VsRocq

A year in review - And what's to come

Romain Tetley

"Real Theorem Provers Deserve Real User Interfaces"

Inria

"Real Theorem Provers Deserve Real User Interfaces"

Théry, Bertot, Kahn (1992)

Inria

What do we want from a "real" IDE ?

From a user's perspective
- **Easy to set-up**

- **Easy to use**

- **Guide new users**

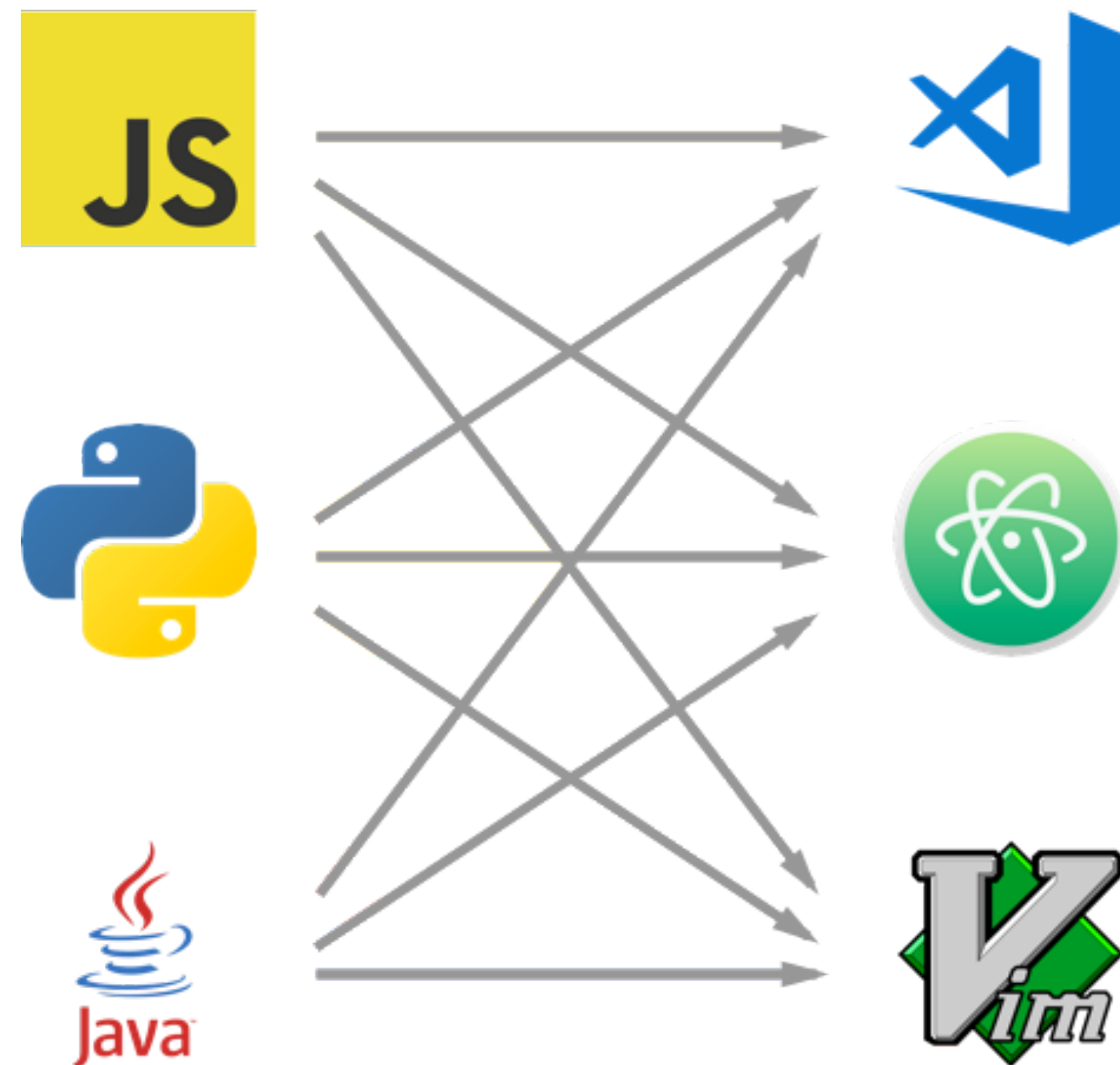**From a developer's perspective**
