OCaml Platform v0.1

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with a vast amount of help from
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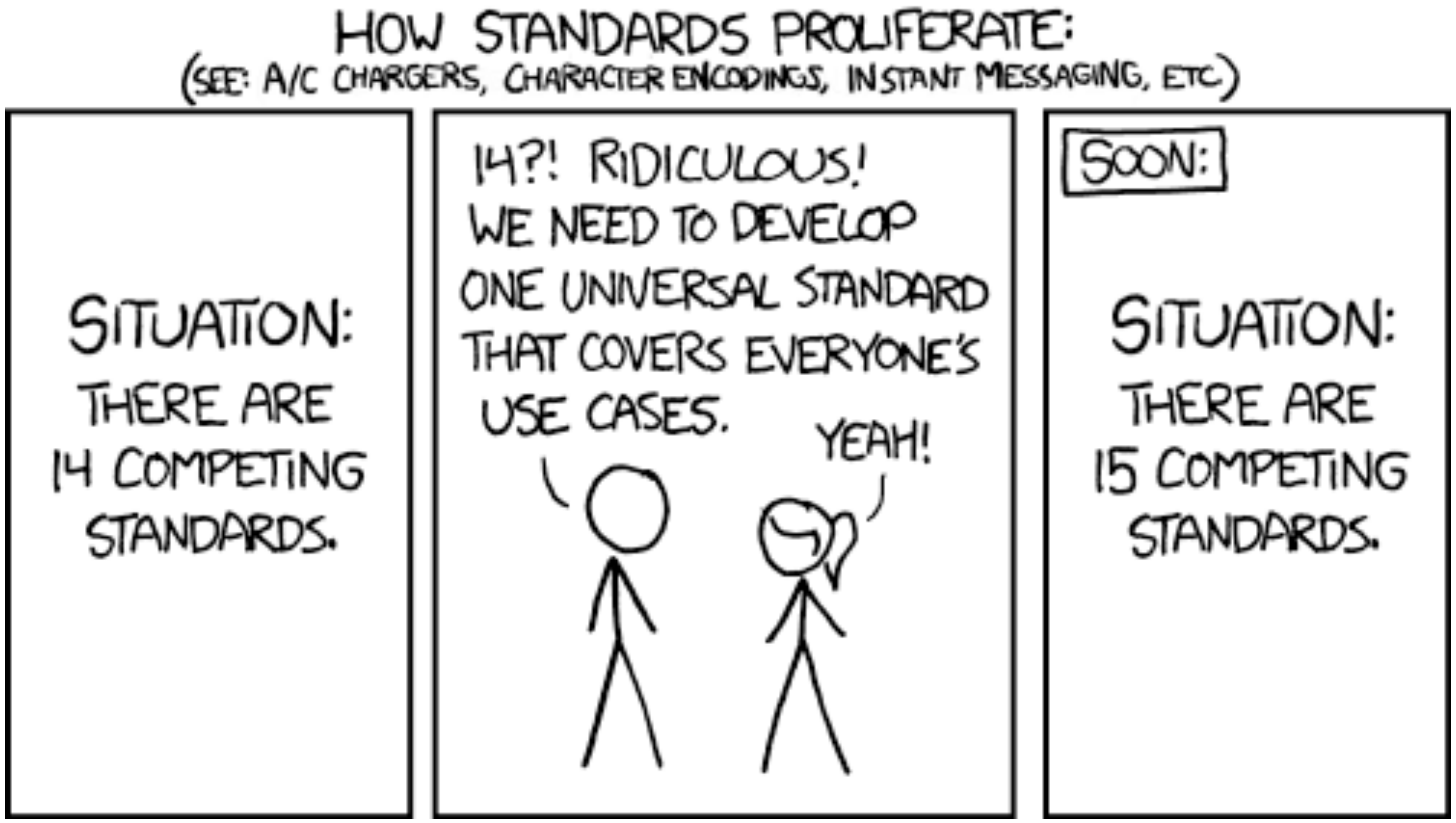
What a Platform isn't

A group of motivated hackers sprint to build a replacement standard library.


