

# Secure and Reliable Apps

Using Tauri, Rust and Elm

Jonas Kruckenberg - June 5th 2023 @ Lambda Days

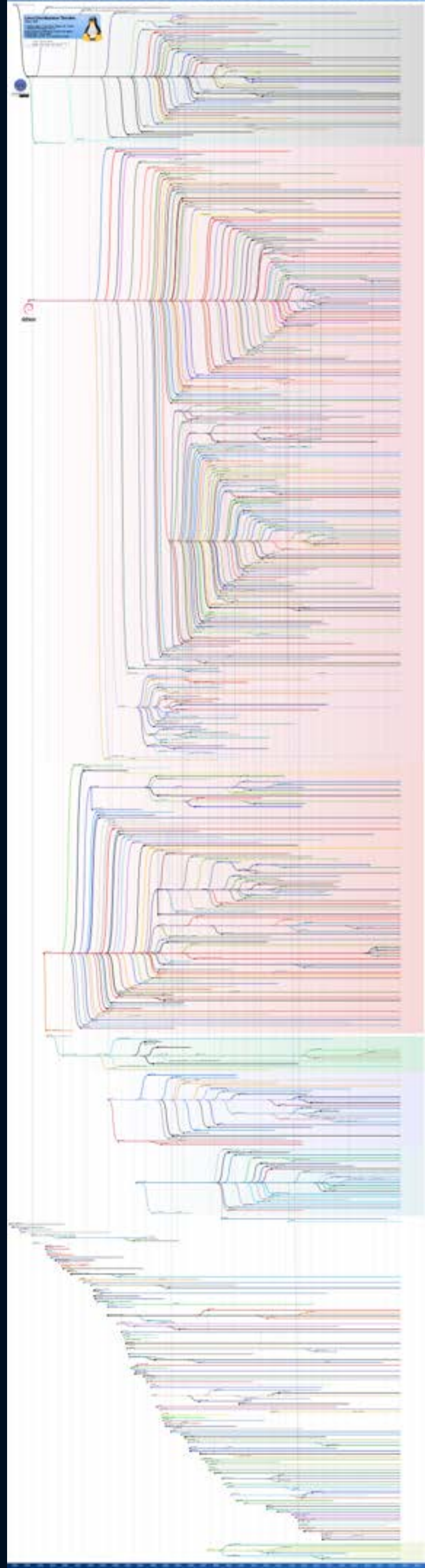




# Users Expect Your App Everywhere



iOS



# So many options



Flutter



Xamarin



APACHE  
CORDOVA™



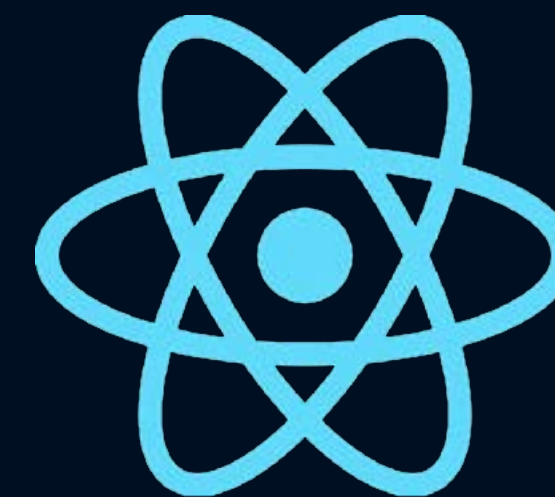
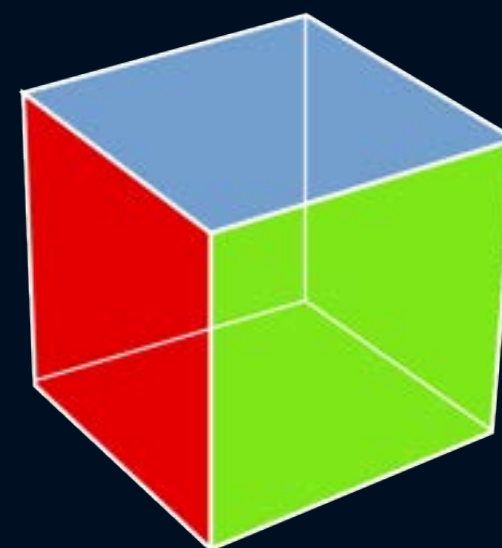
Swift



**TAURI**



ELECTRON



React Native



+



iOS





Why Rust?

