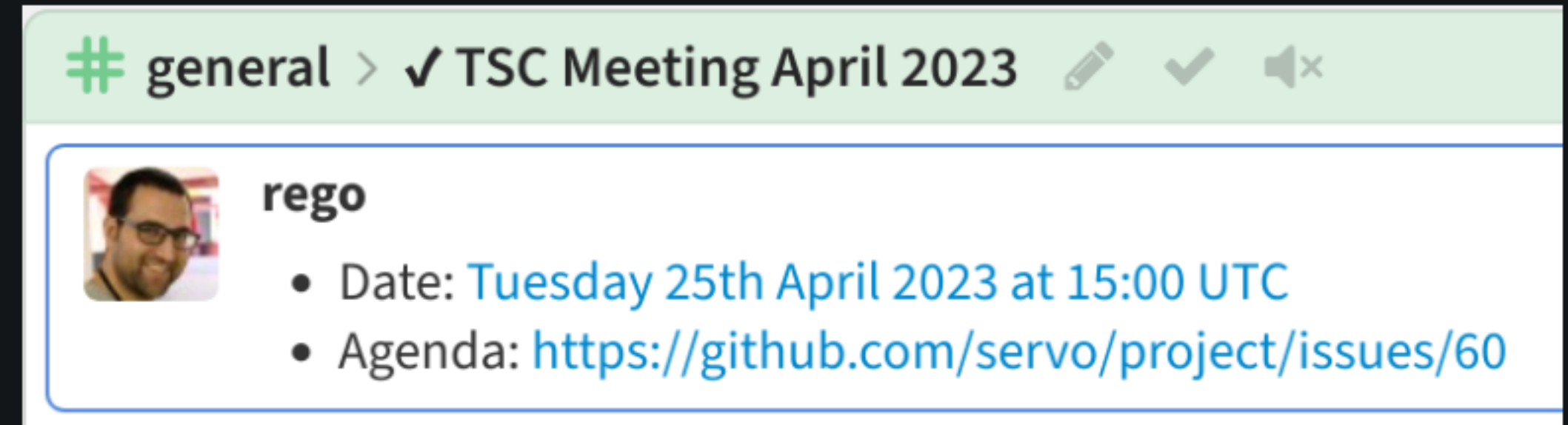
- We need more web engine diversity
- But *general-purpose* engine diversity means taking on Apple, Google, and Mozilla
- On the other hand, the embedded web engine space...
 - is even less diverse — WPE (WebKit) and CEF (Chromium) are the only major players
 - allows for use cases with restricted content

Since the start of 2023

- Restarted the Technical Steering Committee
- Started reconciling the two layout engines
- 328 patches landed in servo/servo alone (vs 223 in 2022)
 - Many improvements to builds and releases
 - Several big dependency updates
 - WPT failures and flaky tests
 - New impl work on Layout 2020
 - Non-Igalia contributors in **bold** :)

Technical Steering Committee

- Oversees Servo's
 - Committers and other roles
 - Design and architecture
 - Infrastructure, outreach, ...
- Now meets **monthly** (dates and times announced on Zulip)
- Anyone can raise points to discuss on GitHub
- Minutes published live on Zulip and on GitHub



Reconciling layout engines

- Layout 2013 still the default, Layout 2020 was left unfinished
- everything between DOM+style and WebRender
- ✗ 2020 does not yet support floats or incremental layout
- ✓ 2020 uses opportunistic parallelism, not eager parallelism
- ✓ 2020 splits flow tree into separate box and fragment trees
- ✓ 2020 generates a WebRender display list directly
- ✓ 2020 better aligns its naming and architecture with specs

Reconciling layout engines

- We propose a gradual transition to Layout 2020
 1. Improve support for Layout 2020 in CI and releases
 2. Implement some smaller features in Layout 2020
 3. Decision time: should we remove Layout 2013?
 4. Implement floats and other complex features
- More details in [our report](#)

WPT failures and flaky tests

- Retry unexpected results to find random flakes (mrobinson)
- Support for giving tests multiple expectations (mrobinson)
- Fixed flakiness in scrolling (mrobinson)
- Fixed flakiness in hit testing (mrobinson)
- Fixed flakiness in animations (mrobinson)
- Named access on the window object (**pylbrecht**, **yvt**, delan)
- (wip) CSS Font Loading API (mukilan)

Builds and releases

- New test result comments on pull requests (mrobinson)
- New intermittents dashboard for flaky tests (delan)
- Several improvements to builds in forks (**sagudev**)
- Several improvements to WPT upstreaming (mrobinson)
- mach try (**sagudev**)
- sccache on Linux and macOS (**sagudev**)

