The Polarsys Maturity Model
Unconference workshop – session 3.
Proof of concept

https://polarsys.org/wiki/Maturity_Assessment_WG

Polarsys Meeting
Ludwigsburg (Germany), October 27st 2014

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Structure of the presentation

1. A single platform to rule them all
2. Architecture
3. Demonstration
4. Next Steps
5. Discussion

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A single platform to rule them all

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A single platform to rule them all

Objectives:

- Have all information available in a single place.
- Self-documented: all information is put within its context.
- Customisation available: add your own entries, set your own weight..
- Link to other data repositories: Eclipse Dashboard, PMI, project information.
- Publish all data for further usage.

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Proof of concept

A prototype has been developed as a proof of concept:

- Includes all documentation: quality model, attributes, goals, metrics, rules.
- Includes results of all analysed projects and help to exploit the results.
- Automatically generated from the git repository.
- Check it out: `http://castalia.camp/dl/dashboard`

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Architecture

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Architecture of the platform

Main principles

- The generation process is designed around data.
  - Easier to undersand.
  - Enables quick forking: ability to rewrite only specific parts.
  - Open & transparent: data files can be downloaded.
- Process can be stopped and resumed at any point.
- Automate as much as possible.

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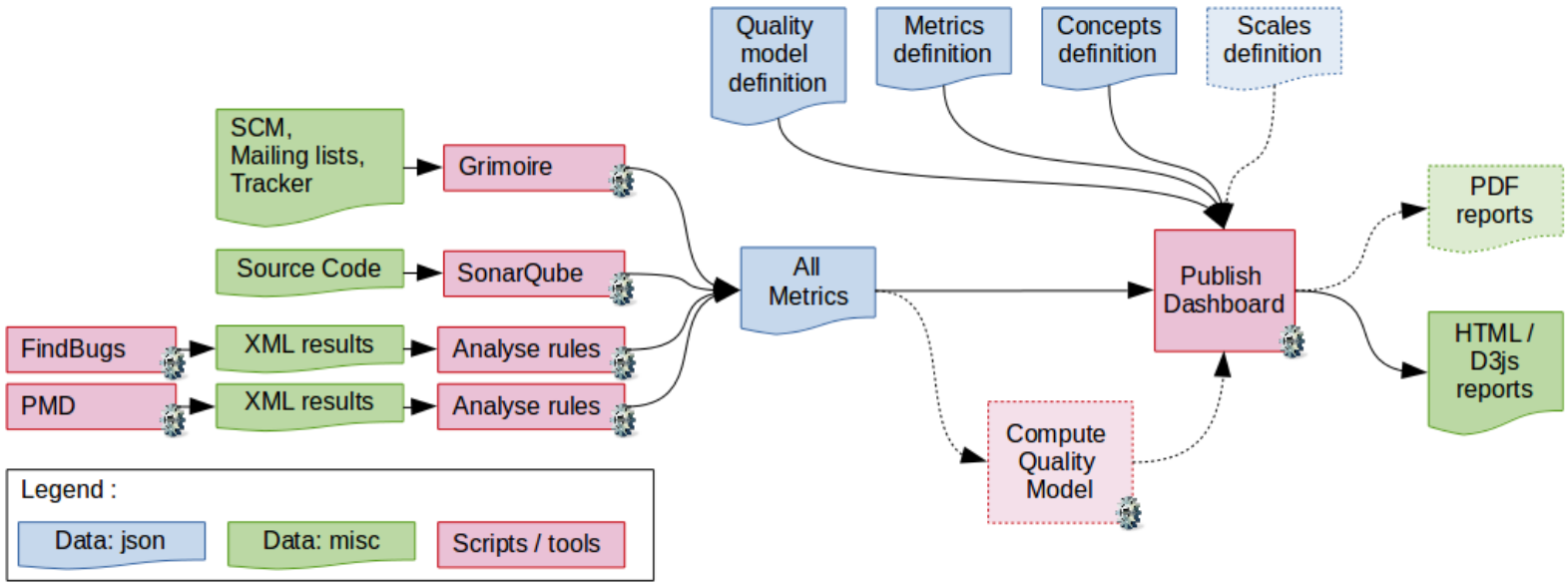
Architecture of the platform