- **Easily maintainable**
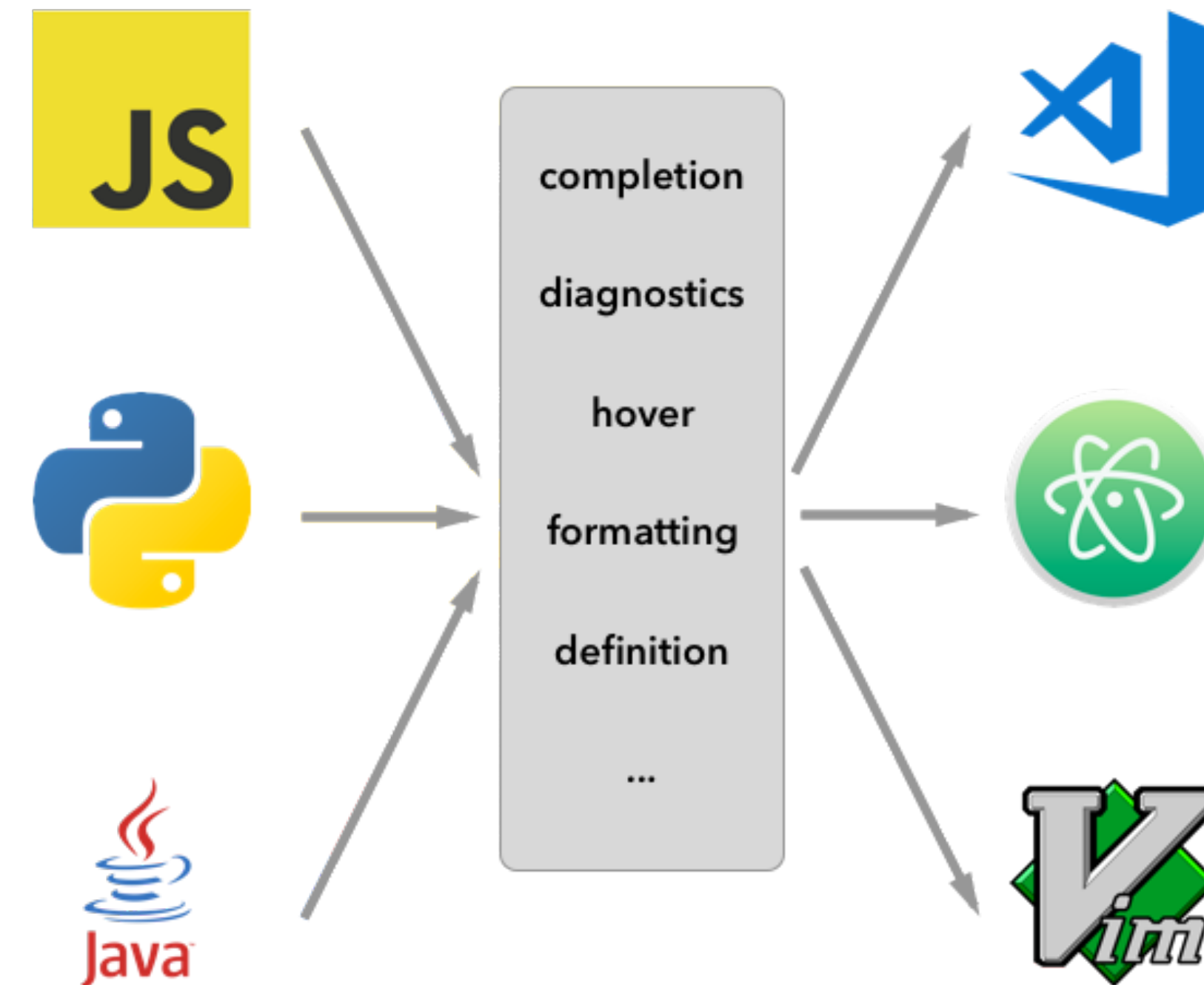
- **Compatible with multiple tools, do the work once**
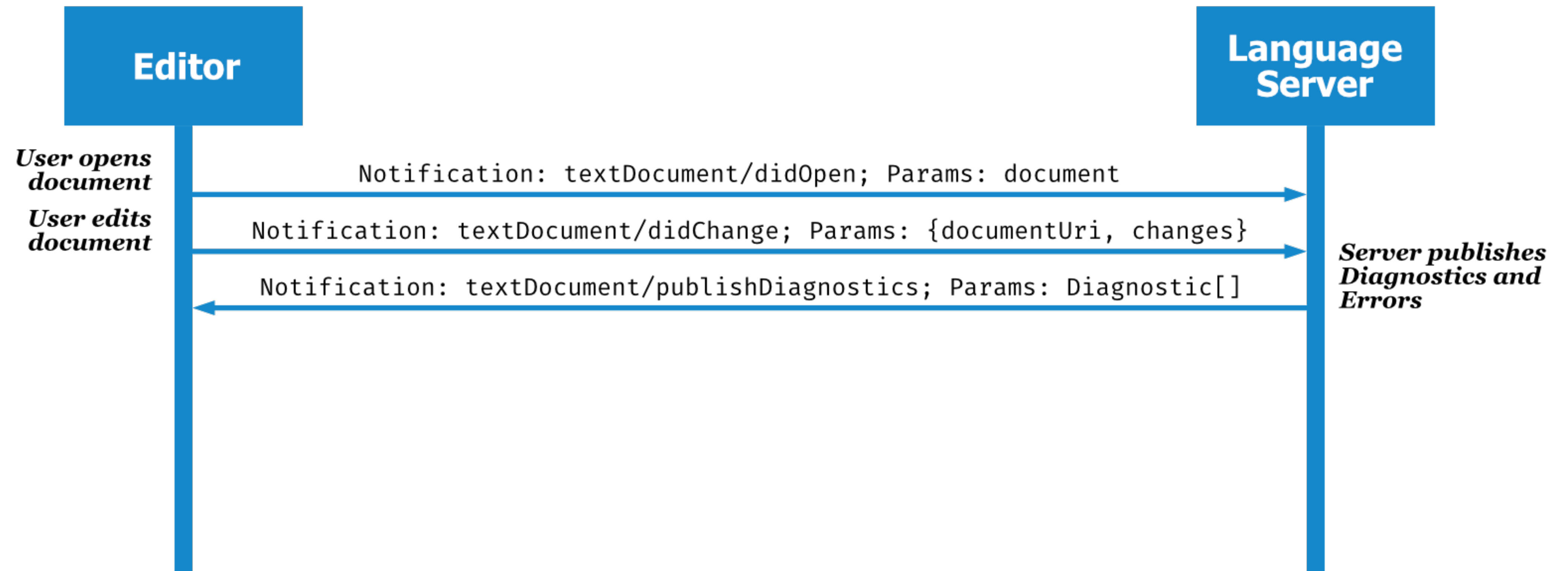
01

