Servo 2023

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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

- parse → style → layout → paint → render
- dom
- script

- servo → firefox
- firefox → servo
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
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](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](Servo Experiments)
- Report any bugs you find on [GitHub](GitHub)
Thanks!

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