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Demonstration

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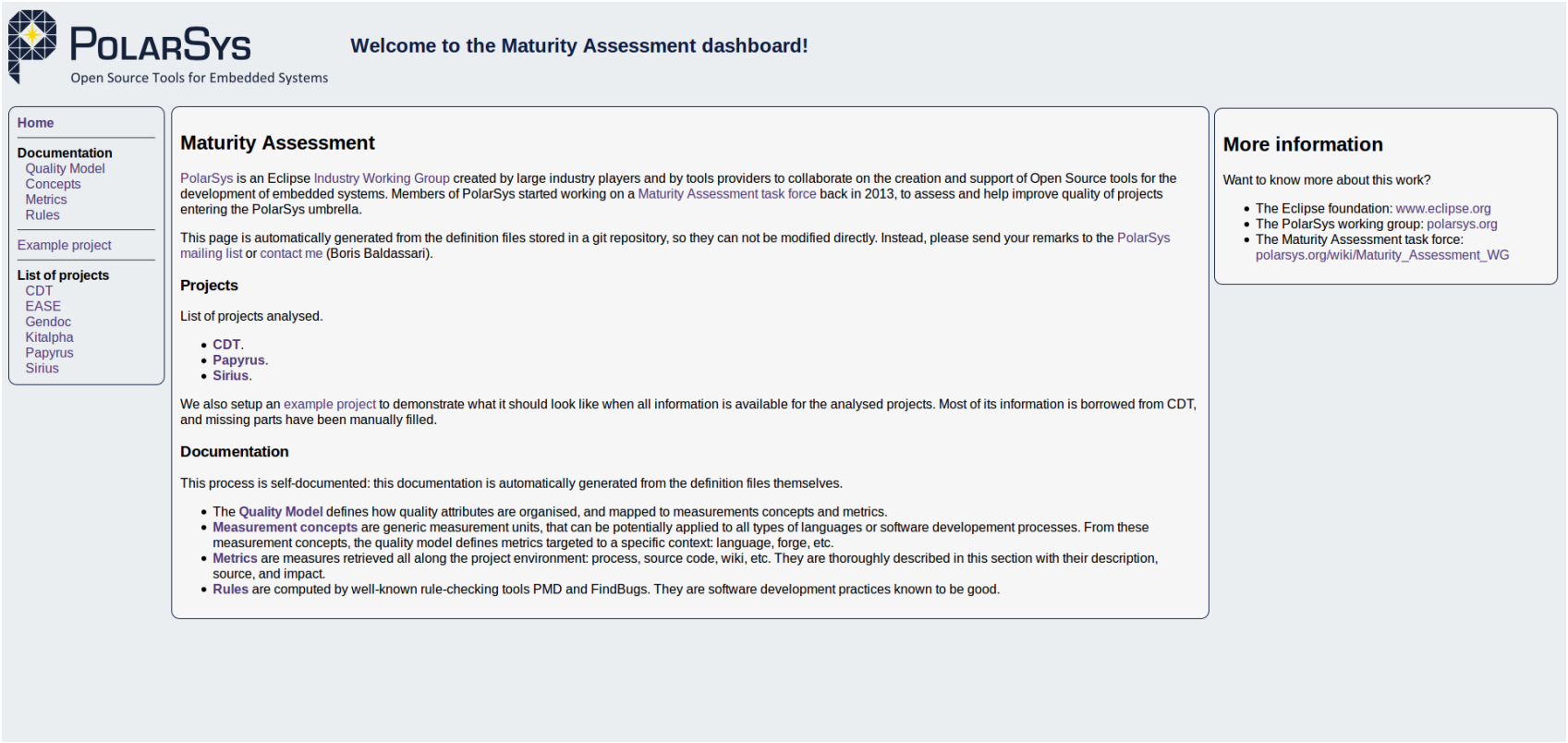
Dashboard Home



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Example project: Home

Lists all information available in the PMI file.