Dependency updates

- *truetype* crate (**IvanUkhov**)
- Python 3.11 (**andreubotella**)
- Rust toolchain (**mukilan**)
- *euclid* crate (**mrobinson**)
- *winit* crate (**atomgardner**)
- WebIDL.py (**sagudev**)
- many crate dedupes (**atouchet**)
- (wip) WebRender (**mrobinson**)

New progress on Layout 2020

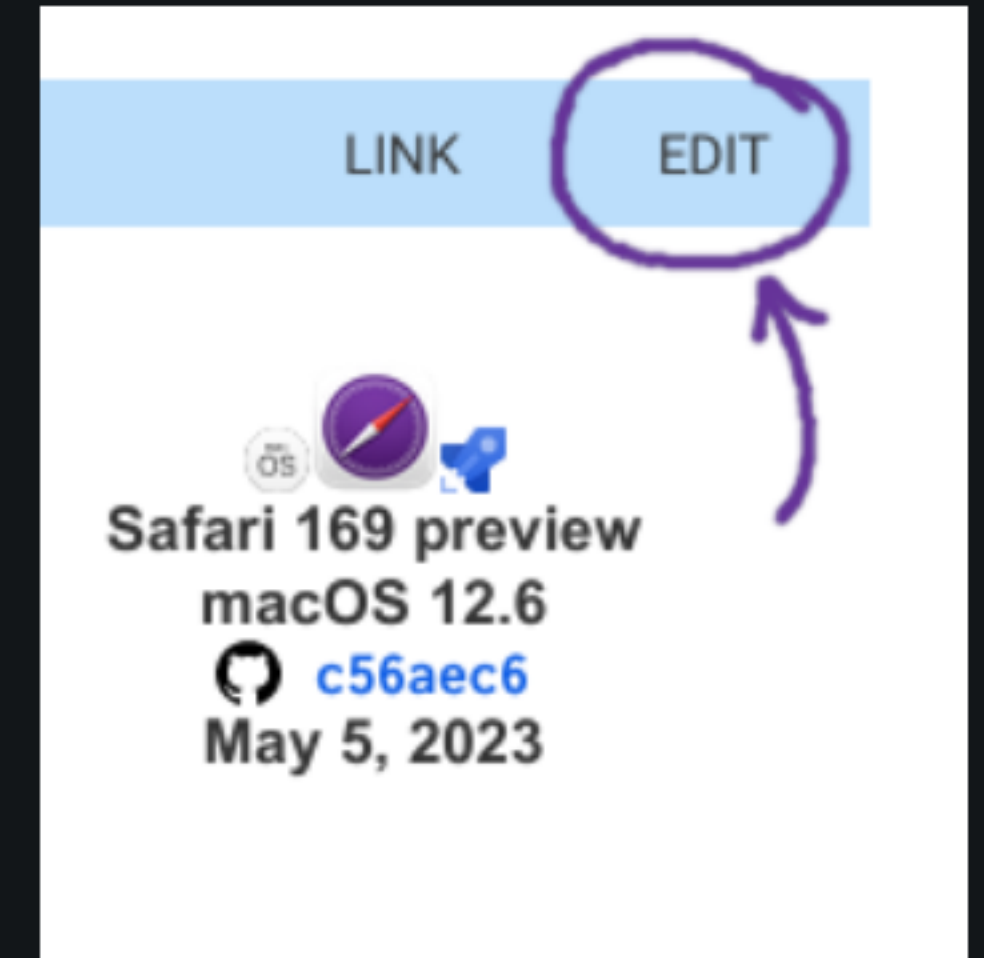
- mach support (mrobinson)
- partial CI support (mrobinson)
- iframes (mrobinson)
- ‘{min,max}-width’ + ‘{min,max}-height’ (delan)
- ‘text-indent’ (Loirooriol)
- ‘outline’ + ‘outline-offset’ (Loirooriol)
- ‘text-decoration’ improvements (Loirooriol)

Next up for Layout 2020

- position: sticky
- 'vertical-align'
- 'white-space'
- counters
- floats (eventually)

