Blitz

A lightweight, modular, extensible web renderer
What is Dioxus

• “React” but in Rust
• Renders to
  • Web (WASM)
  • Webview (IPC)
• Until now there has been no “native” rendering
What is Blitz

• An HTML/CSS renderer
  • Think: webview without JavaScript
• Similar: Electron, Tauri, Sciter, Ultralight, Litehtml
• Built on Servo and Rust UI ecosystem components
  • stylo, html5ever, taffy, parley, accesskit, vello, wgpu
• Targeting Application UI (+ Embedding) use cases
• Lightweight (~12mb binary size)
• Modular
Architecture

Drivers

- Dioxus Driver
  - dioxus-core
  - dioxus-std
- HTML / MD Driver
  - html5ever
  - comrak

Renderer(s)

- Blitz Vello
- WebRender
- Skia
- Custom

Blitz core

- Blitz DOM
- Stylo
- Taffy
- Parley
- AccessKit
- Image
- USVG?
Ecosystem-first Modularity

• Using existing solutions from the ecosystem
• Contributing back to those solutions
• Making first-party code usable standalone
• Ecosystem compatible licensing (MIT/Apache2.0)
• Build only what you need:
  • Video support, Image formats (incl. SVG), Layout algorithms, CSS property support
• Extend with own implementations
• Bring your own renderer
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<thead>
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<th>File</th>
<th>Size</th>
<th>Crate</th>
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<td>10.2MiB script</td>
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<tr>
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<td>6.6%</td>
<td>8.1MiB mozjs_sys</td>
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<td></td>
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<td></td>
<td>2.2%</td>
<td>2.6MiB style</td>
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<td>2.1MiB [Unknown]</td>
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Electron: ~130mb  Ultralight: ~22mb  Sciter: ~34mb
CSS Support (Stylo)

• Huge feature set:
  • Parsing, selector resolution, inheritance, media queries
• Very fast + reliable (but heavy)
• Neat trait-based API

BUT:
• Poor documentation
• Features not in servo disabled
Rendering (Vello + WGPU)

- Built on WGPU
- Innovative: compute shaders
- High performance (120fps)
- Immature (crashes, features)

Renderers are pluggable

-> Webrender, Skia, BYO (e.g. Bevy)
Text Support (Parley)

- Pure rust stack
  - Skrifa, Fontique, Swash (RustyBuzz?), Parley
- System font enumeration
- Shaping, bidi aware layout
- Selection/Editing *(Soon!)*
- Inline-block

Not yet integrated into Blitz.

*(inline-block, tree lowering)*

Lots to add: wrapping modes, padding/border/margin support, floats.
User Research Is Storytelling

How can user experience researchers make sure their voices are heard and their work is valued? By telling a good story. Gerry Duffy guides us through the thickets of research as storytelling by showing us how to recast an oft-maligned discipline as an opportunity to craft a convincing and exciting narrative.

To Ignite a Personalization Practice, Run this Prepersonalization Workshop

Looking to tailor your product to individual users’ needs? In this article, Colin Eagan and Jeffrey MacIntyre walk you through their approach to aligning different stakeholders toward the common goal of personalized user experiences.
Layout (Taffy)

- Flexbox + CSS Grid (+ Block)
- Trait based API
- Coded “to the spec”
- 1000+ tests (but no WPT)

The sky is the limit:
- Tables, Subgrid, Masonry, “Stretch”
- Parallel layout

WPT:
- Cannot run WPT due to lack of scripting support
- Want to introduce new “layout ref” test type (+ make layout tests script-free)
Integration with Servo?
Gecko?
Let’s chat
Roadmap

• Text / Inline layout / text input (parley)
• Font loading (system & web)
• Event handling & Interactivity
• SVG support
• calc(), content-box, static position
• Custom widgets
• Performance and Robustness
• Devtools
Get in touch

GitHub: DioxusLabs/blitz
Dioxus Discord: https://discord.gg/U4TYsKdN
Servo Zulip: https://servo.zulipchat.com
Linebender Zulip: https://xi.zulipchat.com
Social media: @nicoburns (Github, Reddit, Twitter)
Email: hackfest@nicoburns.com