

The Harmony Framework



SoftwareEngineering@LaBRI

Empirical Software Engineering

- Ask a question
- Design an experiment
- Measure on real data
- Analyze the results

Performing studies

- **Controlled experiments**
 - Expensive
 - Mainly students, not the same as experienced developers
- **Analyzing development repositories**
 - Cheap
 - Mainly open-source projects, not the same as industrial projects
 - Different type of repositories, hard to gather

How to get development data

- **Push mode**

- the data model is built at development-time by extracting data after each commit
- Queries can readily be written, but relevant data might lack

- **Browse mode**

- the data model is built on-demand by browsing the development repositories
- Extracting the data is long, but fine-tuned analyses are possible

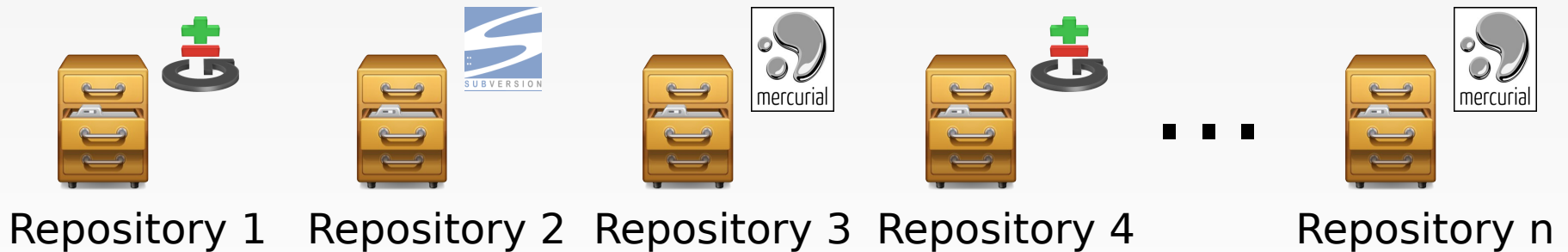
Without Harmony



Are library migrations frequent ?

