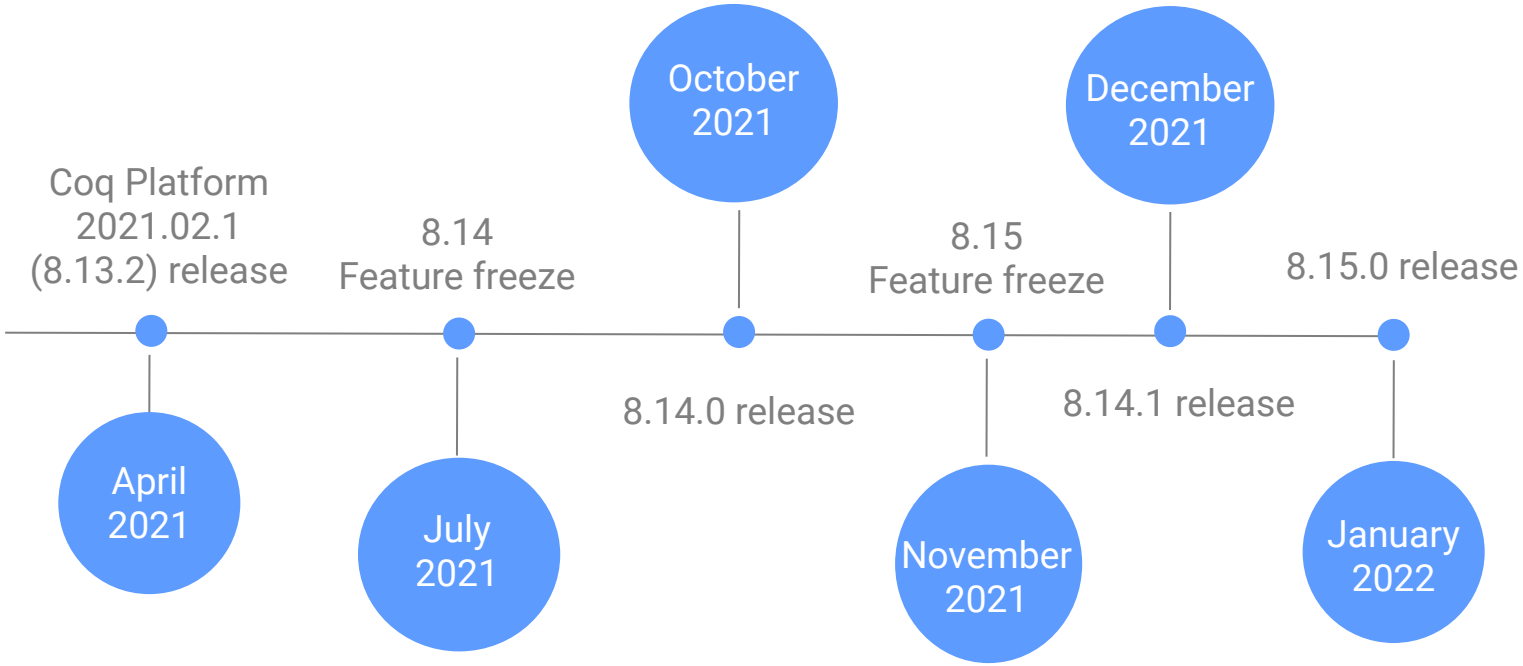
COQ DEVELOPMENT TEAM SESSION

Coq Development Team
CoqPL 2022
Online
January 22nd, 2022

OUTLINE

1. Coq 8.14 and Coq 8.15
2. Coq Platforms
3. Coq Future
4. Q & A

Coq Releases Schedule



Coq 8.14 Features

https://coq.inria.fr/refman/changes.html#version-8-14

- Change of the **case** representation: more efficient and closer to user-level syntax. Fixes an **incompleteness** bug in the type-checking of cumulative inductive types leading to a subject reduction failure (proof in MetaCoq)
- Separate **coqnative** binary for native compilation
- Improvements to typeclasses, canonical structure resolution and notations
- Removal of **omega** replaced by **lia**
- Ltac2 APIs for manipulating inductive types and pretty-printing
- Standard library improvements, notably a new Sint63 module for primitive signed integers.

