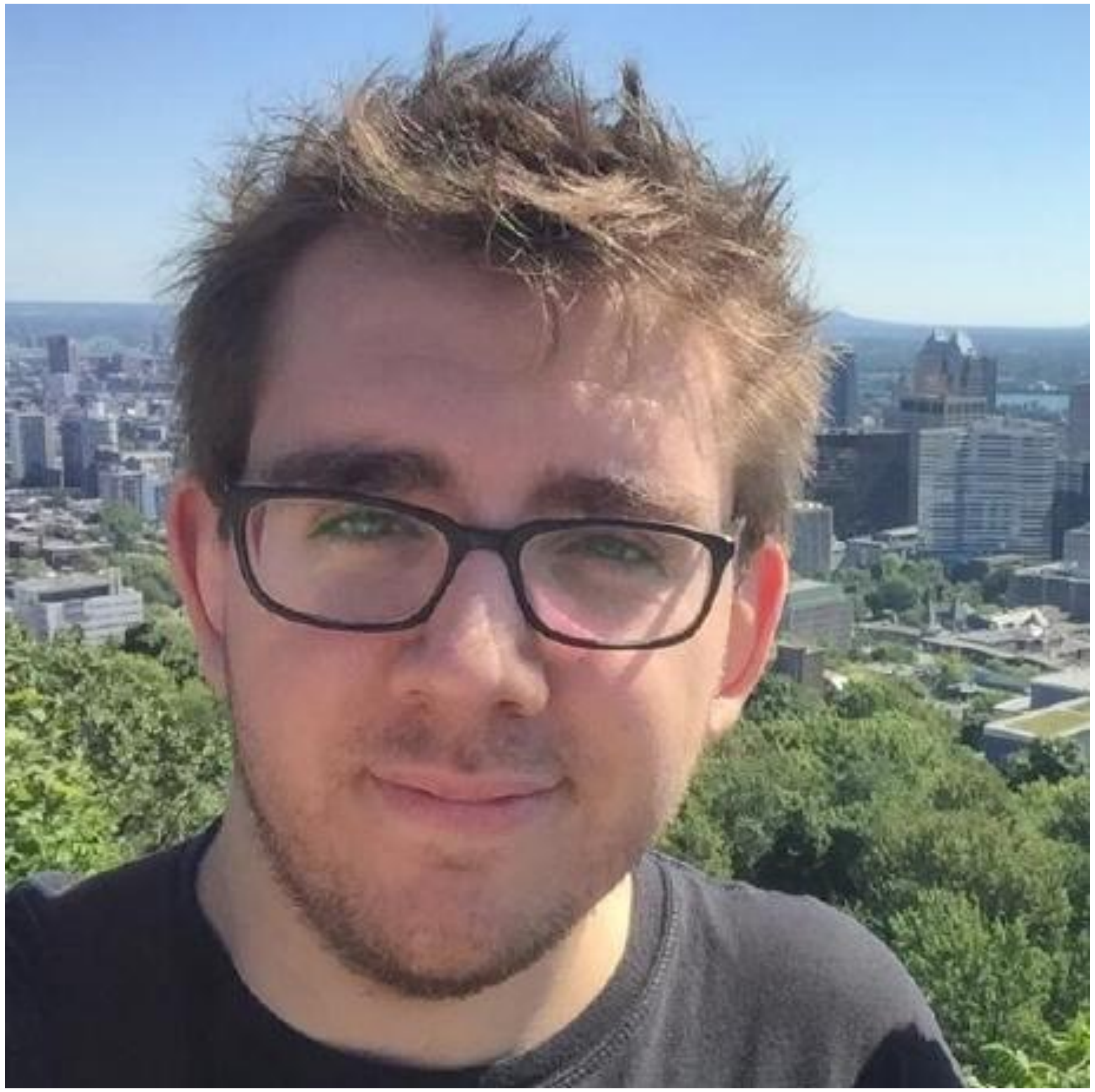
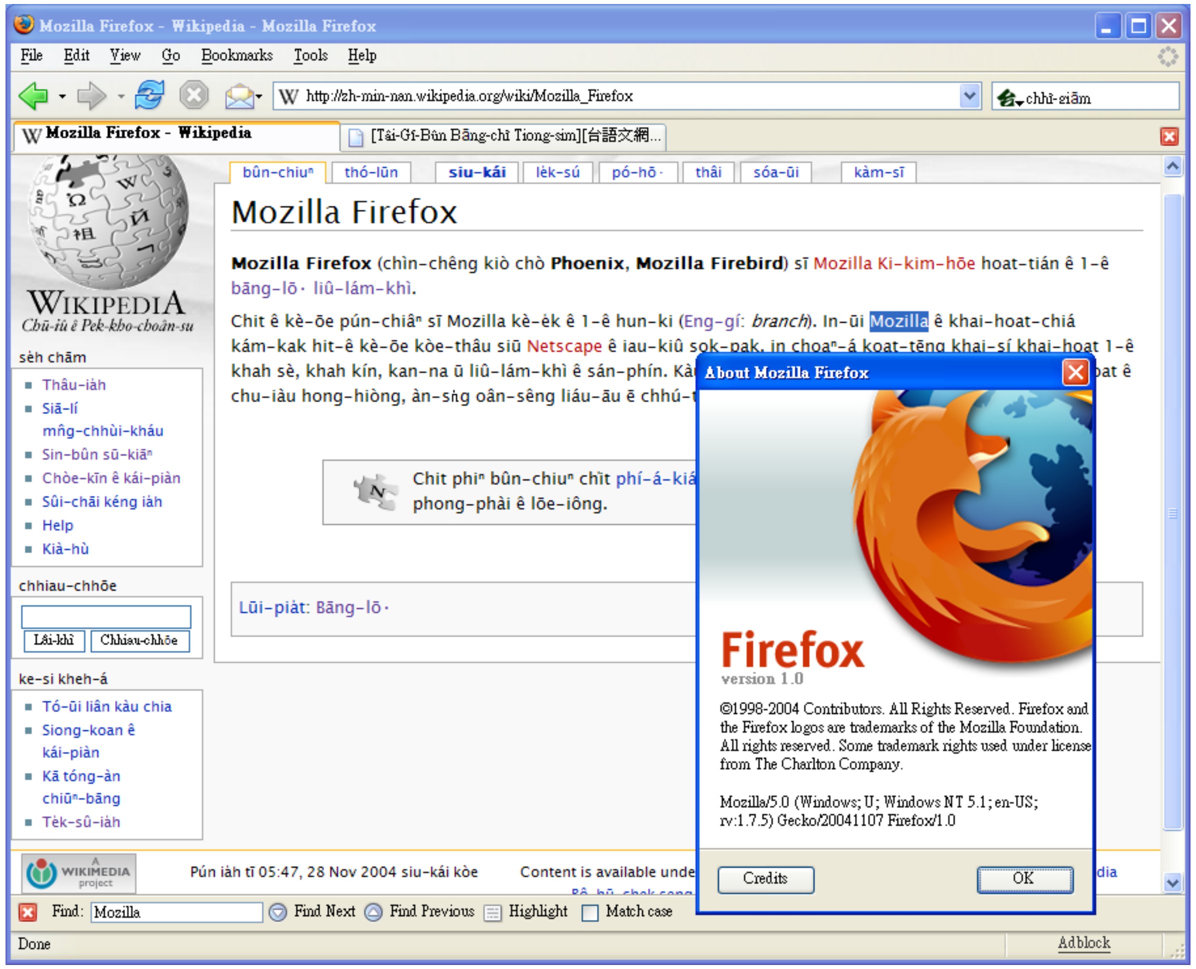
Why you should take a look at