Cédric

Open Data



With Harmony



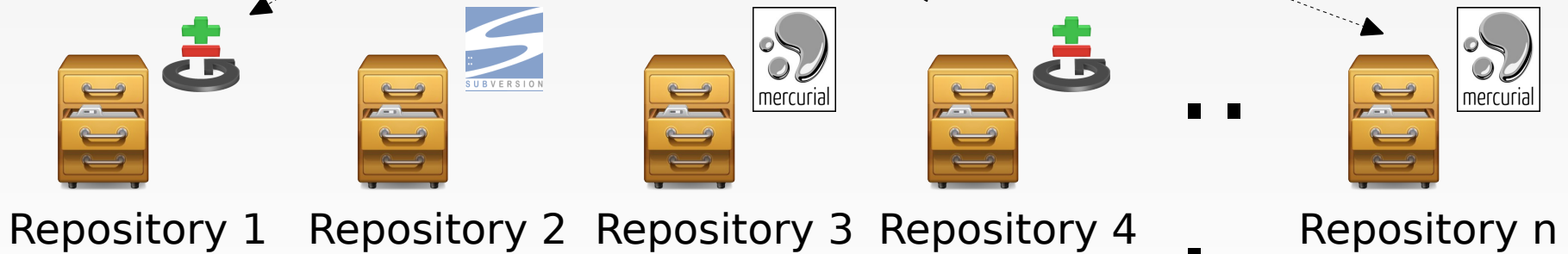
Cédric's Harmony analysis



4 % of the studied repositories performed at least one migration



Open Data



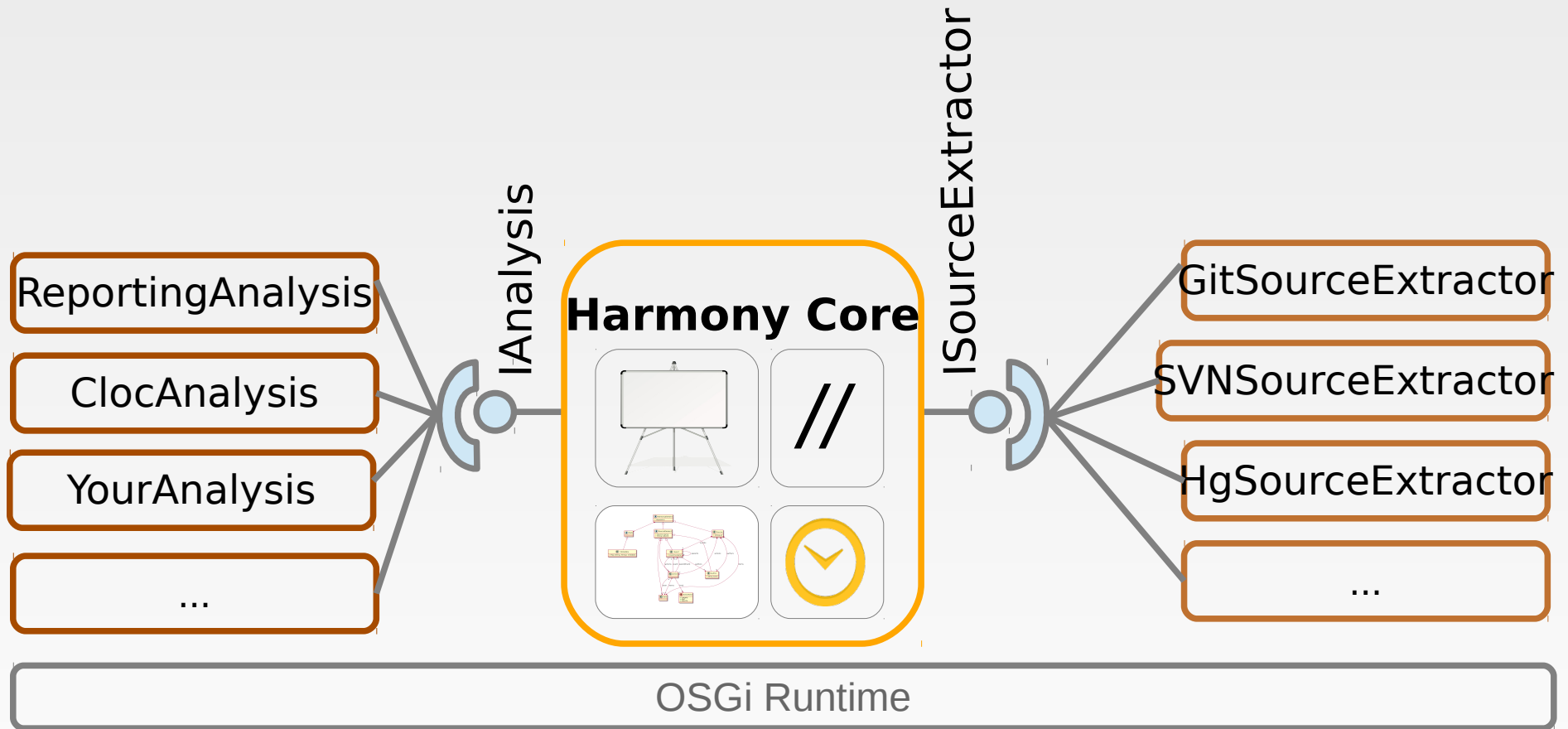
Harmony goal

Ease the analysis of development data based on a browse approach

Main features

- Repository independent analysis code. Write once, run everywhere.
- Analyses are reusable. There is a dependency mechanism between them, and they can communicate using the whiteboard paradigm
- Harmony core take care of the scheduling, multi-threading and persistence

Harmony Architecture and features



Demo

- Step 1 : Harmony installation
- Step 2 : Launching an existing analysis
- Step 3 : Extension of the analysis to answer a new question

Step 1 : Harmony installation

- Download Eclipse

- Eclipse Classic 4.2.2 :

<http://www.eclipse.org/downloads/packages/eclipse-classic-422/junosr2>

- Install Harmony

- Add Update site : <http://se.labri.fr/data/harmony/update-site>
- Install all the components from this update site
- Import Harmony bundles into your workspace (Import → Plugins and Fragments → Active target platform → select Harmony core and analyses)

Step 2 : Launching an analysis

- Run configurations → Harmony Equinox
- Type “harmony” in the OSGi console
- Wait and see ...

Step 3 : Extension of the analysis

- Modification of ReportAnalysis.java to analyze more data
- Save and back to step 2 for execution

