Introduction to RepOSS

October 18, 2011
Northeast Asia OSS Promotion Forum WG3
Background and Goal
Surrounding OSS

1. In many ICT fields, OSS (Open Source Software) is having important roles as key components of its system

2. As of July, 2011, about 260K OSS projects with 2.7M developers were registered into sourceforge.net (From sourceforge.net)

3. In order for stakeholders to choose OSS as to which one is more suitable for their systems, OSS information under some criteria will be useful as a reference
Goal

Concerns around OSS

- Functions, Supportability, and Quality
- Continuity, Stability of its community
- License restrictions and IPR
- POC (Proof of Concept), Show cases

Our Goal

To promote OSS adoptions and applications by providing a practical OSS reference and assessments with respect to concerns above.
Existing OSS Assessment Methodologies
## OSS Assessment Methodologies

<table>
<thead>
<tr>
<th>Seniority</th>
<th>OSMM Capgemini</th>
<th>OSMM Navica</th>
<th>QSOS</th>
<th>OpenBRR</th>
<th>OMM</th>
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<table>
<thead>
<tr>
<th>Original authors/sponsors</th>
<th>OSMM Capgemini</th>
<th>OSMM Navica</th>
<th>QSOS</th>
<th>OpenBRR</th>
<th>OMM</th>
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<tbody>
<tr>
<td>Capgemini</td>
<td>Navicasoft</td>
<td>Atos Origin</td>
<td>Carnegie Mellon Silicon Valley, Spike Source, O'Reilly, Intel</td>
<td>Qualipso project, EU commission</td>
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<table>
<thead>
<tr>
<th>License</th>
<th>OSMM Capgemini</th>
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<th>QSOS</th>
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<tbody>
<tr>
<td>Non-free license, but authorized distribution</td>
<td>Assessment models licensed under the Academic Free License</td>
<td>Methodology and assessments results licensed under the GNU Free Documentation License</td>
<td>Assessments results licensed under a Creative Commons license</td>
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<table>
<thead>
<tr>
<th>Assessment Mode</th>
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<tbody>
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<td>Practical</td>
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<table>
<thead>
<tr>
<th>Detail levels</th>
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<tbody>
<tr>
<td>2 axes on 2 levels</td>
<td>3 levels</td>
<td>3 levels or more</td>
<td>2 levels</td>
<td>3 levels</td>
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<table>
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<tr>
<th>Predefined criteria</th>
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<table>
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<tr>
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<td>Flexible</td>
<td>Strict</td>
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<tr>
<th>Scoring scale by criterion</th>
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<th>OSMM Navica</th>
<th>QSOS</th>
<th>OpenBRR</th>
<th>OMM</th>
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<tr>
<td>1 to 5</td>
<td>1 to 10</td>
<td>0 to 2</td>
<td>1 to 5</td>
<td>1 to 4</td>
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<tr>
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<th>Criteria weighting</th>
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<th>OpenBRR</th>
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</table>

※from Wikipedia, July, 2011
Yet no standard, as the case may be

<table>
<thead>
<tr>
<th></th>
<th>OpenBRR</th>
<th>QSOS</th>
<th>Qualipso OMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>No open repository</td>
<td>Terminology is broad and imprecise</td>
<td>Ambiguous scoring rules</td>
<td>Criteria based on Waterfall model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Universality of scoring rule is not possible</td>
<td>No open repository</td>
</tr>
</tbody>
</table>

**Common ground of Evaluation Methods**

**Maturity score:**
- $A_i$: the score of main property $i$
- $W_i$: the weight of main property $i$

**Sub property:**
- $U(i)$
- $U(i+1)$

**Difficulties to overcome**
1. Subjective Weight assignment
2. Determination of critical maturity score
3. Different results from various OSS maturity assessment methodologies
4. Objection from OSS community (i.e. Meanings of its summation)

\[
M = \sum_{i=1}^{n} A_i \times W_i
\]

\[
A = \left( \sum_{i=1}^{n} U_i \times W_i \right) \div n
\]

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1. **Deviation** by Subjective information and/or qualitative analyses

2. Deep and detailed analyses with communities members without objections from OSS communities

3. **Continuity** and the latest information
Existing Methodologies are:

- Using similar properties and similar equations, but
- Have weights that would be depended on assessors’ perspectives
- Qualitative analyses and Subjective evaluation are creating deviations

No Universal Standard
Concept and approach of RepOSS

Which is a flexible OSS Assessment Repository
Approach toward our Goal

- No universal Standard
- Subjective or Qualitative information
- Continuity issue

1. OSS Repository for Flexible assessments
2. Objective and Quantitative Properties
3. Open Community Model
Repository for assessments

- Properties (Quantitative information)
- Assessor’s Perspectives and Purposes
  - Methodologies (QSOS, OpenBRR)
  - Own analyses
- Flexible OSS Assessments