Antonin Carette - R&D Engineer @ Dernier Cri

#HELLOFRIENDS

- R&D engineer @ Dernier Cri
- Passionate about *Machine Learning* and *Big Data* problems
- Interested in system programming, optimizations and performances
- 2017 = Rust, Nim, Elixir
- Mozilla ♥ && RedoxOS++





Mozilla Firefox

Mozilla Firefox (chìn-chêng kiò chò **Phoenix**, **Mozilla Firebird**) sī Mozilla Ki-kim-hōe hoat-tián ê 1-ê bāng-lō· liû-lám-khì.

Chit ê kè-ōe pún-chiâⁿ sī Mozilla kè-e̍k ê 1-ê hun-ki (Eng-gí: *branch*). In-ūi Mozilla ê khai-hoat-chiá kám-kak hit-ê kè-ōe kòe-thâu siū Netscape ê iau-kiû so̍k-pa̍k, in choaⁿ-á koat-tēng khai-sí khai-hoat 1-ê khah sè, khah kín, kan-na ū liû-lám-khì ê sán-phín. Kà... ...oat ê chu-iàu hong-hiòng, àn-sṅg oân-sêng liáu-āu ē chhú-t...

Chit phiⁿ bûn-chiuⁿ chi̍t phí-á-kiá... phong-phài ê lōe-iông.