- Complete description of the project.
- Access to all repositories: source, issue tracking, mailing lists.
- Links to all resources: download, getting started, build, wiki, web site.
- All releases, milestones, with dates and result (ongoing/fail/success).

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Example project: Home

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Example project: Quality Model

- Provides a complete tree visualisation of the quality model:
  - Presents the full hierarchy and organisation of the model.
  - From quality attributes to measurement goals and base metrics.
  - With the values gathered or computed for the project.
- Includes in-context documentation: click on a node to get more details, links, references.
- Demonstrates the top-down and bottom-up sequences.

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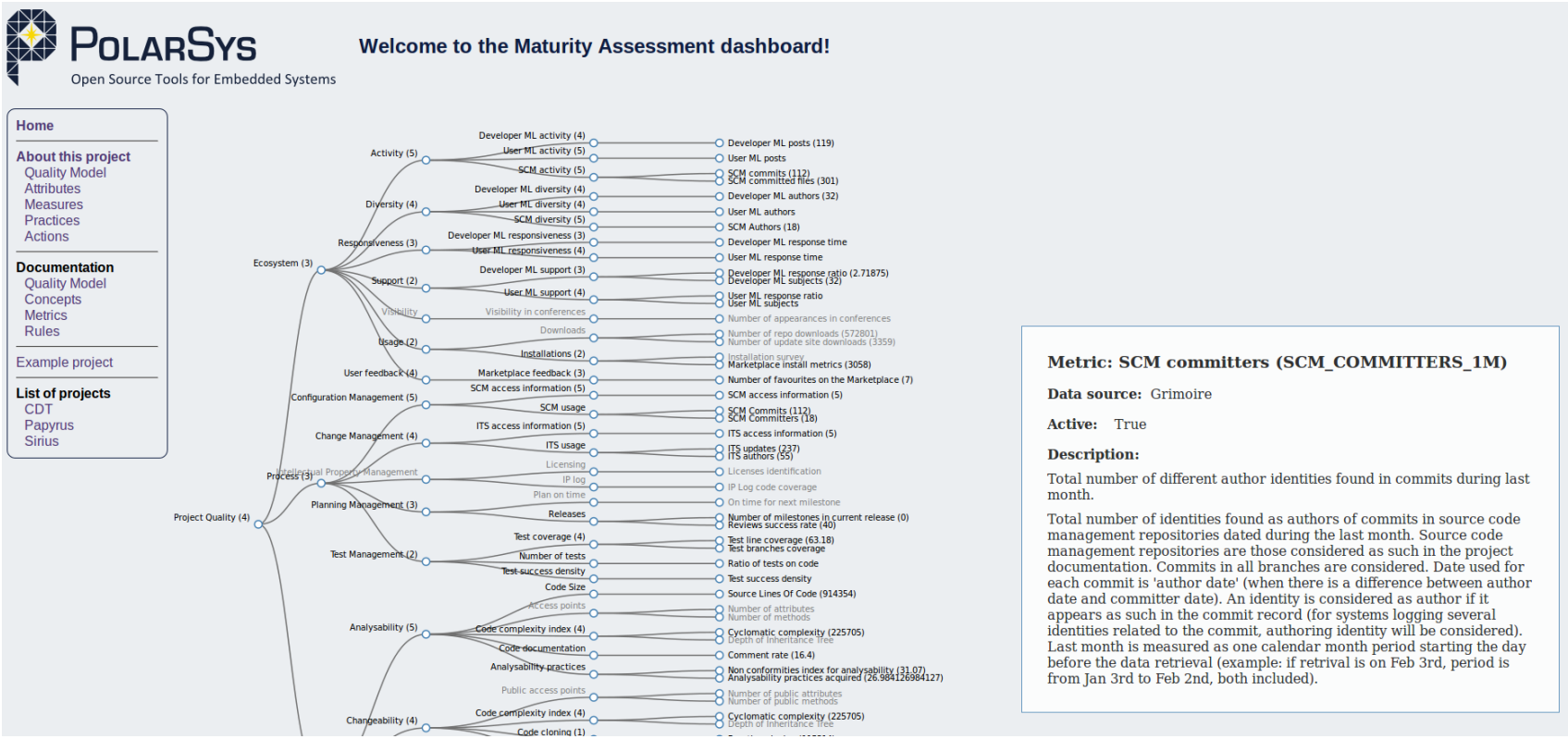
Example project: Quality Model