HOW STANDARDS PROLIFERATE:
(SEE: A/C CHARGERS, CHARACTER ENCODINGS, INSTANT MESSAGING, ETC.)
SITUATION: THERE ARE 14 COMPETING STANDARDS.
14?! RIDICULOUS! WE NEED TO DEVELOP ONE UNIVERSAL STANDARD THAT COVERS EVERYONE'S USE CASES.
YEAH!
SOON:
SITUATION: THERE ARE 15 COMPETING STANDARDS.

What a Platform isn't

A group of motivated hackers sprint to build a replacement standard library.

- Hard to get adoption without a domain-specific purpose.
- Tends to be *opinion* based, and fodder for infinite discussion.
- Sustaining maintenance is tough.

What a Platform is!

- **Tooling** that works together beyond just a language, into the full dev lifecycle.
- **Quantitative** metrics to judge if we are succeeding or not.
- **Agility** to judge the impact of changes quickly to keep moving.

Together, these let users judge if the Platform is suitable for *their* needs.

Design Space

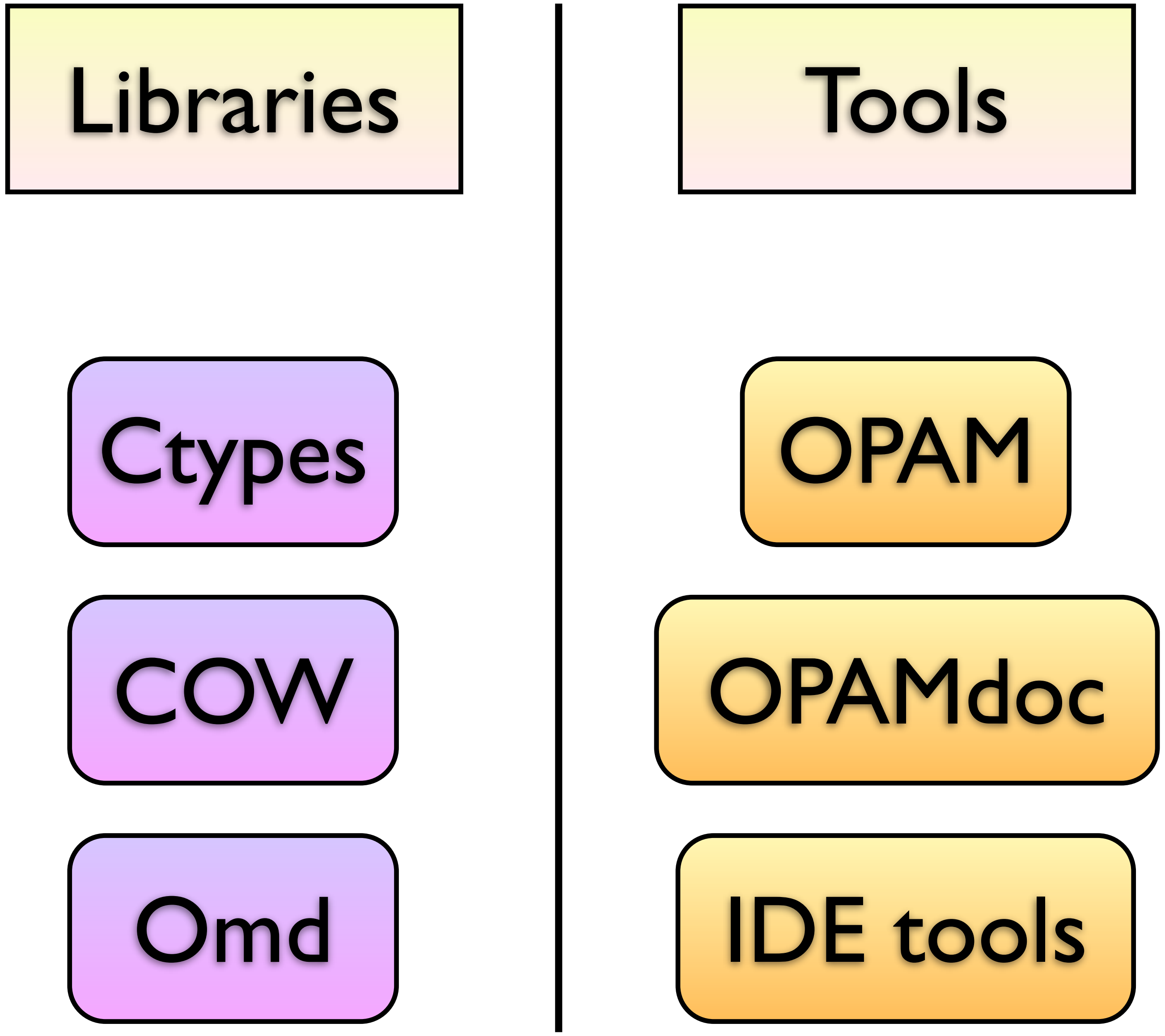
Libraries

Ctypes

COW

Omd

Design Space



Libraries

Ctypes

COW

Omd

Tools

OPAM

OPAMdoc

IDE tools

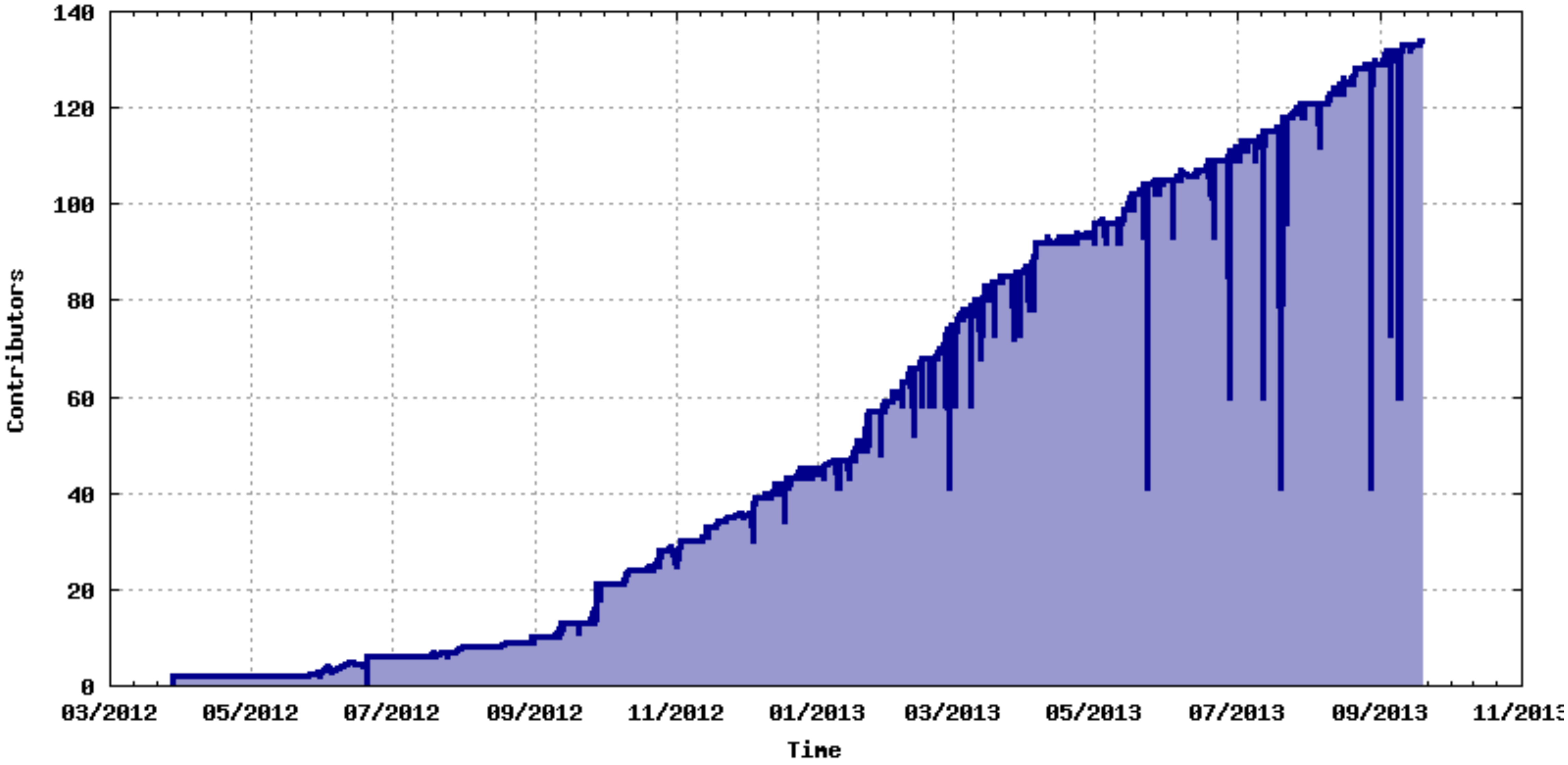
Design Space

Libraries	Tools	Resources
Ctypes	OPAM	OCaml.org
COW	OPAMdoc	Books
Omd	IDE tools	OCamlot