Language Server Protocol

What is LSP ?

LSP Protocol

Adapting LSP for Coq

02

VsRocq

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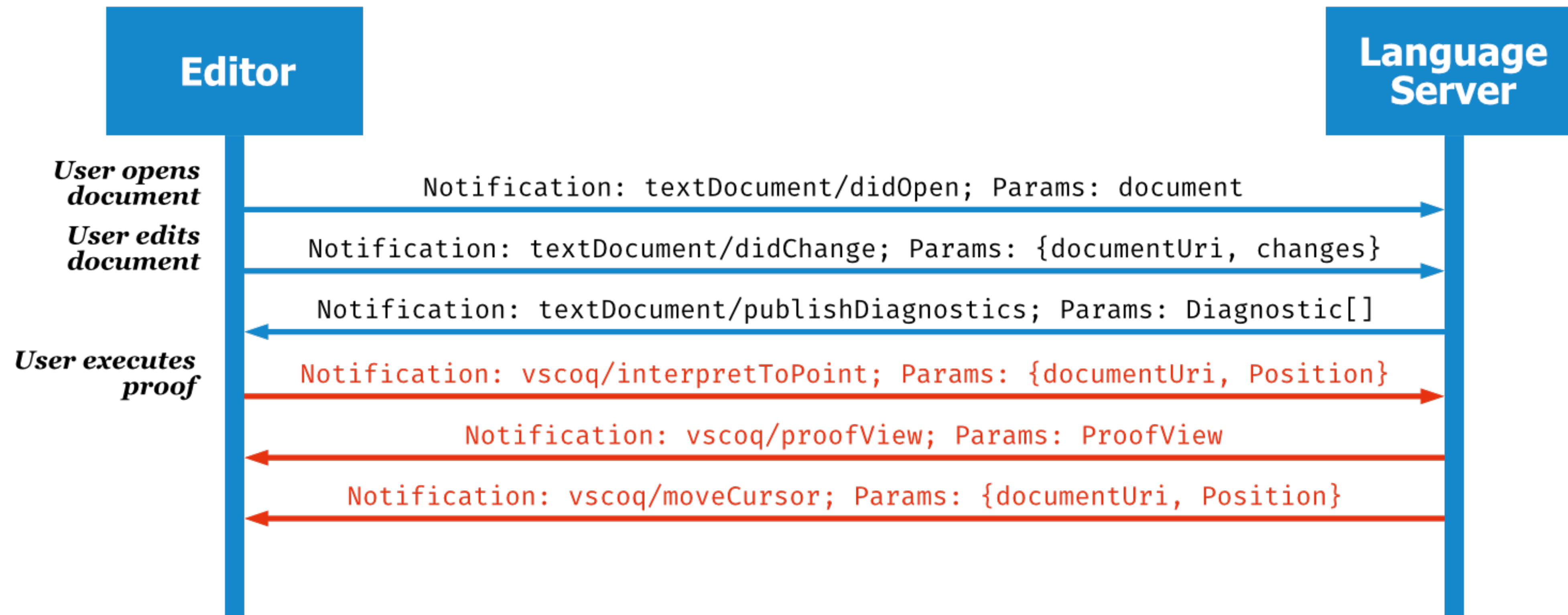
VsRocq

vsrocq-language-server
- **Written in ocaml**

- **Reactive programming pattern**

Client
- **Written in typescript, using React**

- **Two independent web-apps: the goal view and the query panel**

- **Pretty printing library in react to format goals (based on Oppen's algorithm)**