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Steps

To measure the quality of OSS by comparing and evaluating various properties

Categorization
- Service categorization (5)
- OSS classification (18/105)

Selection
- Selection Criteria
- Elimination Criteria
- Candidate selection (396)

Collection
- Properties definition (89)
- Property collection (220 OSS)

Evaluation
- Show how to evaluate OSS
- Public release of Repository system
Categorize 396 OSS projects based on the Korea government TRM (Technical Reference Model)

- 5 main categories, 18 sub categories, additional 105 sub-sub categories

- If too detailed, integrated into a higher category
- If too rough, divided into sub categories
- Functions for a specific business category are excluded
1. OSS information must be retrieved from the official and public websites

2. Quantitative data which can be evaluated must be adopted

3. Detailed Properties gathering Procedures
Evaluation

Easy to have access to OSS evaluation information:
- Properties and so on in RepOSS

Show how to evaluate OSS
- Mapping into existing OSS maturity assessment models (QSOS, OpenBRR, and so on)
- Analysis examples by BI tools
Implementation points

- Easy to use the repository
  - Data into XML database
  - BI tools for analyses

- Evaluation and Assessments
  - OSS maturity model mappings
  - Evaluation examples
  - Data collection manual

- Continuity and durability as a OSS community
  - Public Open web system, which is being developed by all OSS components
OpenBRR Mapping

8.2 User contribution framework
1) Check it by using 4 “Communication Tools” including 8.3 “Developer Mailing List” and “User Mailing List”

9. Adoption
9.1 How many book titles does Amazon.com give for Power Search query: “subject computer and title: component name”?
1) 8.3.2 “Number of books”

9.2 Reference deployment
1) 11 “Case”

10. Community
10.1 Average volume of general mailing list in the last 6 months
1) Check it by using 4.3 “Developer Mailing List” and 4.4 “User Mailing List” (it’s the same question as 7.1)

10.2 Number of unique code contributors in the last 6 months
1) 2.1 “Main Developer” and 2.2 “Other Developer”

11. Professionalism
11.1 Project Driver: N/A
1) 2 “Development System” will provide some hints

11.2 Difficulty to enter core developer team: N/A
2) Check it by checking 4.3 “Developer mailing list address”

Reference
[1] Business Readiness Rating for Open Source, BRR 2005-RFC 1,
Analysis with BI tools

Numbers of bugs

☑ # of Bugs vs. Fix Rate
☑ Consider # of lines and delivery period

<table>
<thead>
<tr>
<th></th>
<th>OSS A</th>
<th>OSS B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bug fix rate</td>
<td>99%</td>
<td>36%</td>
</tr>
<tr>
<td># of Bugs</td>
<td>49,000</td>
<td>800</td>
</tr>
<tr>
<td># of Bugs / Period</td>
<td>300</td>
<td>21</td>
</tr>
<tr>
<td># of Bugs / Period / Lines</td>
<td>0.072</td>
<td>0.079</td>
</tr>
</tbody>
</table>
Licenses

- Check OSS Licenses, whether or not they were approved by OSI (Open Source Initiative)

- What should be done under the license, which you want to use (i.e. "THE BEER-WARE LICENSE")

- Check the status like Dual or Triple licenses
Road Map

- Searching for WG3 future work
- Gathering User Requirement
- Strategic Planning
- Practical Scheduling
- Work Load Assignment
- Design & Architecture
- Trial of Case Study

- Enhancement of OSS maturity assessment methodologies
- adding OSS information
- RepOSS system development and internal delivery

- RepOSS system public delivery and Promotion
- Enhancing OSS information
- Community base activity
- OSS maturity assessment models

- Improvement and feedback from public comments and requirements.

Initiation 2010
Development 2011
Complement 2012
Propagation 2013 ~
Thank you
http://www.qualoss.org/dissemination/DEPREZ_CompareFL0SSAssessM  
ethodo-Camera-02.pdf

http://www.inf.unibz.it/~gsucci/publications/images/ComparingOpenB  
RRQSOSandOMM%20Assessment%20Models.pdf

3. George Kakarontzas, Panagiotis Katsaros, Ioannis Stamelos, “Component Certification as a Prerequisite for Widespread OSS Reuse”  
http://journal.ub.tu-  
berlin.de/index.php/eceasst/article/viewFile/449/433

4. James Howison, Megan Conklin, Kevin Crowston, “FLOSSmole: A Collaborative repository for FLOSS research data and analyses”  
http://flosseb.floss.syr.edu/system/files/FLOSSmole.pdf

5. Business Readiness Rating for Open Source BRR 2005- RFC 1  
Method for Qualification and Selection of Open Source software (QSOS)  
v1.6 2006  
http://www.qualipso.org/