# Rust Is Practical

- Strong compile-time guarantees
- Great tooling and ecosystem
- Integrates well with other languages

# Rust Is Efficient

- Zero-cost abstractions
- No garbage-collection or manual memory management

**Table 4.** Normalized global results for Energy, Time, and Memory

Total					
	Energy		Time		Mb
(c) C	1.00	(c) C	1.00	(c) Pascal	1.00
(c) Rust	1.03	(c) Rust	1.04	(c) Go	1.05
(c) C++	1.34	(c) C++	1.56	(c) C	1.17
(c) Ada	1.70	(c) Ada	1.85	(c) Fortran	1.24
(v) Java	1.98	(v) Java	1.89	(c) C++	1.34
(c) Pascal	2.14	(c) Chapel	2.14	(c) Ada	1.47
(c) Chapel	2.18	(c) Go	2.83	(c) Rust	1.54
(v) Lisp	2.27	(c) Pascal	3.02	(v) Lisp	1.92
(c) Ocaml	2.40	(c) Ocaml	3.09	(c) Haskell	2.45
(c) Fortran	2.52	(v) C#	3.14	(i) PHP	2.57
(c) Swift	2.79	(v) Lisp	3.40	(c) Swift	2.71
(c) Haskell	3.10	(c) Haskell	3.55	(i) Python	2.80
(v) C#	3.14	(c) Swift	4.20	(c) Ocaml	2.82
(c) Go	3.23	(c) Fortran	4.20	(v) C#	2.85
(i) Dart	3.83	(v) F#	6.30	(i) Hack	3.34
(v) F#	4.13	(i) JavaScript	6.52	(v) Racket	3.52
(i) JavaScript	4.45	(i) Dart	6.67	(i) Ruby	3.97
(v) Racket	7.91	(v) Racket	11.27	(c) Chapel	4.00
(i) TypeScript	21.50	(i) Hack	26.99	(v) F#	4.25
(i) Hack	24.02	(i) PHP	27.64	(i) JavaScript	4.59
(i) PHP	29.30	(v) Erlang	36.71	(i) TypeScript	4.69
(v) Erlang	42.23	(i) Jruby	43.44	(v) Java	6.01
(i) Lua	45.98	(i) TypeScript	46.20	(i) Perl	6.62
(i) Jruby	46.54	(i) Ruby	59.34	(i) Lua	6.72
(i) Ruby	69.91	(i) Perl	65.79	(v) Erlang	7.20
(i) Python	75.88	(i) Python	71.90	(i) Dart	8.64
(i) Perl	79.58	(i) Lua	82.91	(i) Jruby	19.84



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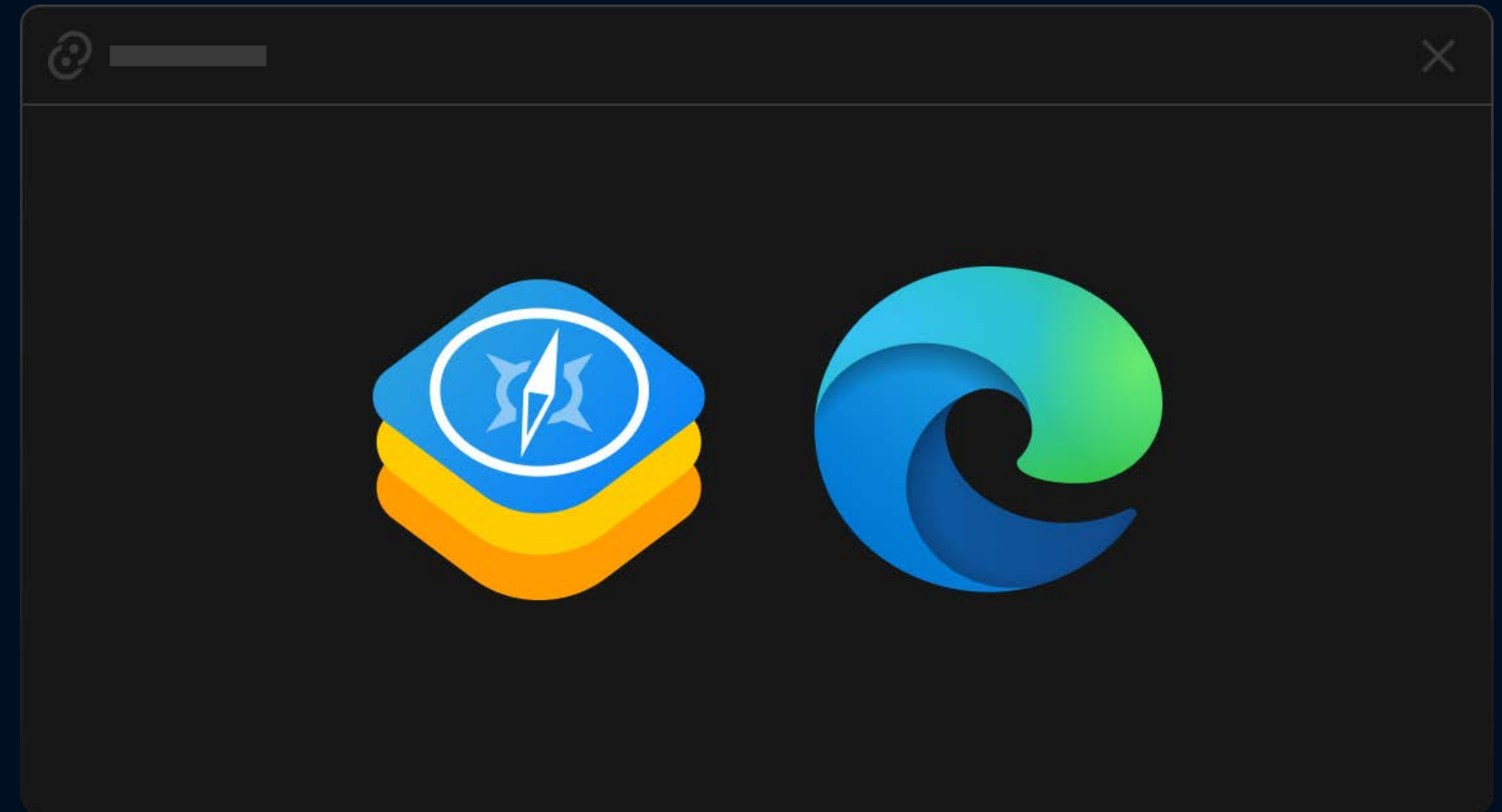
# Rust Is ???



