Initiating SPI in small enterprises
Experiments with the Micro-Evaluation framework

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CETIC
ICT research & technology transfer center

- Software engineering
  - Requirements engineering
  - SPI
  - Software measurement
- Distributed technologies
  - Grid Computing – Cluster Linux
  - Webmining
- Electronic systems
  - Embedded software & hardware design
  - Wireless technologies
Your speaker

Alain RENAULT

Cetic (2001-)
Research and Technology Transfer in SPI

University of Namur (1998-2001)
Software Quality Lab

Software Engineer (1989-1998)

Initiating SPI in small enterprises
Experiments with the Micro-Evaluation framework

Experiment made by
• University of Namur
  – Naji Habra
• Cetic
  – Alain Renault
• École de technologie supérieure (Québec)
  – Claude Y. Laporte
  – Jean-Marc Desharnais
  – Mohamed Mounir Abou el Fattah
  – Jean-Claude Bamba
Agenda

- What is the Micro-Evaluation
- The concepts behind the framework
- The experimentation
- The limitations of the first version
- The next generations of the Micro-Evaluation
What is the Micro-Evaluation?

- **Origin**
  - University of Namur: OWPL project

- **Original objectives**
  - Make a first *global* inventory of the software capacity in the local SMEs
  - This must not be time consuming, but must be reliable

- **Provide input to the OWPL project**
  - Help start a first SPI initiative
    - Highlight strengths and weaknesses
  - Rize the awareness level of SMEs
    - on software quality
    - on SPI

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**Agenda**

- What is the Micro-Evaluation
- *The concepts behind the framework*
  - The experimentation
  - The limitations of the first version
  - The next generations of the Micro-Evaluation
The concepts behind the framework

Hypothesis
- SME = specific context
- SME = low maturity level
- Poor culture of quality
- Process vocabulary is too much complicated, not accessible
- Process improvement objective
- Label, quality level not so important

Original constraints
- Evaluation tool
  - Easy
  - Lite
  - Pragmatic
- Evaluation report
  - Lite
  - Simple and concrete
  - Usable
- Approach
  - Open minded
  - Objective (analysis)
- Team evaluated
  - One person has sufficient visibility
  - Trust this person
The concepts behind the framework

Structure of the framework

• Coverage : 6 axes
  o Quality assurance
  o Customers management
  o Subcontractors management
  o Project management
  o Product management
  o Training & human resources management

• Depth : 16 topics
  o Open question and/or sub-questions

The concepts behind the framework

Structure of the framework

• Evaluation grids
  o Objective evaluation
  o Open questions

![Diagram showing the relationship between Degree of institutionalization, Quality of practice, and Improvement]
The concepts behind the framework

Structure of the framework

• Example of question

6a. How do you select your subcontractors?
- Do you have regular subcontractors or do you sometimes question this choice?
- Do you have a well-defined procedure to select your subcontractors?

<table>
<thead>
<tr>
<th>Proposition</th>
<th>Some</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>According to isolated criteria like cost, reputation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>According to a rigorous selection procedure (Request for Proposal (RFP), selection criteria)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As far as « Subcontractors Management » is concerned, do you consider that what is done is efficient and provides expected results?
The concepts behind the framework

Structure of the Evaluation Report

- Practice description - summary of each axis
- Strengths and weaknesses
- Risks and opportunities
- Recommendations (short and mid-term)

“There is no configuration management nor version management. During a modification the last version is overwritten. A specific directory contains all the standard modules, but there is a non negligible risk to overwrite these sources with others.”

- Strengths and weaknesses
- Risks and opportunities
- Recommendations (short and mid-term)
The concepts behind the framework

Structure of the Evaluation Report

- Practice description - summary of each axis
- Strengths and weaknesses
  - **Strengths**
    - Awareness of the current weaknesses
    - Will to improve practices
  - **Weaknesses**
    - No products versions management
- Risks and opportunities
- Recommendations (short and mid-term)
The concepts behind the framework

Structure of the Evaluation Report

- Practice description - summary of each axis
- Strengths and weaknesses
- Risks and opportunities
- Recommendations (short and mid-term)
  - Short term
    - Define the way the documents are used or managed (sources or others)
  - Medium term
    - Define standards, procedures and good practices that the team should follow for its project management, testing and development (coding rules)

Agenda

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The experimentation

First experimentation

- In Wallonia (Belgium)
  - 20 organizations (1998-1999)
  - 7 re-evaluations (2000-2001)
  - 12 new evaluations (1999-2004)

Second experimentation

- In Québec (Canada)
  - 23 organizations (2004)
  - New evaluations forseen in 2005

Small Enterprises (Maturity Perception)

- Commitment to quality
- Human resource management
- Origin of quality
- Requirements formalization
- Change management
- Customer integration
- Subcontractors selection
- Subcontractors tracking
- Project planning
- Project phasing
- Development methodology
- Verification
- Versioning
- Products structure
- Problems management
- Development methodology
The experimentation

Second experimentation in Québec (Canada)
- 23 organizations (2004)

First experimentation in Wallonia (Belgium)
- 20 organizations (1998-1999)
- 7 re-evaluations (2000-2001)
Agenda

- What is the Micro-Evaluation
- The concepts behind the framework
- The experimentation
- **The limitations of the first version**
- The next generations of the Micro-Evaluation

Limitations of the first version

- The Micro-Evaluation
  - The Micro-Evaluation is very attractive as a tool for VSE
  - It offers optimum ROI
  - It gives an accurate insight into assessed organizations
  - It is affordable thanks to its simplicity
  - It takes context into account

- But …
  - It is limited to small teams, small projects with expected low maturity level
  - It rests on one trusted person
  - It can be further simplified (concentrate on one single project or team)
  - More precision is required in the evaluation grids
  - The context needs to be even more taken into account (i.e. Agile practices)
Agenda

• What is the Micro-Evaluation
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• The limitations of the first version
• The next generations of the Micro-Evaluation

Next generations of Micro-Evaluation

• Even more simple
  – Terminology improvements
  – Questions and items rephrasing
  – Change order of questions
  – Concentrate on one single project or team

6a. How do you monitor your subcontractors’ activities?
- Do you keep in touch with your subcontractors during the projects?
- Do you hold regular meetings with your subcontractors?

13. What relations, what contacts do you undertake with your suppliers during their taking part to the project?
- Does the supplier regularly take part to project activities?
Next generations of Micro-Evaluation

- Even precision and objectiveness
  - Improved evaluation grid

9. How do you monitor your subcontractors’ activities ?
- Do you keep in touch with your subcontractors during the project ?
  - Proposition
  -occasional meetings, on demand
  - regular meetings

13. What relations, what contacts do you undertake with your suppliers during their taking part to the project ?
- Does the supplier regularly take part to project activities ?
  - Proposition
  - only if necessary
  - on a regular basis, on fixed milestones
  - as often as possible
  - continuously, the supplier participates to the project

Next generations of Micro-Evaluation

- Even more contextual
  1. Use of OWPL Success factors
  2. Integrate more Agile concepts
  3. Provide with an « Agile profile »
  4. Create an « Agile Micro-Evaluation »
Conclusions: VSE can improve their maturity level

VSE can afford SPI

- Micro-Evaluation can help
- No need of a huge methodology
- No need of a huge budget

Human factor is an important concern

- communicate by yourself
- select the « right » contact person
- identify critical (positive and negative) individuals

Context must be considered

- are current practices efficient ?
- is current project a good candidate for SPI ?
- what are the business objectives of the organization ?
Thank you for your attention ...

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