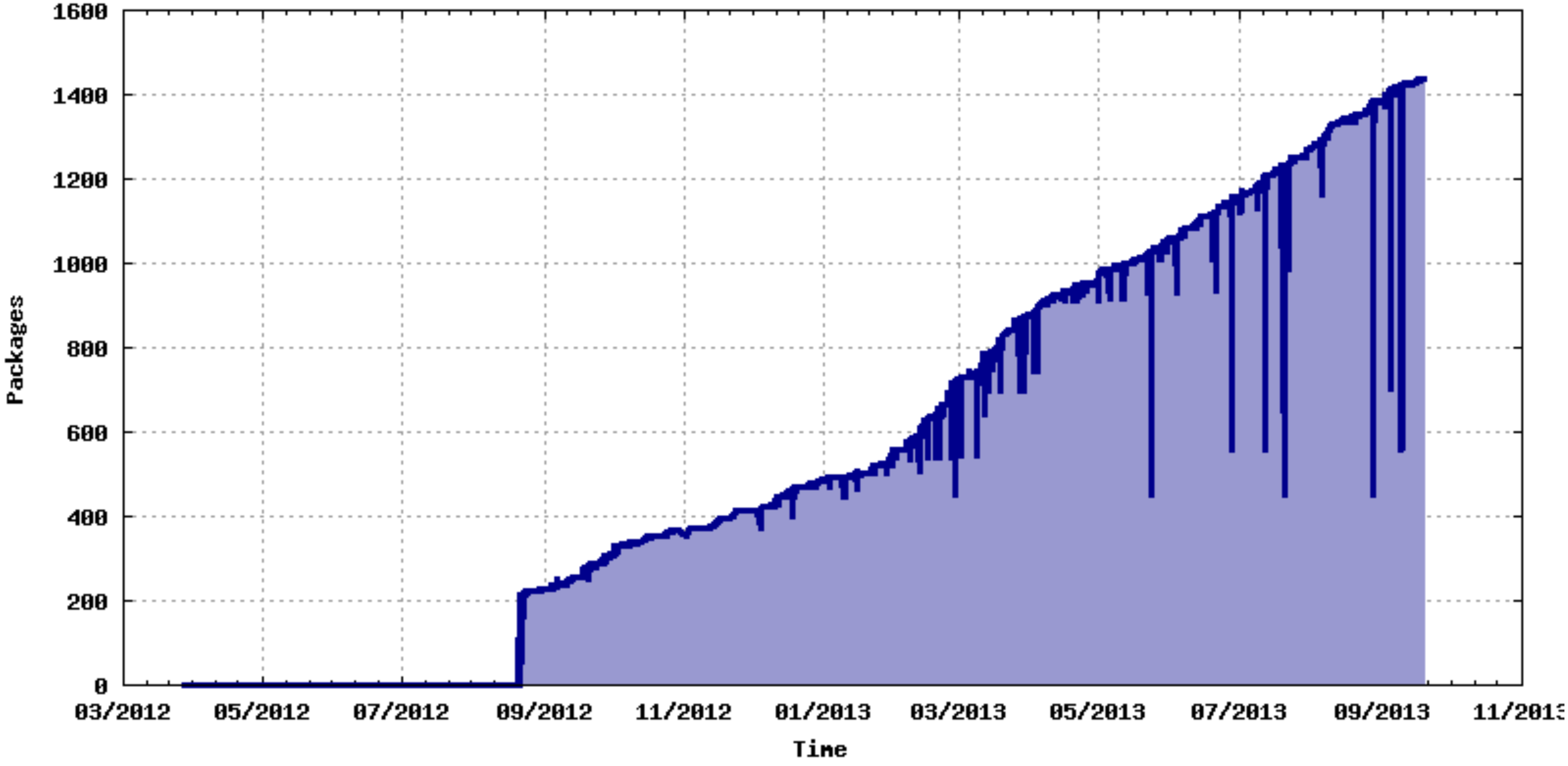
OPAM Progress in 2013

- **OPAM 1.0** released in March 2013
- **OPAM 1.1** beta released Sept 2013
  - Solid bug fixing and improvement released based on *lots* of feedback.
  - Over 100 contributers, 500+ packages, 1500+ unique versions.
  - Migrating to opam.ocaml.org (CC0) as a community-maintained effort.

OPAM contributors growth



OPAM package growth



http://opam.ocamlpro.com

OPAM 1.2 and onwards

- **Windows support** for the tool.
- **Fast compiler switching** (needs relocatable compiler).
- **Binary packages** to share OPAM installations for teaching.
- More **expressive constraint language** for optional dependencies.
- https://github.com/OCamlPro/opam/issues