Lūi-pia̍t: Bāng-lō·

Pún ia̍h tī 05:47, 28 Nov 2004 siu-kái kòe

Content is available unde... ...dia

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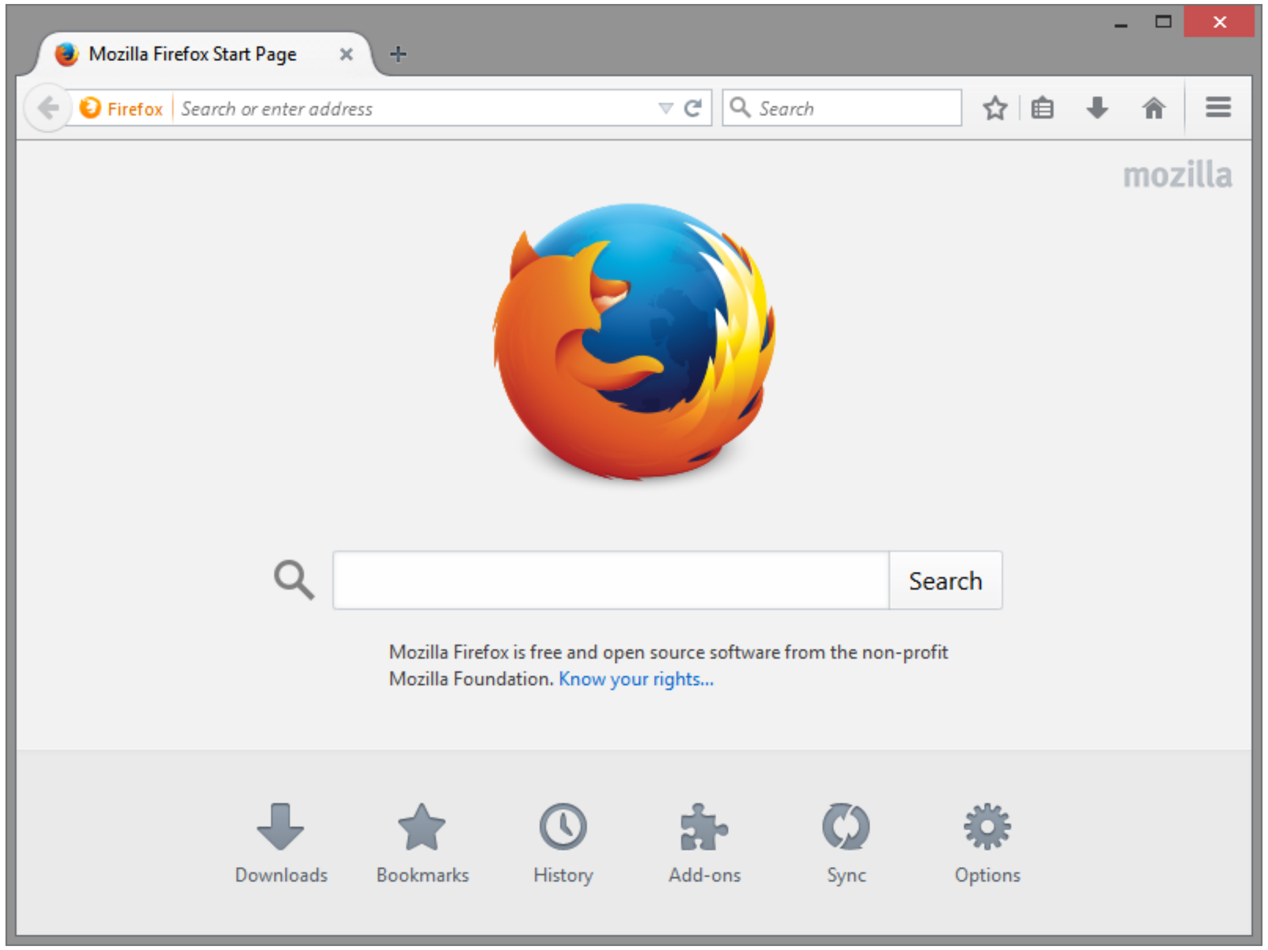
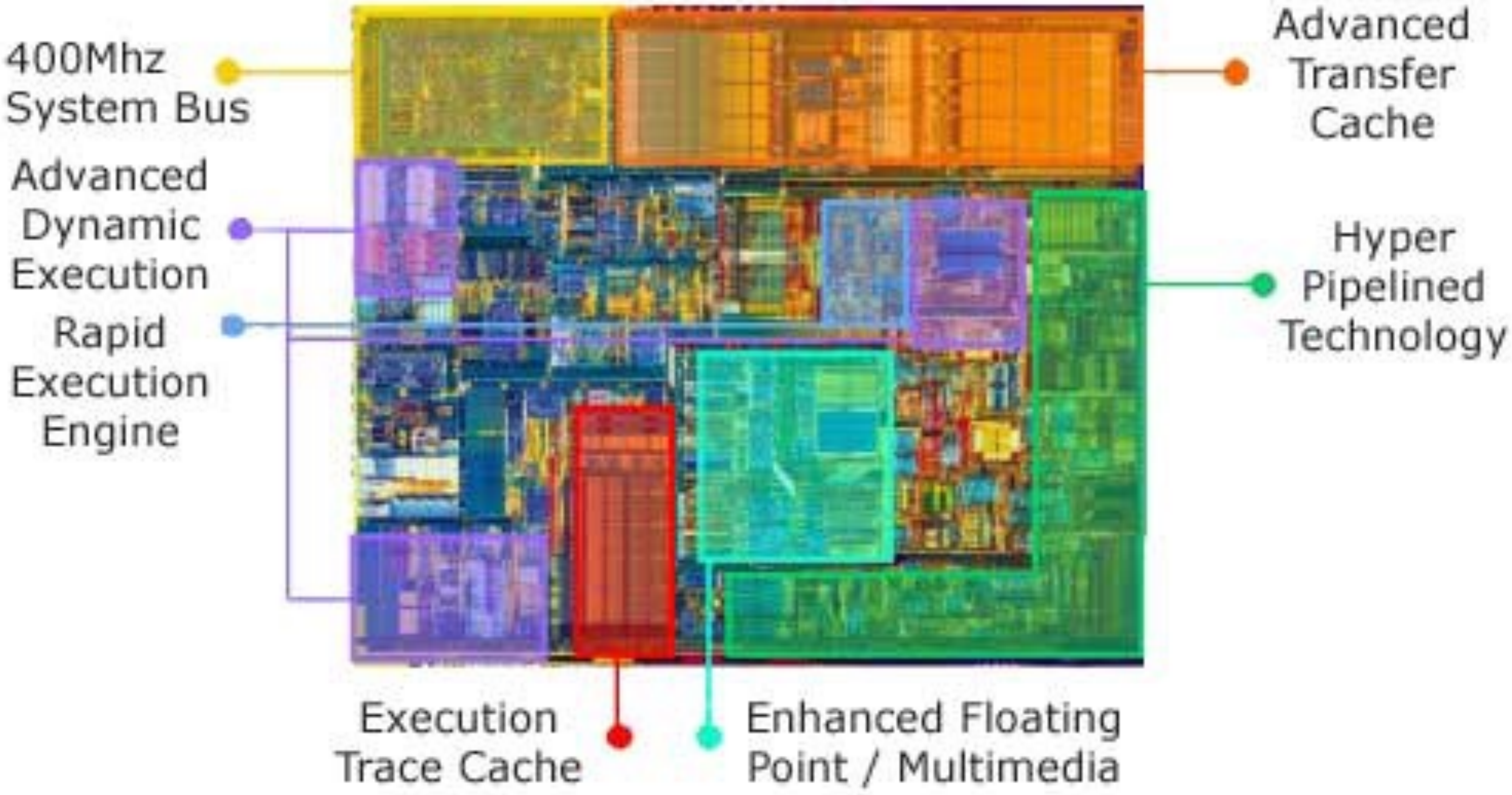
Mozilla/5.0 (Windows; U; Windows NT 5.1; en-US; rv:1.7.5) Gecko/20041107 Firefox/1.0

