Automating OW2 SQuAT Assessment and Reporting using Workflow and Metric Collection Tools

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CETIC in a few words

Innovation

Proof-of-concept

Research projects

Applied research

Feasibility studies

Technology transfer
CHOOSE (2012) :

– Application of QualOSS Methodology
– Targeting OW2’s Mature Transition Checklist (MTC)
– Automated analysis and reporting
– For Java only
– Workflow oriented approach
Maturity Transition Checklist

Technical
- Source code, Documentation and Binaries
- Build maturity
- Source code repository and management

SQuAT (Software Quality Assurance Trustworthiness)

Community
- Commiters activity
- Dashboard completeness
- Project Activity
Mature Transition Checklist

Technical
• Source code, Documentation and Binaries
• Build maturity
• Source code repository and management

QualOSS adapted to SQuAT (with Community)

Community
• Commiters activity
• Dashboard completeness
• Project Activity
QualOSS is methodology to assess F/OSS endeavor

=> to construct assessment model:

- Benchmarking of F/OSS for integration or services
- Deciding of the migration frequency
- Deciding of the setup of new endeavor to increase chance of success
- Assess maturity of an F/OSS endeavor
QualOSS Assessment Method

Robustness and Evolvability of F/OSS Endeavor

- Work Products
  - Products
    - Maintanability
    - Reliability
    - Security
  - Documentation
    - Availability
  - Test
    - Availability & Coverage
    - Repeatability

Community Members

- Size and Regeneration Adequacy
- Interactivity & Workload Adequacy
- Composition Adequacy

Software Processes

- Capability of Reqs & Change Mgmt
- Capability of Release Mgmt
- Capability of Support & Community Mgmt

Tools & Dependencies

- Runtime and Compile-time Dependencies
- F/OSS endeavor Compatibility
• QualOSS defines a set of 35 indicators
  – Releases
  – Mailing List
  – Commits log
  – Bugs List

• Evolution based indicators
  – Multiple major and minor releases

• Indicators’ scoring system depend on thresholds
  – Calibration on 400 SourceForge projects
  – Specific calibrations made according to MTC
Report sample with Chameleon

Reliability score: 2.28/3.5

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average number of bugs in stable releases</td>
<td></td>
</tr>
<tr>
<td>Slope number of bugs in stable releases</td>
<td></td>
</tr>
<tr>
<td>Number of bugs by number of stable releases</td>
<td></td>
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<tr>
<td>Slope number of bugs by stable releases lifetime</td>
<td></td>
</tr>
<tr>
<td>Average number of bugs in stable releases specific</td>
<td></td>
</tr>
<tr>
<td>Slope number of bugs in stable releases specific</td>
<td></td>
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<tr>
<td>Average number of new and modified files per day between minor releases</td>
<td></td>
</tr>
<tr>
<td>Average percentage of modified files between minor releases</td>
<td></td>
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<tr>
<td>Average number of coding convention violation</td>
<td></td>
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6. SQuAT

SQuAT (Software Quality Assurance Trustworthiness) is OW2’s software quality program, it provides a set of tools dedicated to software quality. Using the SQuAT tools, it will be easier to ensure the quality of a project (IP/Licence management, code style, ...).

A mature project has to publish reports concerning the following aspects:
* IP/Licence control (Proposed tool: FOSSology)
* Quality measurements (Proposed tool: Sonar)
* Trustworthiness and maturity indicators : we propose the QualIOSS assessment method.

The following evaluation were performed by the QualIOSS assessment method. (http://qualoss.org/)

Each criterion evaluation has a score between 0 and 3.5. The mean is as following:
* 0 : not yet computed
* 0.5 : high risk
* 1.5 : medium risk
* 2.5 : small risk
* 3.5 : negligible risk

The community evaluation is compute on version repository logs, the maintainability and reliability ones have been performed on the bugs list and sources.

<table>
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<tr>
<th>Evaluation Type</th>
<th>Score</th>
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<tbody>
<tr>
<td>Community evaluation</td>
<td>1.5/3.5</td>
</tr>
<tr>
<td>Maintainability evaluation</td>
<td>2.21/3.5</td>
</tr>
<tr>
<td>Reliability evaluation</td>
<td>2.28/3.5</td>
</tr>
</tbody>
</table>
Conclusion

- Tools support 35 maturity indicators
- Tools validated on some OW2’s projects
- The information gathering process has been validated on a larger number of projects
- Generated reports are the same as OW2 MTC
• Continue QualOSS characteristics automation

• Improve technology coverage

• Increase number of indicators
Thank you
 Merci

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