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Example project: Measures & Practices

- Shows a list of measures and rules checked, with mnemo, name and description.
- Direct link to the metric or rule detailed description.

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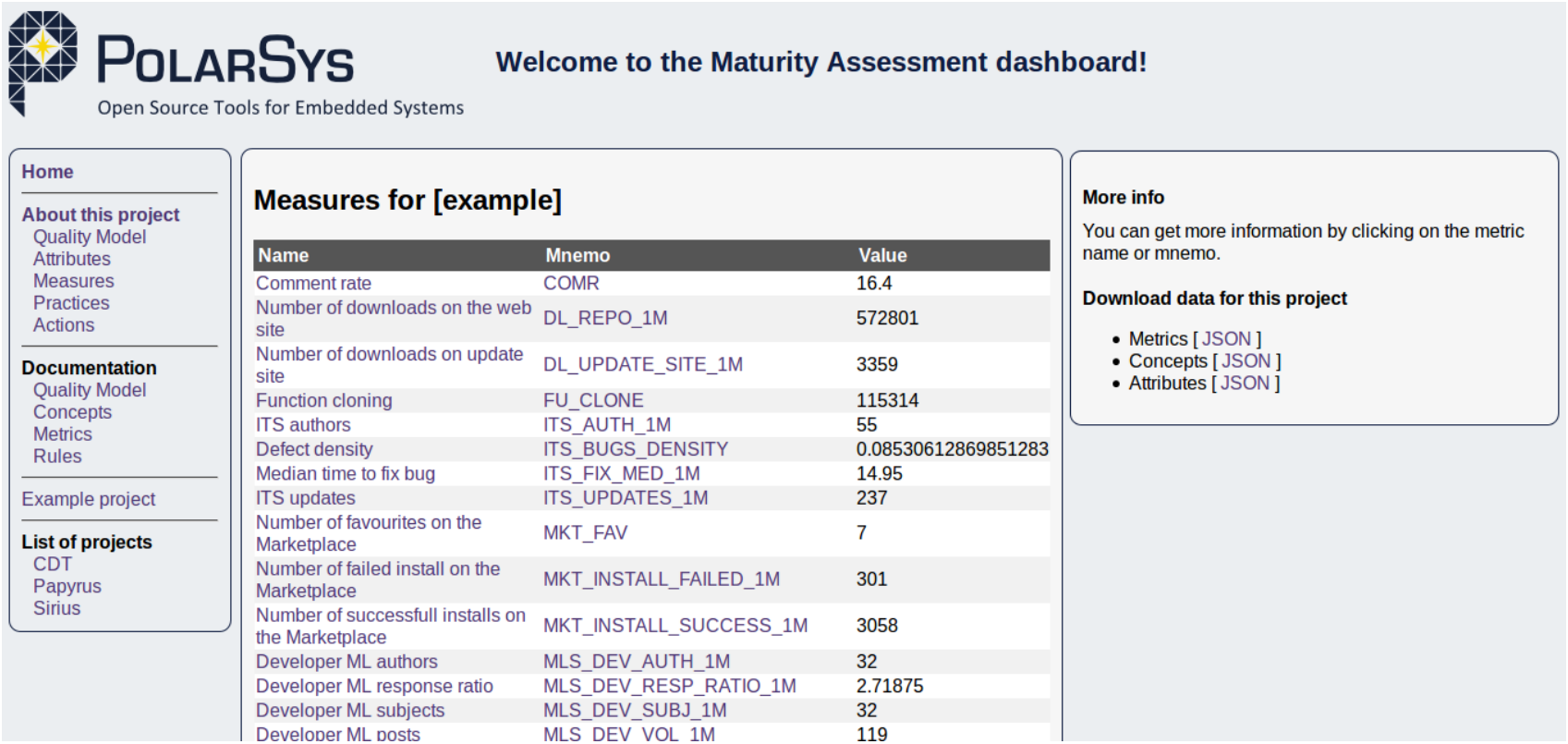
Example project: Measures