OPAM Documentation

Goal: single source of cross-referenced documentation for all packages.

- **Why it's hard:**
  - not all packages can be installed simultaneously (solved via OPAM)
  - resolving module inclusion statically leads to huge output sizes.
  - touches almost all parts of the toolstack (compiler, OPAM, build systems)

OPAM Documentation

Codesign: the Platform and compiler are evolving together, not developed in isolation

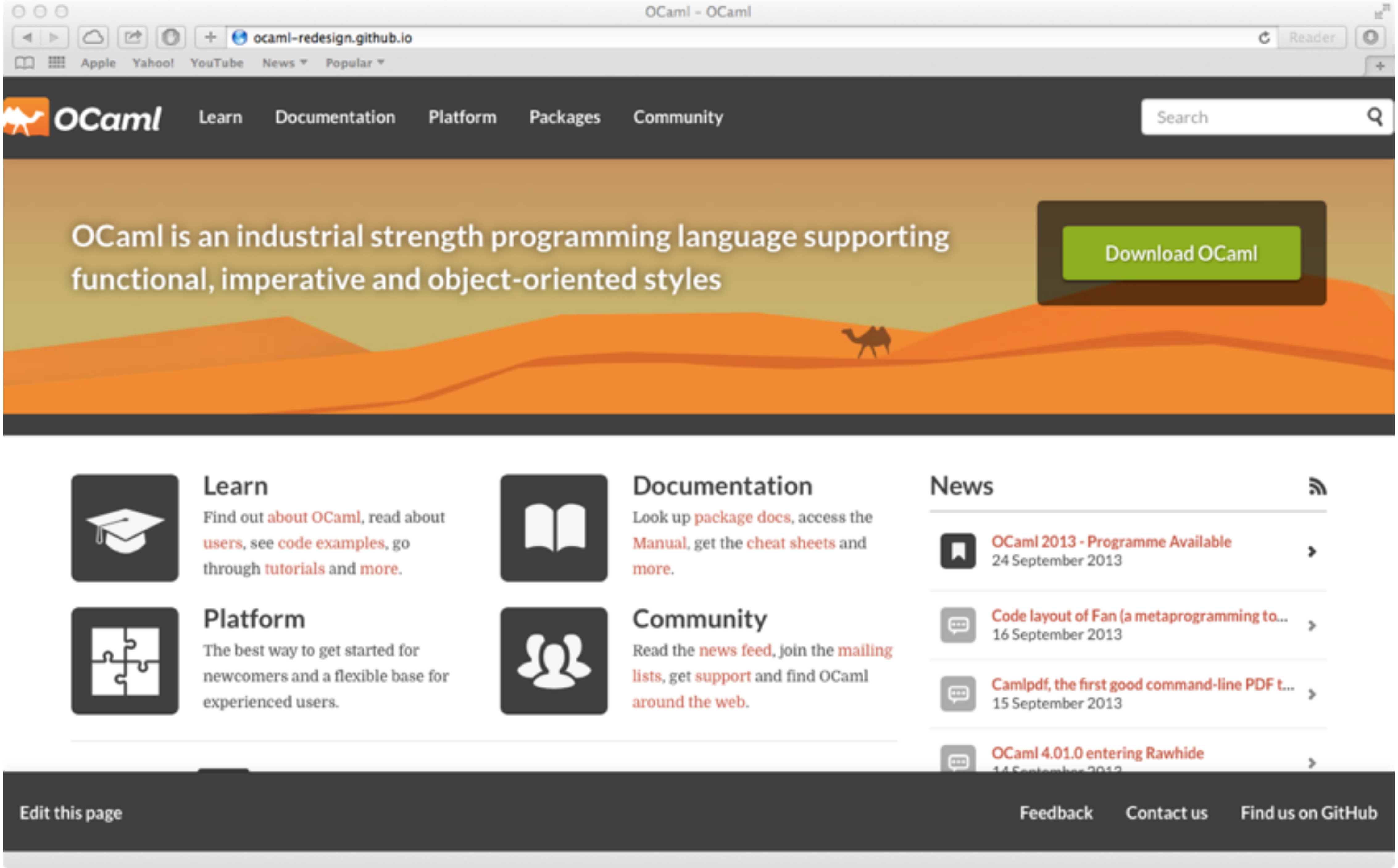
- **Examples:**
  - Compiler exports itself as a library, which is enough to build custom frontends.
  - *cmt* files expose typed AST (internals) which is enough for IDEs and search tools.
  - -*short-paths* in 4.1 makes long module paths much more usable.