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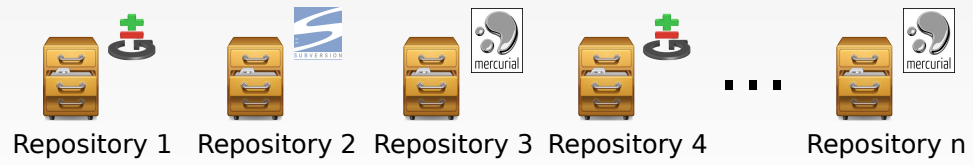
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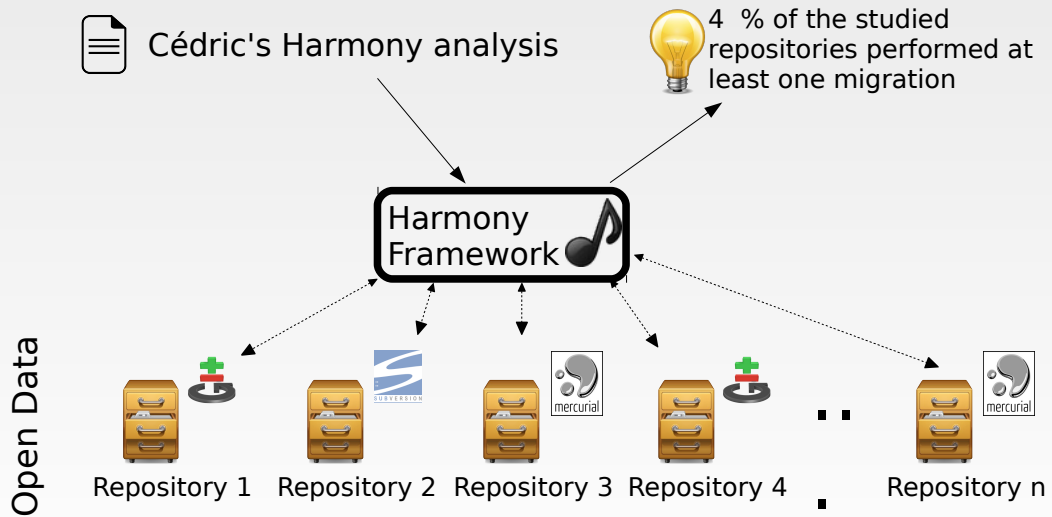
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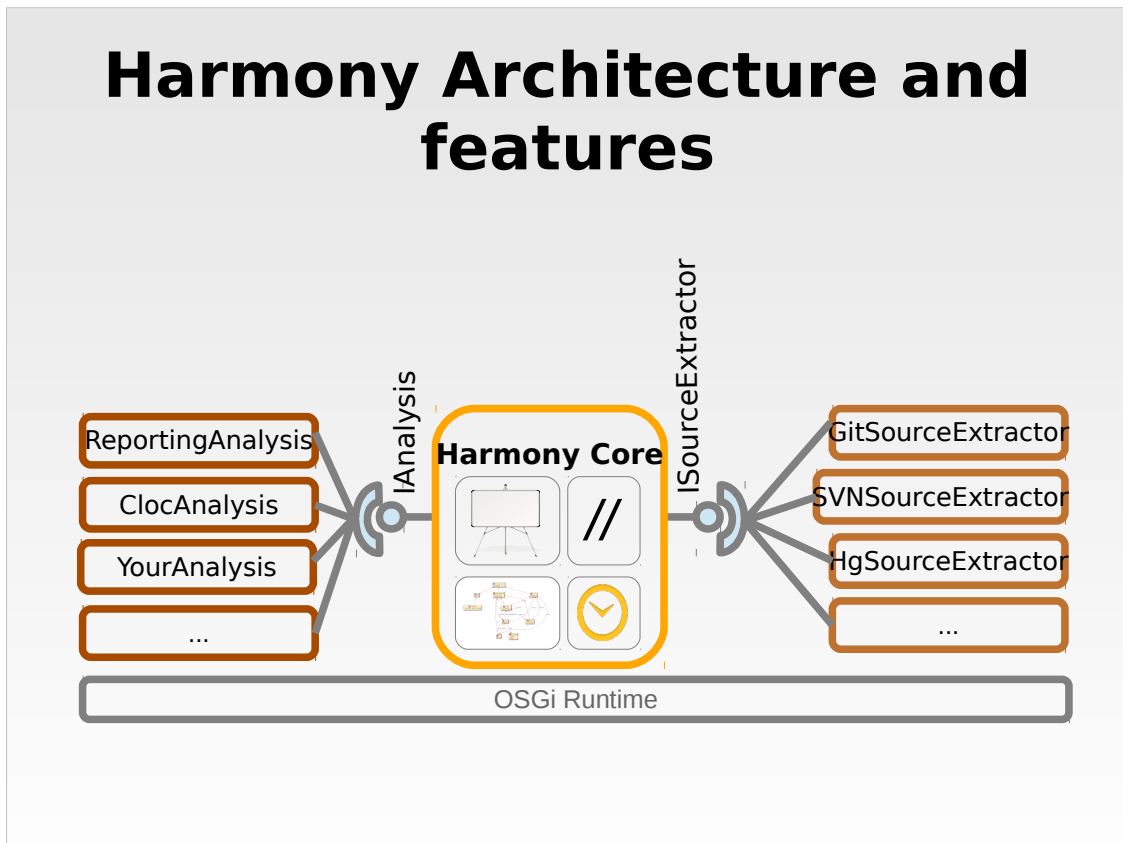
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