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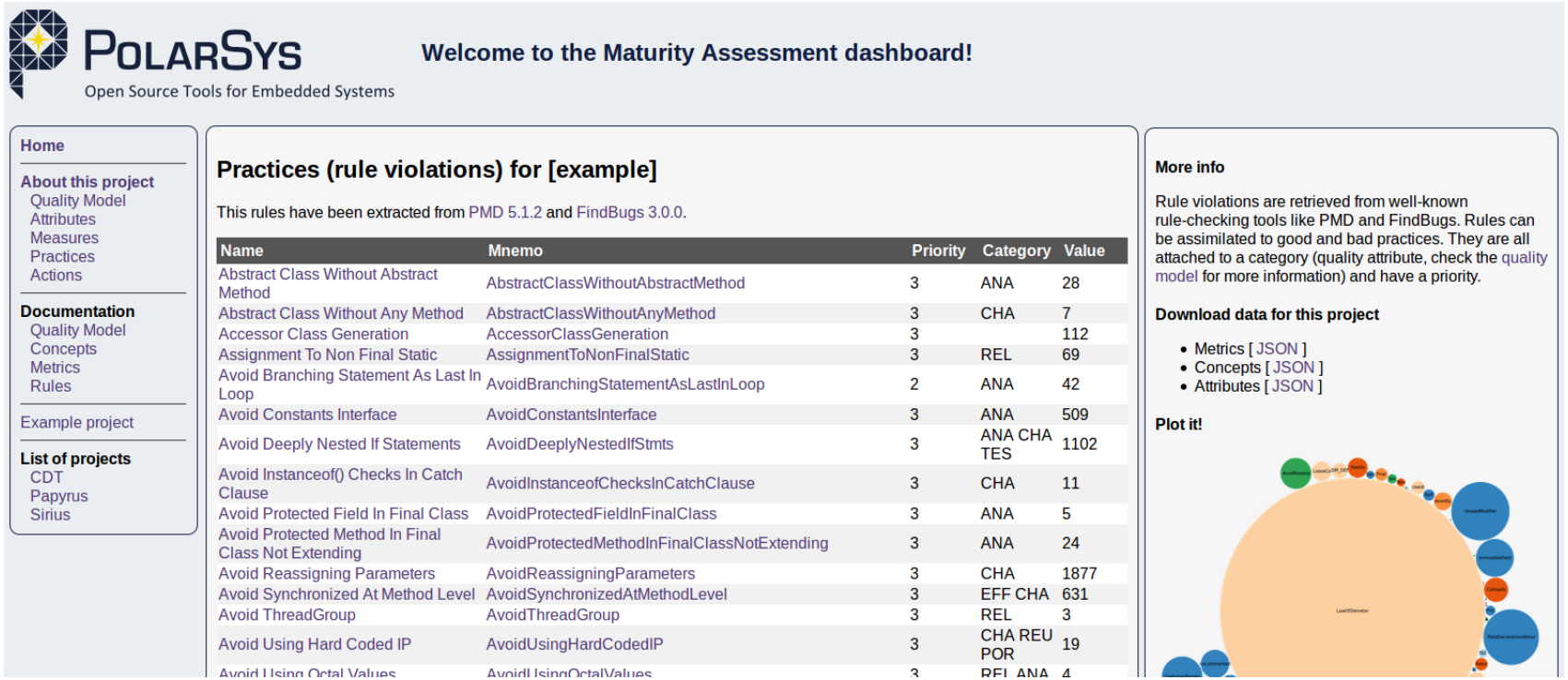
Example project: Practices



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Welcome to the Maturity Assessment dashboard!