2004

2014

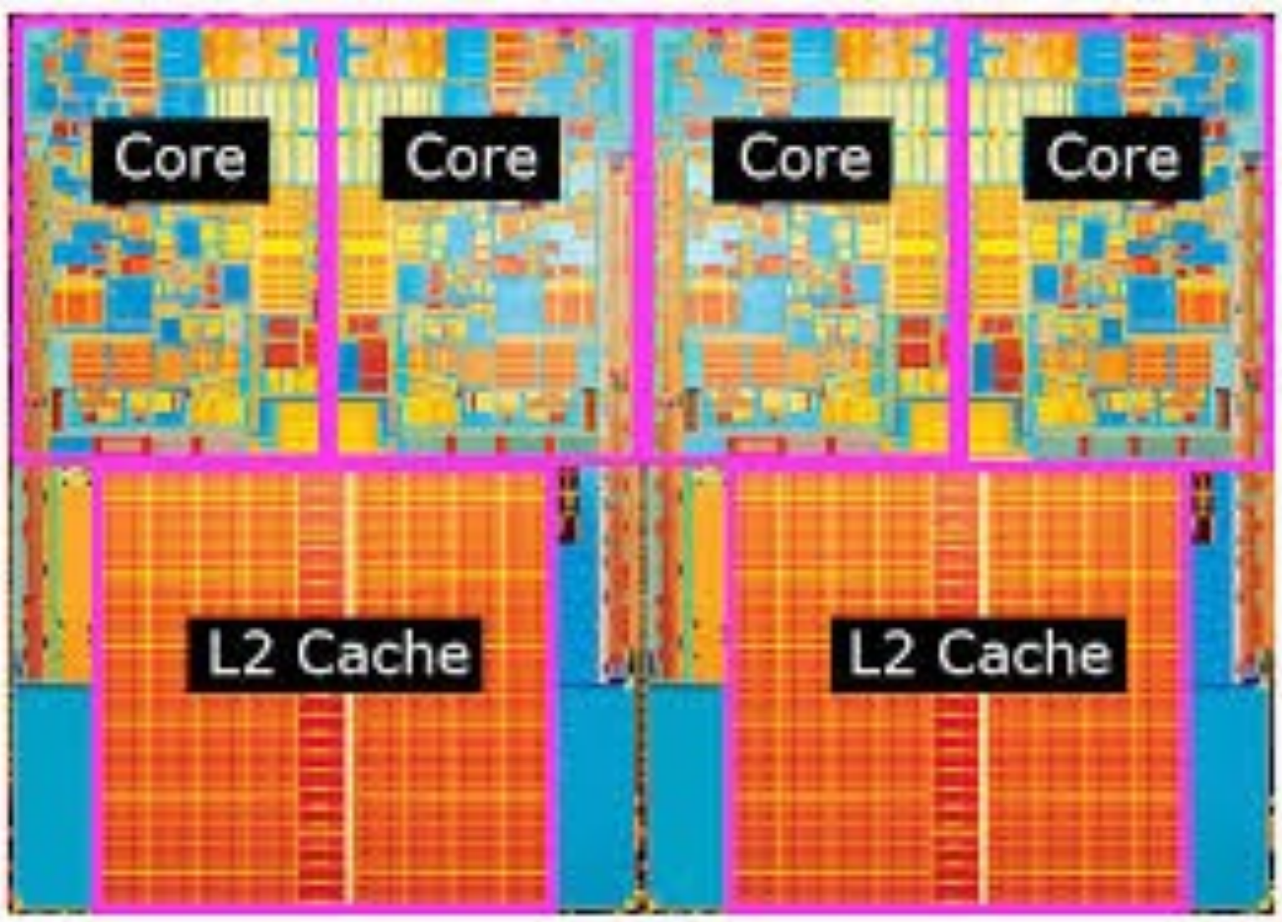


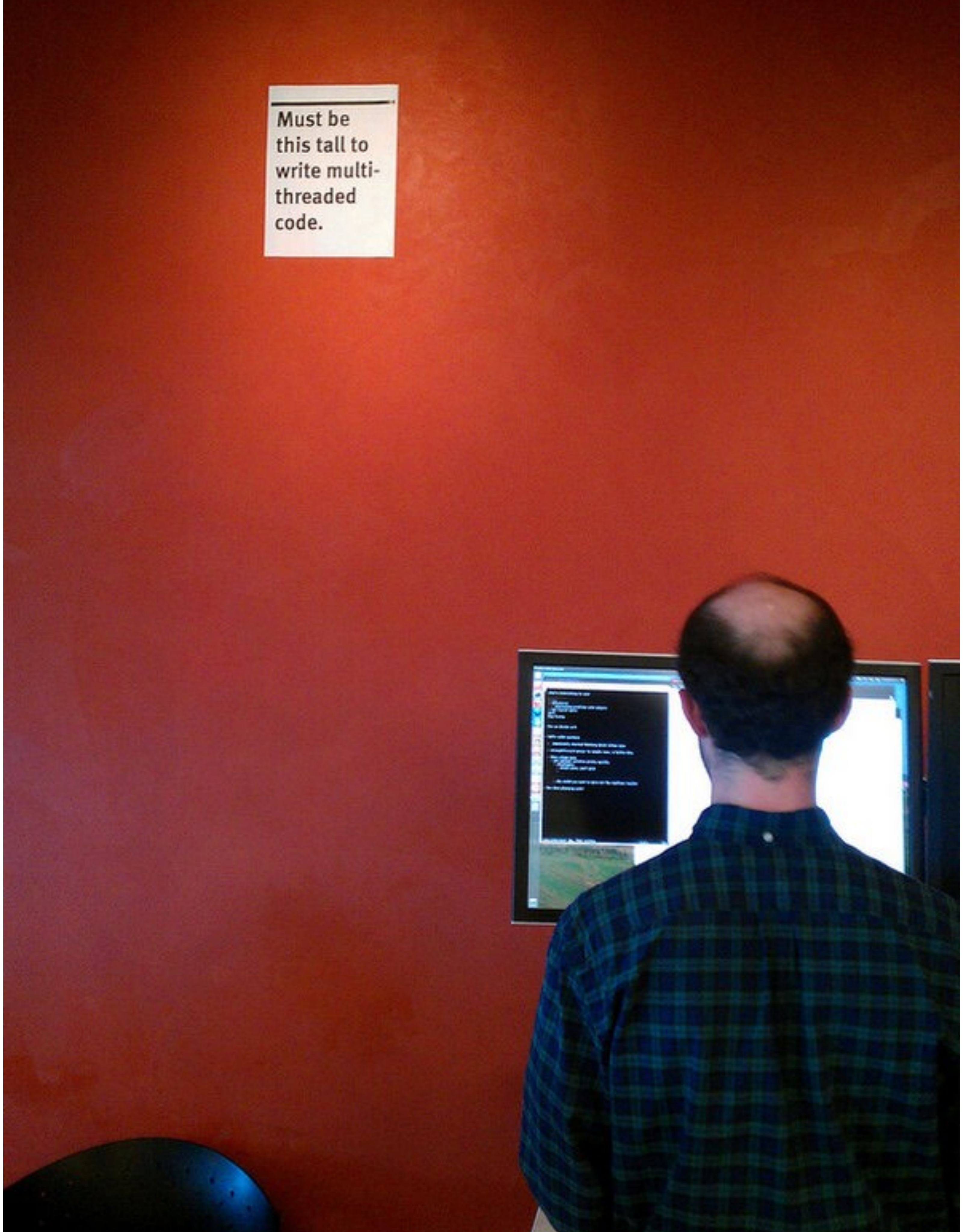
Mozilla Firefox is free and open source software from the non-profit Mozilla Foundation. Know your rights…