- **Re-usable, dynamic, interactive**

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Last year's road map

Stabilization

Sept. 2023   Jan. 2024   March 2024   Roll out new features

VsCoq2 Release

3 minor versions released

Last year's road map

Stabilization +
New features

Stabilization

Sept. 2023   Jan. 2024   March 2024   Oct. 2024

VsCoq2 Release

3 minor versions
released

10 new versions released
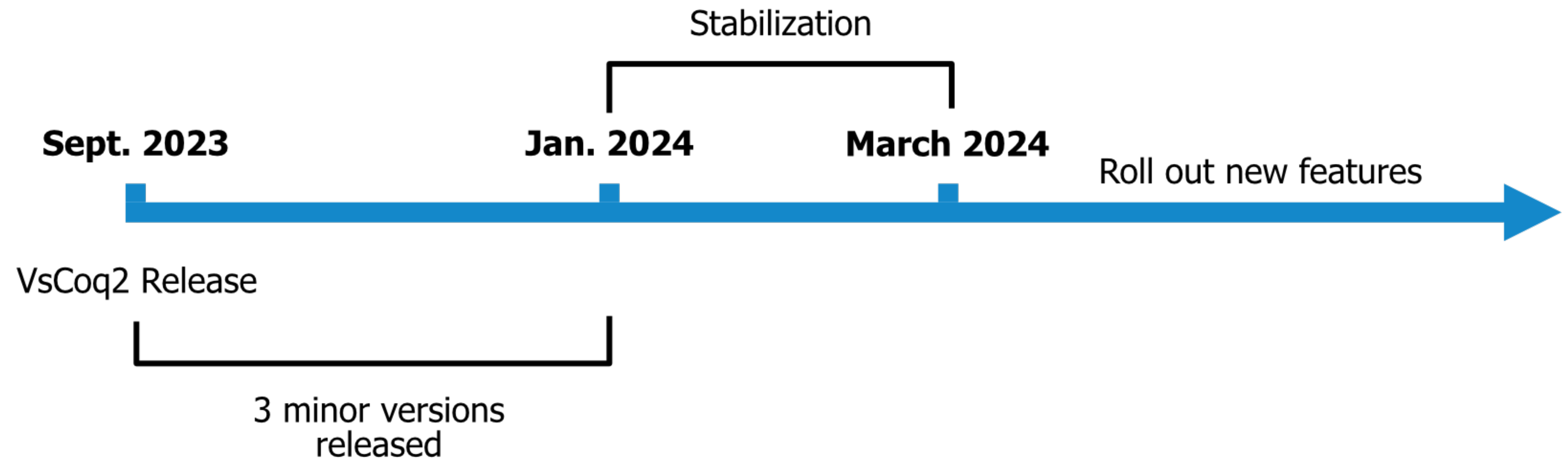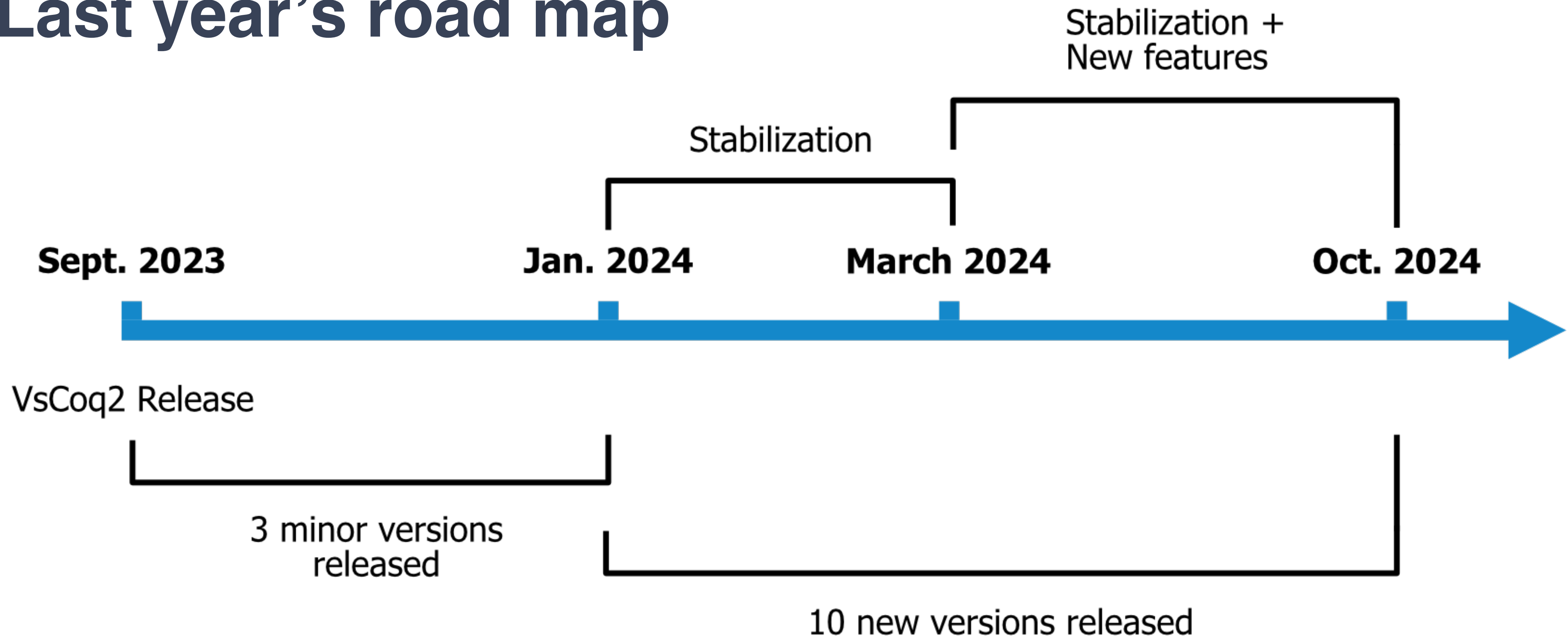
Some factoids about last year