OPAM Doc

- **Typed AST** now written as *cmt* file from 4.00.1 onwards.
- New **bindoc** tool generates *cmd* files which parse ocamldoc comments.
- *cmd* files are separate for multiple translations, tutorials, etc.
- New **opamdoc** tools combines a *cmt* database into a single website with a subset of packages.

Tooling: ocaml.org

- ***http://ocaml-redesign.github.io/***
- ***http://ocaml-redesign.github.io/pkg/*** **(both WIP)**



OCaml is an industrial strength programming language supporting functional, imperative and object-oriented styles

Learn

Find out about OCaml, read about users, see code examples, go through tutorials and more.

Documentation

Look up package docs, access the Manual, get the cheat sheets and more.

Platform

The best way to get started for newcomers and a flexible base for experienced users.

Community

Read the news feed, join the mailing lists, get support and find OCaml around the web.

News

- OCaml 2013 - Programme Available
  24 September 2013
- Code layout of Fan (a metaprogramming to...
  16 September 2013
- Camlpdf, the first good command-line PDF t...
  15 September 2013
- OCaml 4.01.0 entering Rawhide
  14 September 2013

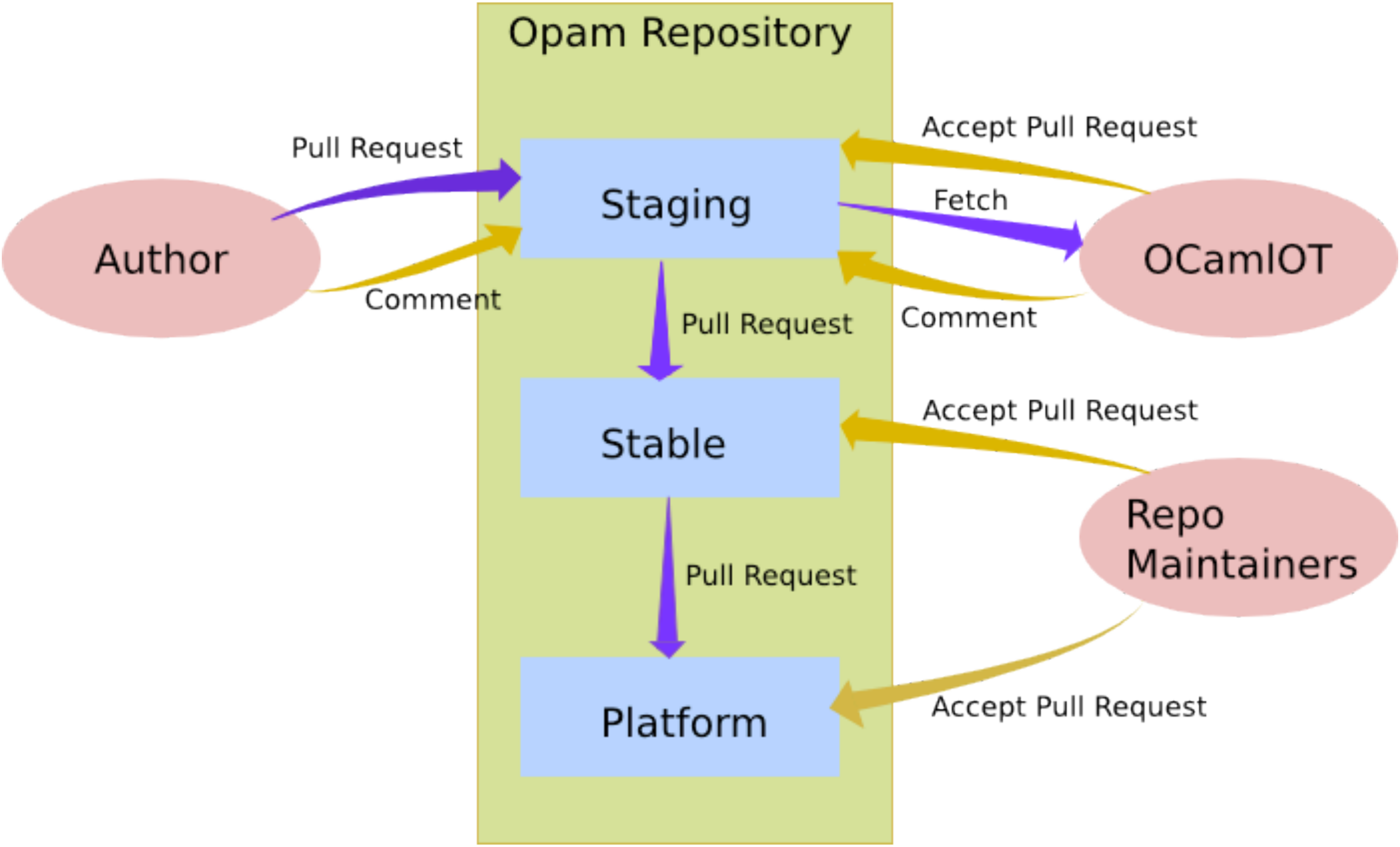
Quantitative: Packages

- What are useful metrics for OCaml?
  - **Portability:** OS, CPU arch, compiler version, C bindings, native/bytecode
  - **Maintainer:** responsiveness, documentation coverage, issue URL
  - **Tests:** code coverage, benchmarks
  - **Stability:** interfaces changing a lot?