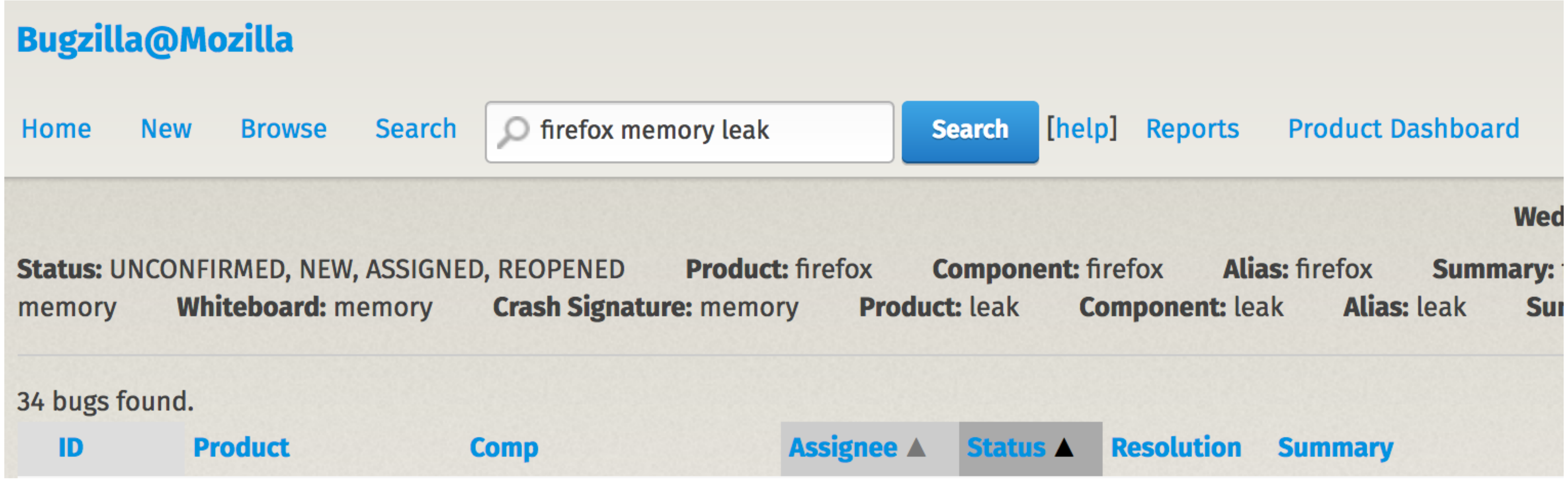

400Mhz System Bus
Advanced Dynamic Execution
Rapid Execution Engine
Advanced Transfer Cache
Hyper Pipelined Technology
Execution Trace Cache
Enhanced Floating Point / Multimedia

2002

2012


Core
Core
Core
Core
L2 Cache
L2 Cache


Must be this tall to write multi-threaded code.



firefox memory leak

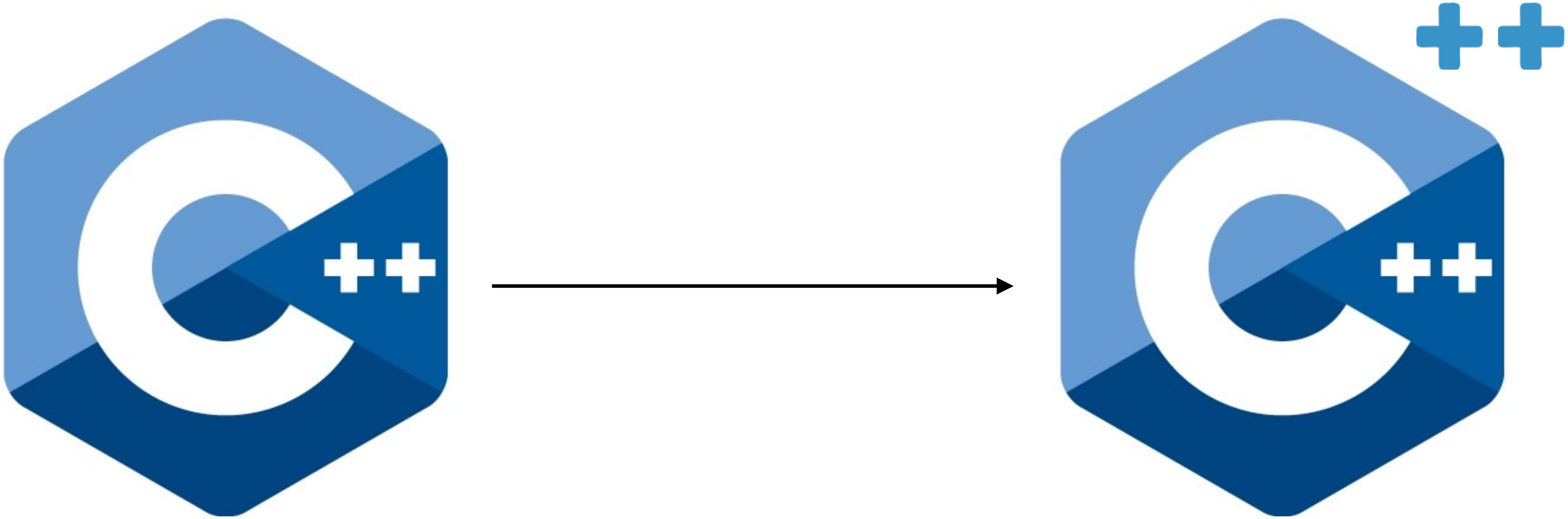
Wed

Status: UNCONFIRMED, NEW, ASSIGNED, REOPENED **Product:** firefox **Component:** firefox **Alias:** firefox **Summary:** memory **Whiteboard:** memory **Crash Signature:** memory **Product:** leak **Component:** leak **Alias:** leak **Su**

34 bugs found.