**How Does It Work?**

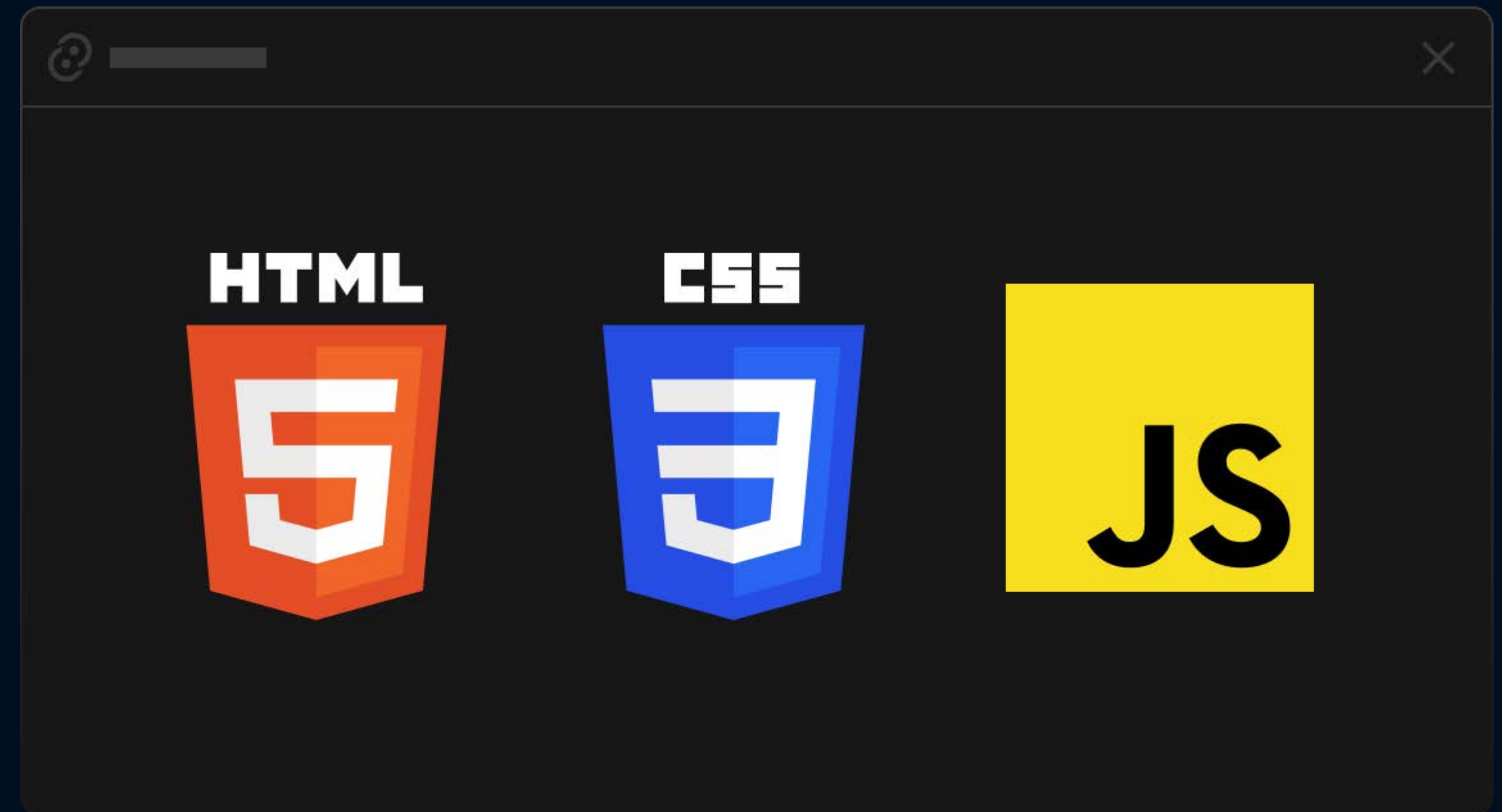
# Leverage HTML and CSS

- Use System Webviews pre-installed on each OS



# Leverage HTML and CSS

- Use System Webviews pre-installed on each OS
- Render HTML, CSS, JS





Window Creation Library

- Uses TAO to create windows, menus, system trays





# WRV

Webview Rendering Library

- Uses TAO to create windows, menus, system trays
- Uses WRV to render the UI





- Uses TAO to create windows, menus, system trays
- Uses WRY to render the UI
- Bundles your Web Assets
- Additional APIs