Home

About this project
- Quality Model
- Attributes
- Measures
- Practices
- Actions

Documentation
- Quality Model
- Concepts
- Metrics
- Rules

Example project

List of projects
- CDT
- Papyrus
- Sirius

Practices (rule violations) for [example]

This rules have been extracted from PMD 5.1.2 and FindBugs 3.0.0.

Name	Mnemo	Priority	Category	Value
Abstract Class Without Abstract Method	AbstractClassWithoutAbstractMethod	3	ANA	28
Abstract Class Without Any Method	AbstractClassWithoutAnyMethod	3	CHA	7
Accessor Class Generation	AccessorClassGeneration	3		112
Assignment To Non Final Static	AssignmentToNonFinalStatic	3	REL	69
Avoid Branching Statement As Last In Loop	AvoidBranchingStatementAsLastInLoop	2	ANA	42
Avoid Constants Interface	AvoidConstantsInterface	3	ANA	509
Avoid Deeply Nested If Statements	AvoidDeeplyNestedIfStmts	3	ANA CHA TES	1102
Avoid Instanceof() Checks In Catch Clause	AvoidInstanceofChecksInCatchClause	3	CHA	11
Avoid Protected Field In Final Class	AvoidProtectedFieldInFinalClass	3	ANA	5
Avoid Protected Method In Final Class Not Extending	AvoidProtectedMethodInFinalClassNotExtending	3	ANA	24
Avoid Reassigning Parameters	AvoidReassigningParameters	3	CHA	1877
Avoid Synchronized At Method Level	AvoidSynchronizedAtMethodLevel	3	EFF CHA	631
Avoid ThreadGroup	AvoidThreadGroup	3	REL	3
Avoid Using Hard Coded IP	AvoidUsingHardCodedIP	3	CHA REU POR	19
Avoid Using Octal Values	AvoidUsingOctalValues	3	REL ANA	4

More info

Rule violations are retrieved from well-known rule-checking tools like PMD and FindBugs. Rules can be assimilated to good and bad practices. They are all attached to a category (quality attribute, check the quality model for more information) and have a priority.

Download data for this project

- Metrics [JSON]
- Concepts [JSON]
- Attributes [JSON]

Plot it!

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Example project: Actions

- Propose advice to help improve some quality characteristics.
- Spans all areas: code, process, publications, mailing lists, etc.
- Help find the right next action that would significantly improve the project quality.
- Share best practices and experience of gurus to help new-comers.