ID	Product	Comp	Assignee ▲	Status ▲	Resolution	Summary

https://air.mozilla.org/

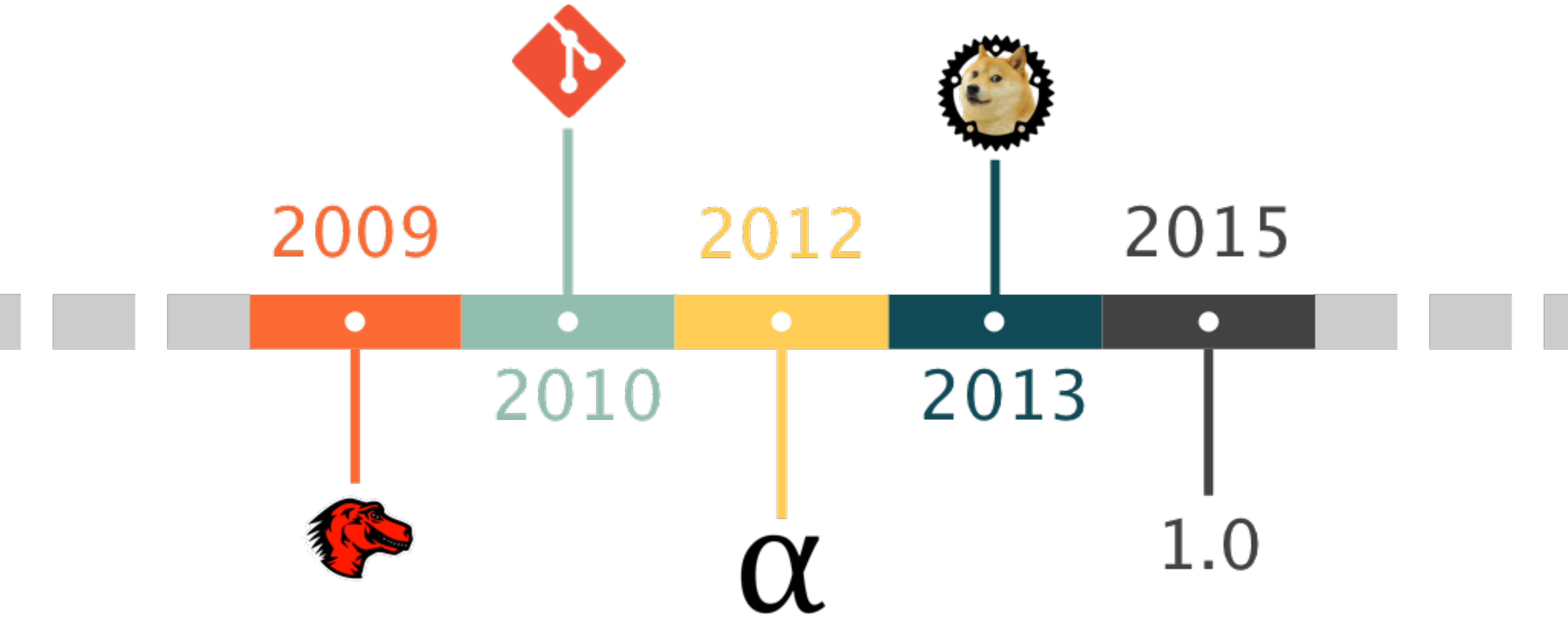


1983

201x

Now that I've got your attention…

Timeline



2009

2010

2012

2013

2015

α

1.0

= ***Rust****, a modern, safe, fast, and multi-core processor aware programming language*

= ***Rust****, a* ***modern****,* ***safe****,* ***fast****, and*
multi-core processor aware
programming language