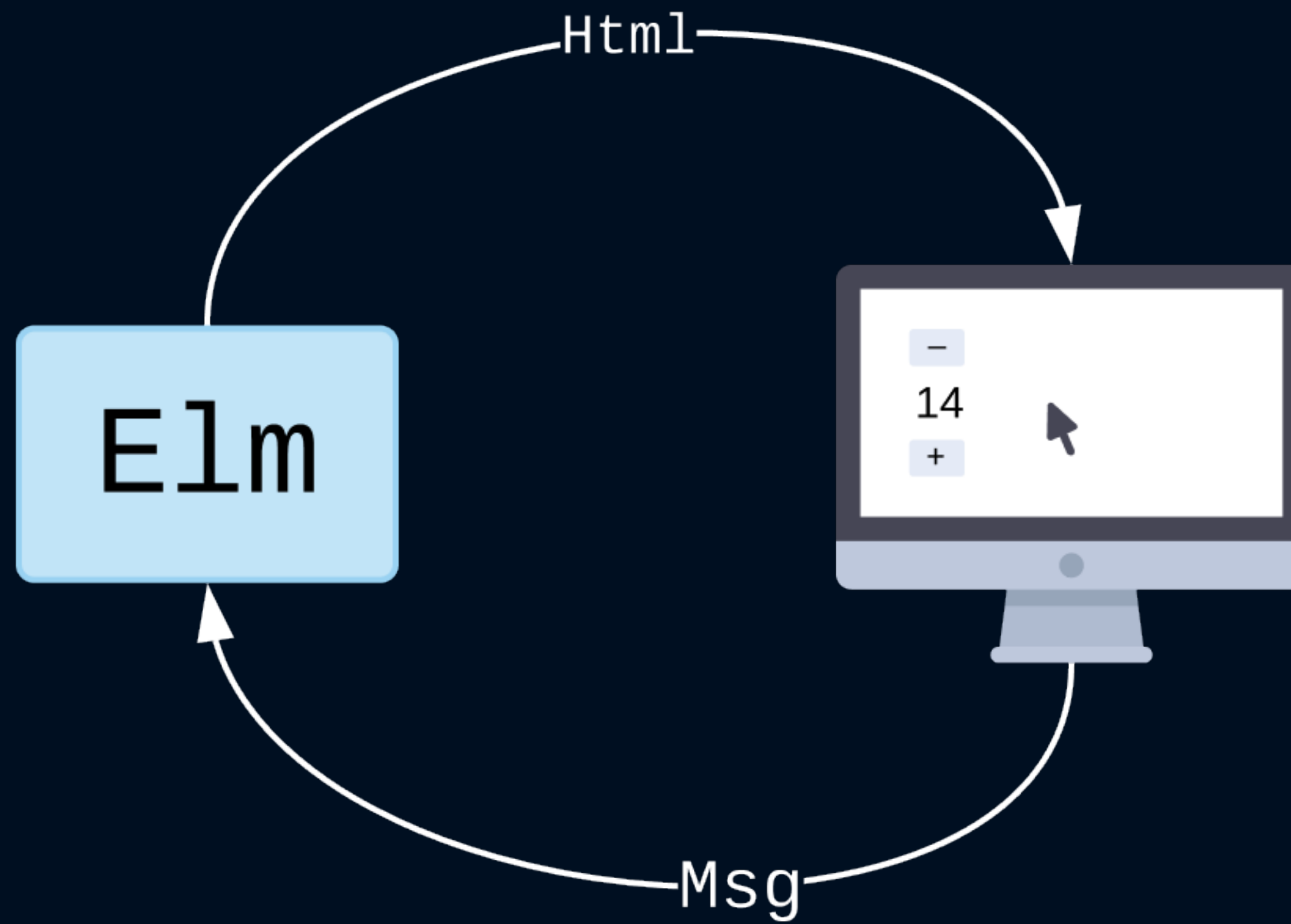
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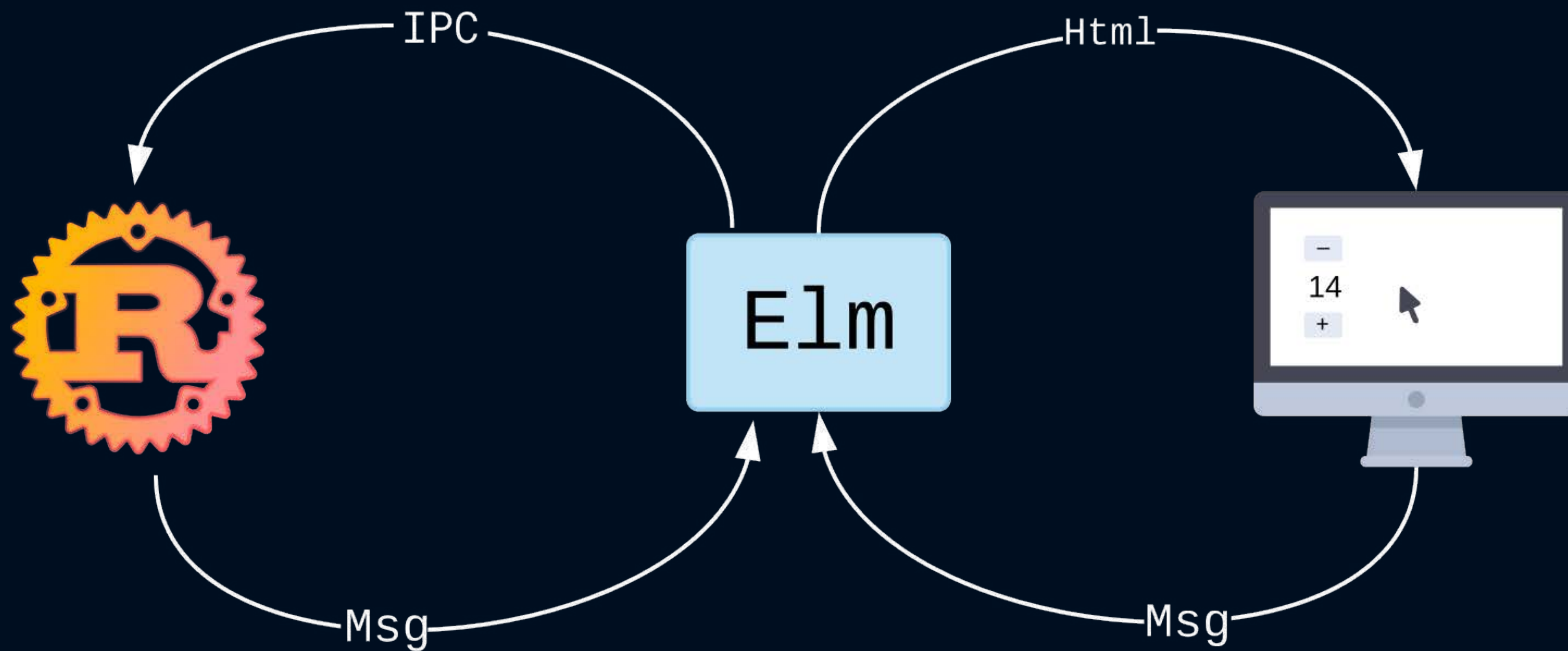






**Inter Process Communication**





**Demo Time!**

# What's Next?

- Typesafe IPC bridge
- First-class support for Elm
- Rust  $\leftrightarrow$  FP languages Interop

# Thanks!

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