- **Focus on stability / VsRcoq Legacy parity**

- **About 70-80% done**

- **We can focus on new features**

Some statistics (from March 2025)
- **Downloaded 34 253 times till date**

- **2435 times in the last three months**

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What about this year ?

Full road map available on GitHub
- **https://github.com/coq/vscoq/wiki/The-VsCoq-VsRocq-roadmap-2024-2025**

- **Many different themes**

Themes focusing specifically on education
- **More interactivity (for non expert users as well)**

- **New ways to query the system**

- **Onboarding: one click install, better access to doc, …**

Collaborations
- **Make it as easy as possible to build on top of VsRocq**

Collaborations in practice

Providing an API for external extensions
- **Get information on the current proofs**

- **Get the state after executing commands**

Use cases
- **A companion extension for a university level logic course in the Netherlands:**

  https://github.com/logic-and-applications/rocq-lna

- **An AI powered IDE: Coq-Pilot (Rocq-pilot ?)**

03

A word on rocq-platform

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The Rocq Platform

- **A distribution of Rocq along with a selection of libraries and plugins**

- **Provide a distribution for developing and teaching Rocq that is:**

  - OS independent

  - Dependable

  - Easy to install

  - Comprehensive

The Rocq Platform - This year

- **Latest release: Rocq 8.19**

- **We now have a release cycle ~ 6 months after Rocq release**

- **Work on signing / notarising process, particularly on MacOS**

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The Rocq Platform - Next year

- ~~Full time position open for an engineer managing the platform~~

- A new engineer is joining the team (for 3 years) in April to manage the platform

- Industrialise the release process: proper CI/CD pipeline

- Work on process for adding new packages and governing board

04

Work on Rocq -
Food for thought

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Make Rocq easier to interface and distribute

- **We are limited by Rocq in terms of features (ex: quick fix, jump to definition, etc…)**

- **Re-thinking compilation and file formats (the platform .dmg is barely below 1Gb)**

- **Sometimes Rocq does not stick to its specs, for example:**

  - Not clear where messages are sent : debug auto sends to Info, debug eauto sends to Debug

  - Pretty printing specs are not always respected : a line break should be inserted before the symbols of a notation

Work in Rocq

- **Documentation overhaul, doc strings**

- **A global query system**

- **Structuring the internal state**

- **Adding namespaces**

- **Separate globalisation from the interp phase**

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Thank you !

Follow us on https://github.com/coq/vscoq