Promises

Modern

- General-purpose
- Multi-paradigm
- Built-it packet manager
- …

Safe

- Statically typed
- Type safe
- Memory safe
- Data safe
- Data races safe
- …

Fast

- LLVM back end
- No GC
- As fast as C++

Data race

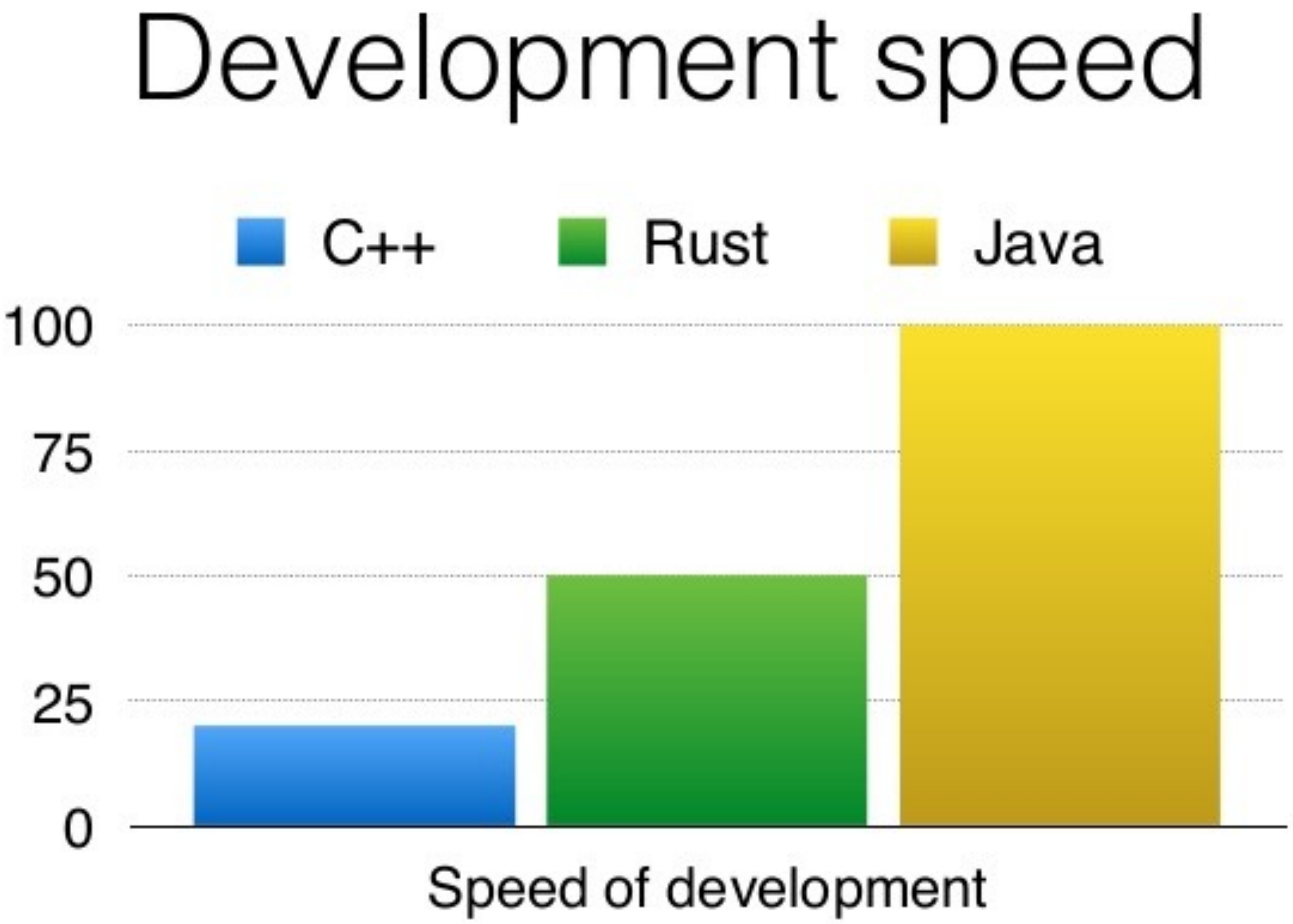
- Concurrent
- Parallelism

Inspired by popular languages

Some awesome features

- Immutability (default)
- Data race safety (only one mutable reference)
- Memory leaks and data race problems raised at compilation time
- Lifetime of a specific variable/field
- Traits
- Generics
- Multi levels of metaprogramming
- FFI (C, Ruby, Python, Haskell, etc.)
- Borrowing & Ownership
- Pattern matching
- Multiparadigm
- Rich error handling
- etc.

Good development speed



http://www.slideshare.net/yandex/rust-c

Cargo, the perfect companion

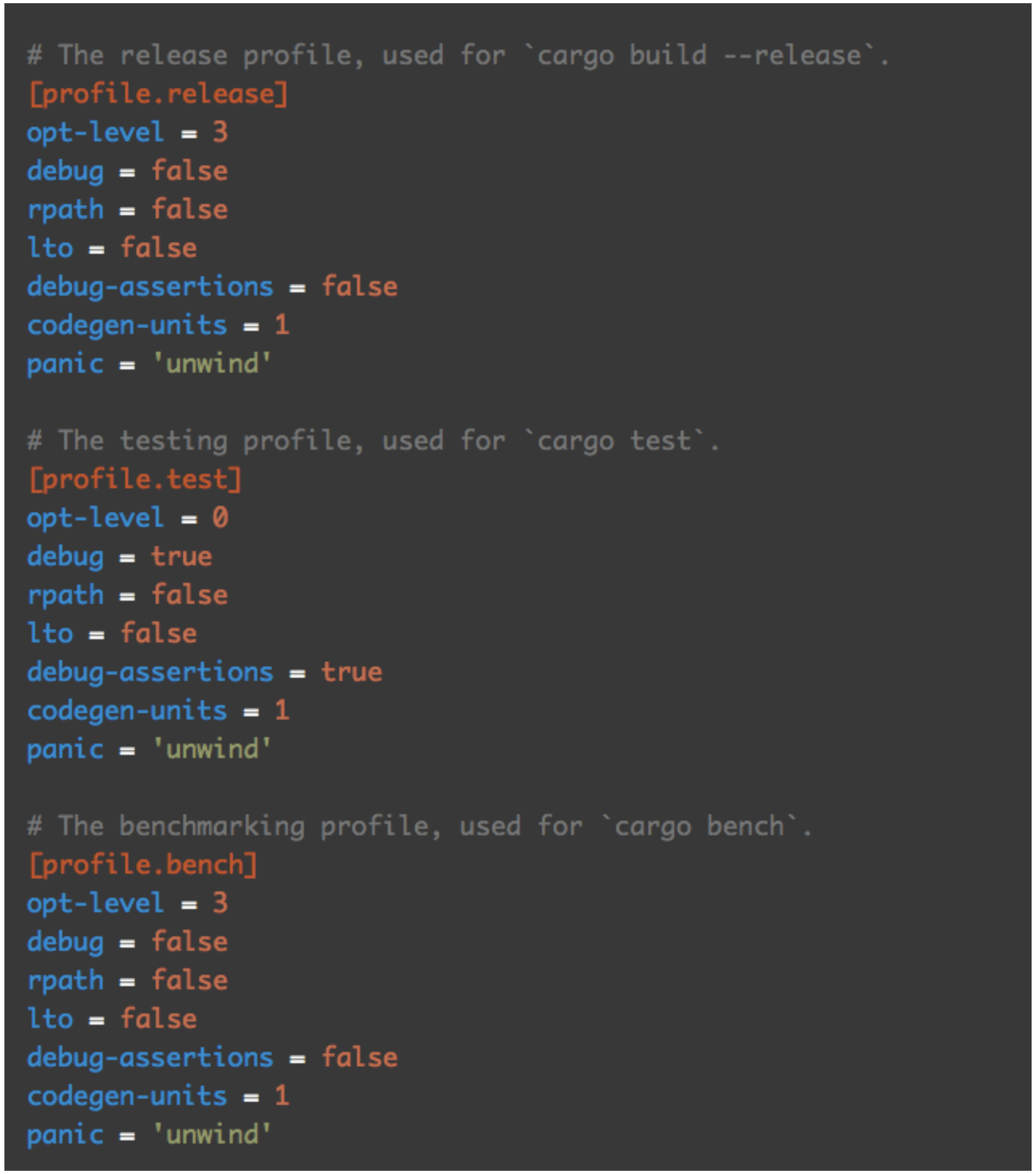
Sun. 12/11: **7,098** crates in stock / **92,105,502** downloads

Tue. 21/02: **8,105** crates in stock / **116,930,786** downloads

Cargo, the perfect companion

Some features

* **build** - *Compile the current project*
* **check** - *Analyze and report errors the project*
* **doc** - *Build the documentation*
* **new** - *Create a new cargo project*
* **run** - *Build and execute the project*
* **test** - *Run the tests*
* **bench** - *Run the benchmarks*
* **update** - *Update project’s dependencies*
* **search** - *Search registry for crates*
* **publish** - *Package and upload the project*
* **install** - *Install a Rust binary*
* **school** - *Bring my kids to school*



```
# The release profile, used for `cargo build --release`.
[profile.release]
opt-level = 3
debug = false
rpath = false
lto = false
debug-assertions = false
codegen-units = 1
panic = 'unwind'

# The testing profile, used for `cargo test`.
[profile.test]
opt-level = 0
debug = true
rpath = false
lto = false
debug-assertions = true
codegen-units = 1
panic = 'unwind'

# The benchmarking profile, used for `cargo bench`.
[profile.bench]
opt-level = 3
debug = false
rpath = false
lto = false
debug-assertions = false
codegen-units = 1
panic = 'unwind'
```