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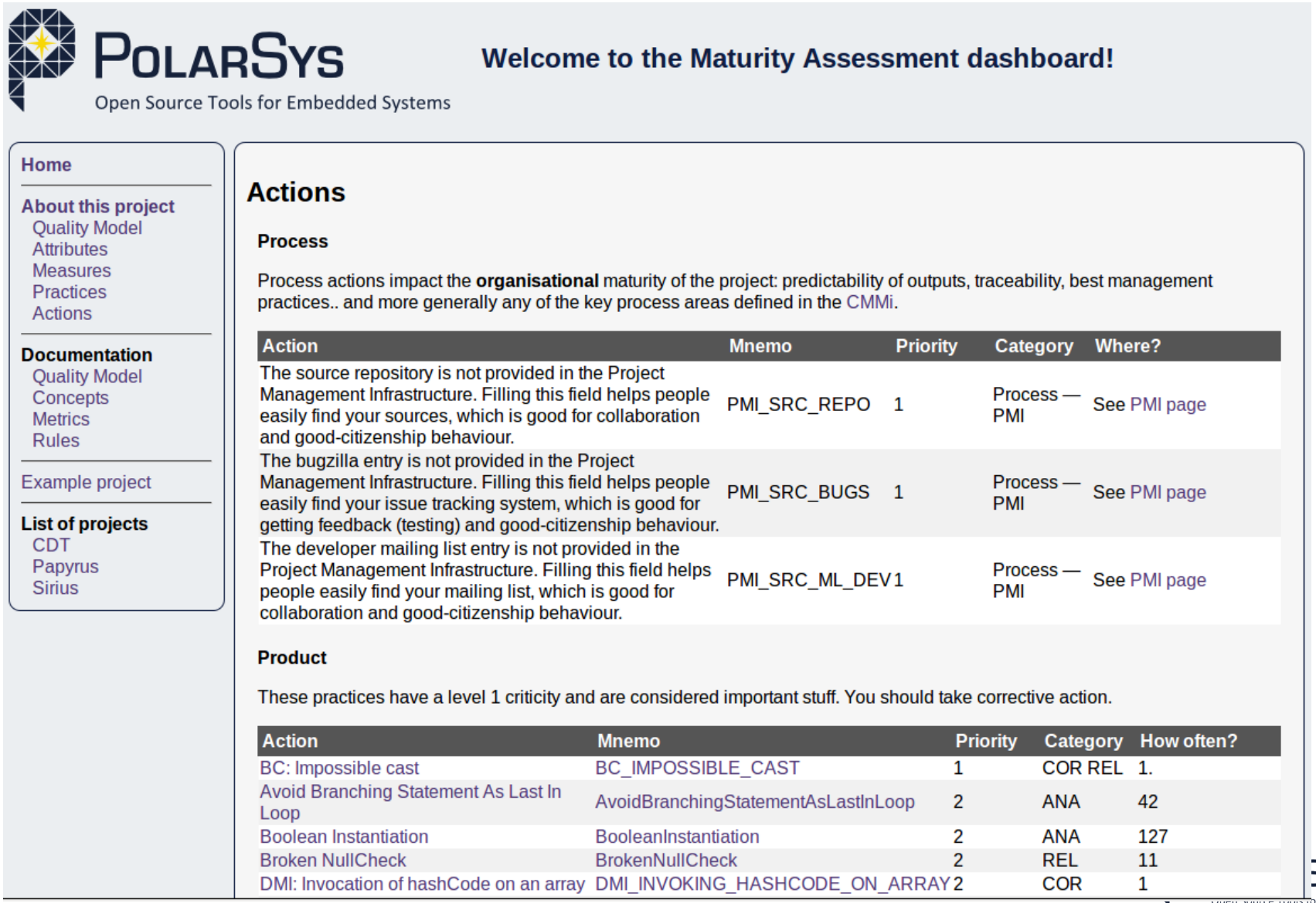
Example project: Actions



Next Steps

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Next steps: thresholds

- To help people understand numbers – not everybody knows if 238 commits a month is high, low, or average.
- Define thresholds for metrics: what is low, medium, high?
- Use a simple 5-level scale, to instantly get an idea of what the numbers mean.
- Use a set of projects as a reference – Not only from Eclipse forges.
- Use statistical methods, rely on experts' advice, mix both?

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Next steps

- Improve presentation of results: visualisation, ergonomy.
- Add more content:
  - metrics: from new areas, to increase the measurement accuracy of quality attributes
  - rules: check more practices, sort them to get only the most important, add new tools.
  - actions and advice: how to run a project the Eclipse way, communicate, attract people.
- Improve automation, ease the adoption setup for new-coming projects.
- Add more projects. What about yours?

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Discussion

Discussion

We would like some feedback on:

- Scales: what would define a good scale?
- Scales: how to choose the thresholds? Expert-based? Statistical methods?
- What useful results would you like to have in the dashboard?
- How would you like results to be presented?

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