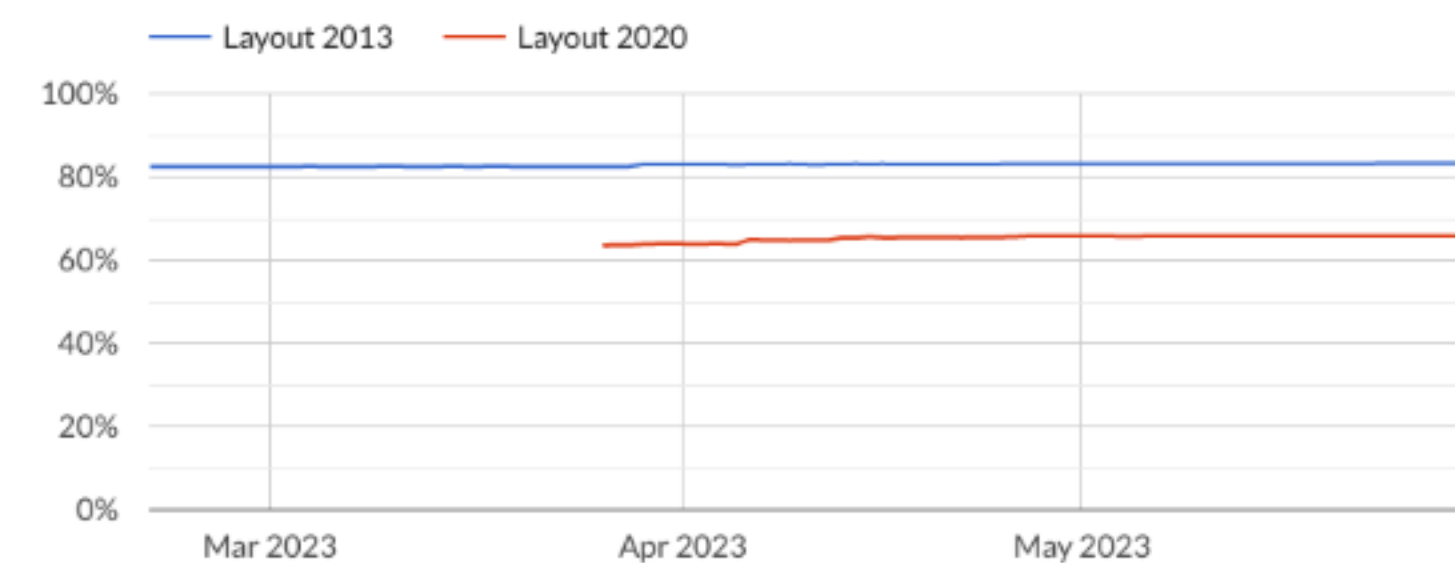
Servo on wpt.fyi

- wpt.fyi → EDIT → ADD PRODUCT → Servo → SUBMIT
- Great for drilling down specs → tests → subtests
- Not so great for tracking progress over time (but it's possible)
- Layout 2013 only for now, Layout 2020 coming soon



Servo WPT dashboard

- ✓ Tracks progress over time
- ✓ Supports both Layout 2013 and 2020
- Has filters for our focus areas:
 - CSS2: abspos, box-display, floats, linebox, margin-padding-clear, normal-flow, positioning
 - CSSOM
 - CSS Position



FOCUS AREA	LAYOUT 2013	LAYOUT 2020
CSS2 focus folders	83.2%	65.8%
-- /css/CSS2/abspos/	40.3%	86.5%
-- /css/CSS2/box-display/	81.1%	65.5%
-- /css/CSS2/floats/	52.8%	22.9%
-- /css/CSS2/floats-clear/	67.7%	20.2%
-- /css/CSS2/linebox/	86.1%	52.3%
-- /css/CSS2/margin-padding-clear/	90.6%	67.6%
-- /css/CSS2/normal-flow/	87.5%	74.0%
-- /css/CSS2/positioning/	81.1%	82.5%
CSSOM	56.6%	58.0%
CSS Position	42.8%	38.8%
All CSS tests	62.8%	56.3%
All WPT tests	58.1%	54.3%

Demos in Layout 2020

- Comparisons with Layout 2013
 - Acid1
 - Acid2

Demos in Layout 2020

- Servo Experiments — demo.servo.org
 - [Mosaic Gallery](#) — parallel style
 - [TWGL Tunnel](#) — WebGL

Demos in Layout 2020

These slides were rendered in Layout 2020 :)

Contributing

- HACKING QUICKSTART.md + Zulip
- Hack on layout (maybe after we switch to Layout 2020)
- Hack on other parts of Servo too :)
 - especially DOM, CSSOM, navigation, iframes, devtools
 - #29831 — Devtools support is broken
- Make cool demos for Servo Experiments
- Report any bugs you find on GitHub

Thanks!

Slides: <https://go.daz.cat/jthha>