Quantitative: Packages

- All of these are being built up in the OPAM repository:
  - The *opam* file tracks compiler constraints across 1500 packages.
  - Can statically analyze the archive contents to determine build system.
  - Transitive cones of library coverage *("when Core breaks, does anyone care?")*

Distributed workflow



Let’s evolve together

- We’re building the framework for a *standard library tussle* that will let us evaluate the fitness of libraries.
- Plan to benchmark and test Core, Batteries, Extlib, Lwt on a variety of platforms and circumstances.
- We make these available on ocaml.org to understand how to achieve consensus. “*Why are there so many separate stdlibs?*”

The current state

No one candidate is quite supreme yet.

- **Lwt:** very portable, small, quite C heavy, separate module namespace.
- **Batteries:** comprehensive, no syntax extensions, separate namespace, community developed.
- **Core:** hugely comprehensive, weekly releases, poor portability, single namespace, architected at Jane Street.

Open Problem: Build

- None are quite satisfactory yet, and "almost working" ones proliferate.
- Tension between speed of compilation and features and portability.
- Library-based systems sorely needed.
- The goal should be to statically analyze all 1,500 OPAM packages to test hypotheses.

Questions?

- Get involved with OPAM! Particularly documentation + blogs.
- Feedback on redesign to infrastructure:

http://amirchaudhry.com/ocamlorg-request-for-feedback/

platform@lists.ocaml.org