Rust, for web developers

Databases

Templating

APIs

Client frameworks

Websocket

Server frameworks

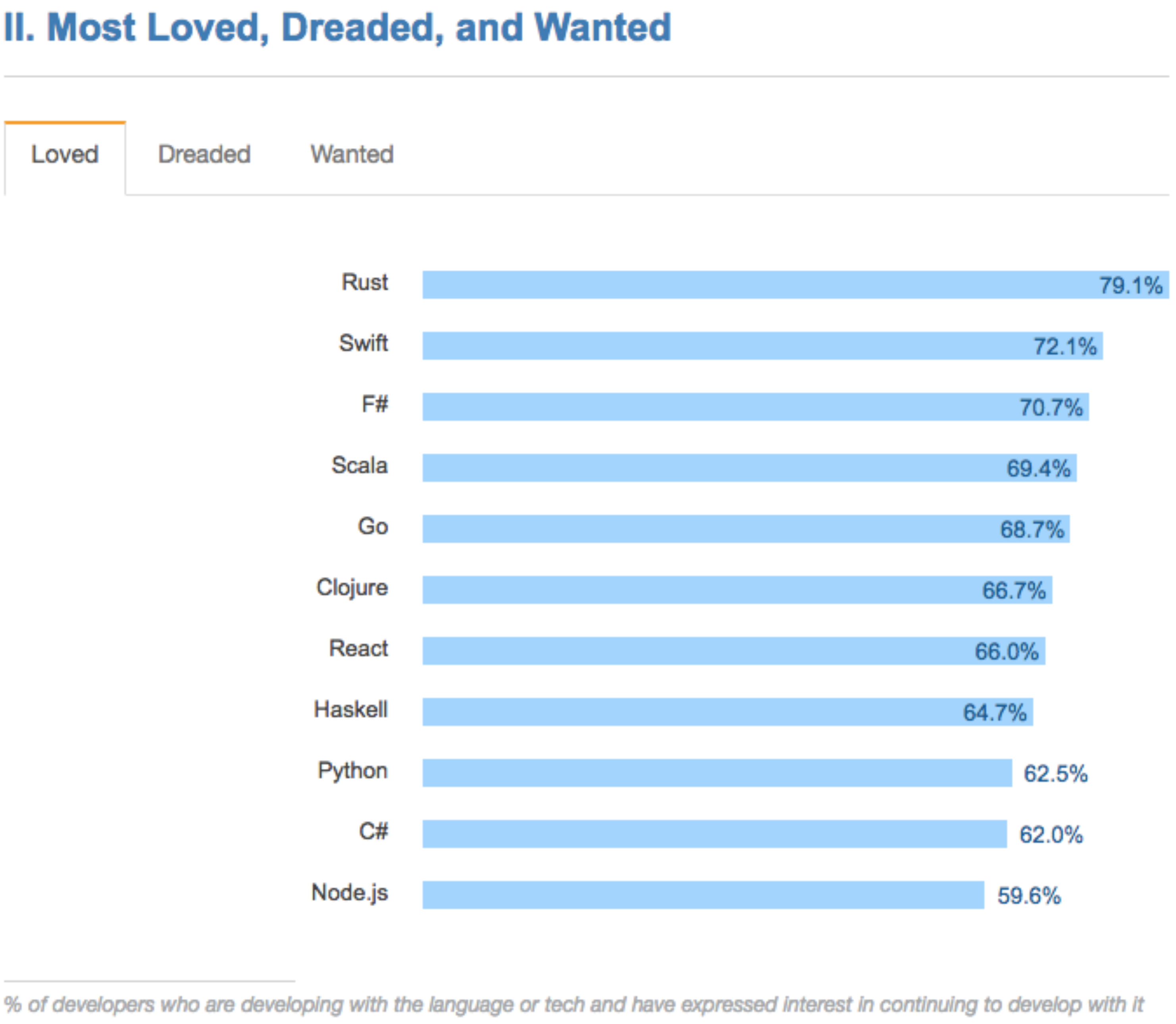
and more…

Rust to Emscripten

https://github.com/flosse/rust-web-framework-comparison

https://medium.com/mozilla-tech/rust-for-web-developers-1b0f4326e8b8#.f3e7mz8k0

Developers <3 Rust



II. Most Loved, Dreaded, and Wanted

% of developers who are developing with the language or tech and have expressed interest in continuing to develop with it

http://stackoverflow.com/research/developer-survey-2016#community

Rust in production

mozilla Firefox®

Dropbox

OpenDNS

OVH.com

npm

clever cloud

Rust in production

… and more awesome projects!

https://this-week-in-rust.org/

https://www.rust-lang.org/friends.html

Additional ressources

https://www.rust-lang.org/fr/

Steve Klabnik about Rust, C, Go, Ocaml and Erlang

Rust in Firefox (Reddit)

The Rust book

Rust, by example

Safer Future Rust

Are we web yet ?

[YouTube] Servo Architecture: Safety and Performance

Please, click here!

```
5    E040 280C A949 0E78 8219 C
1    7C2F E8EF 8207 E2FE 6988 B
/    F5F9 8880 58E5 8626 EA1C A
4F   A944 8393 BEA0 B433 8EE4 E
E290 7ADA C206 5237 94AA FCAD
EABC 4585 20F2 9535 F74B 21C8
0600 38E0 A2F0 8385 009A 768C 1
A588 6678 EC44 3288 6CF3 0BF0
0905 C574 0283 900E 0304 2245 606
806C 892A C431 C600 466C 2CB4 0375
763C 6470 916F 868C 1675 3949 8E2
770C 403A 5C2B E8C7 7230 99F5 E33F A
E95A 80A4 10E0 6996 111E A49C 7991 E0
0CEC F102 9E6F FE64 AFB0 C3E0 C84A E98
F21F F4EA 27A0 5788 5201 5CFE 5E00 63CF
61F3 F1E0 E174 F9ED 478A FAC0 4A5A 6356
```

```
4 F080
3 4846
2 7443
A D4FA
  7458
  198C
  7692
  40FE
  850
  4E
  F
```