Coq 8.15 Features

https://coq.inria.fr/refman/changes.html#version-8-15

- Fix **apply with** w.r.t. renaming of arguments
- **auto** tactics: Hint Unfold fixed, use discrimination nets consistently
- Typeclass resolution handles stuck constraints depending on mode declarations and uses a **best effort** mode resulting in more palatable error messages (not showing constraints that can be solved)
- More consistent **locality** attribute support.
- **Import** now allows selective import of names and components (e.g. notations, hints) from a library/module.
- A **visual Ltac debugger** is now available in CoqIDE

The github.com/coq/platform project

A coherent *distribution* of Coq packages

Main objectives: easy, standard, tested

Output:

- Scripts to setup/install on Win, OSX, Linux
- Binary installers for Win, Linux (snap), OSX
- Customizable! Just choose a package list (e.g. for lectures)

Coq Platform Charter by Michael Soegtrop

The release process

Coq is now released in the platform

(about one month after the package release on github)

user: look at the platform installers/scripts

library dev: test against the platform

platform package dev: we will ask you "please tag"

plugin dev: put your plugin in Coq's CI

CEP#52 Release process for Coq 8.14 by Enrico Tassi

Coq Platform 2021.02.1

Coq 8.12.1 +

Coq Platform 2021.09.0

Coq 8.13.2 +

Alternatives:

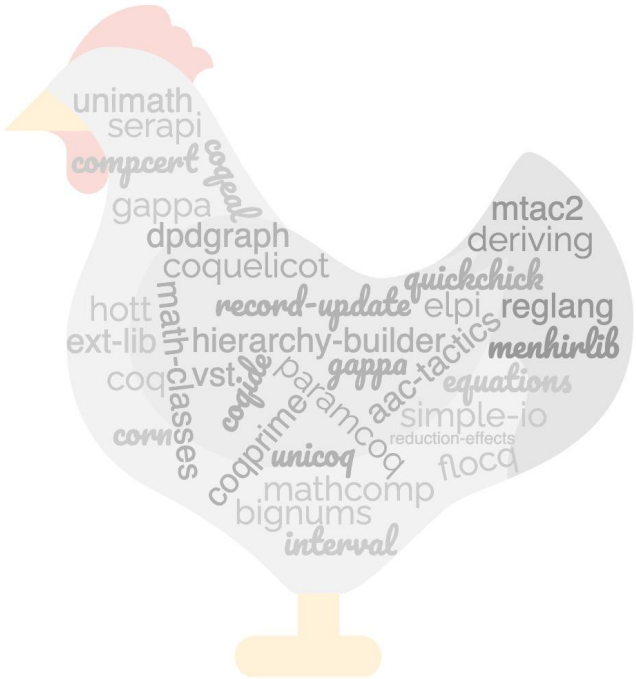
Coq 8.14.0 + beta set of packages

Coq 8.14.0 + Visual Ltac Debugger preview

Coq 8.13.2 with previous package pick, Coq 8.12.2 to help porting

Coq Platform 2022.01.0

Coq 8.14.1 +



Alternatives:

Coq 8.15.0 + beta set of packages

Coq 8.13.2 + full packages

Coq Future

- **UI** support (M. Dénès, E. Tassi, G. Gilbert, E J-G. Arias)
- Improved **Ltac2** support (P. M. Pédrot, G. Gilbert)
- **Rewrite** rules (T. Winterhalter, CEP PR#50)
- Support for **inductive-inductive** types (M. Sozeau, PR #12464)
- Deep "**small-inversion**" in pattern-matching compilation (H. Herbelin, T. Martinez, M. Lenon-Bertrand, J.-F. Monin)
- **Eta**-reduction and **contravariant** subtyping (H. Herbelin, M. Sozeau, CEP #47)
- Is Sized Typing for Coq Practical? (Chan, Li & Bowman)

Development news

- Bug minimizer integrated in CI by J. Gross
- Docker Images for CI maintained by Erik Martin-Dorel
- Coq-community project: https://github.com/coq-community
- Day-to-day communication: https://coq.zulipchat.com
- Discourse forum: https://coq.discourse.group
- Coq Team webpage: https://coq.inria.fr/coq-team
- Upcoming **survey**

Coq Winter Hackaton 2022: online on February 15th-17th.

Q & A Time!

Coq 8.13 Features (January 2021)

https://coq.inria.fr/refman/changes.html#version-8-13

- Primitive **persistent array** type
- UIP for equality in SProp (with a caveat)
- Improvements of notations, implicit argument handling
- More consistent grammars in the reference manual, matching the implementation
- lia and zify enhancements to support boolean operators and the signed integers

Upgrading to 8.13 - Warnings

- Hint ... raises a warning if no locality attribute is given

  Migration HowTo (by Pierre Marie Pédrot)

  https://youtu.be/RLRNetkpExY for the CoqPL 2021 explanation :-)

- Notation selection, more specific notation first
  - specific = matches a larger term
  - order of Import matters, most recent wins

The coq-native OPAM package

- lazy < vm_compute < **native_compute**
  - λ-terms compiled using ocamlopt
  - Interesting to run reflexive tactics

- CEP#48 by Erik Martin Dorel & Pierre Roux
  - **opt in**: opam install coq-native
  - warning: requires more memory/time to compile .vo