Quality in Brazilian Software Industry:
an evaluation of the practices of organizations.

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COPPE/UFRJ

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➡ **The patterns (Standards, CMM, etc.) are generic;**

➡ **They don't assure the effective adoption of the Software Engineering practices;**

➡ **We can't aver they result in real improvement in the the quality of the product or process.**

"Evaluate the real impact of the adoption of the precepts established by the various patterns and techniques for Quality in Software Products and Process on the practices of the Brazilian software industry."

Object

- ***Antecedents:***

    - Survey of the Ministério da Ciência e Tecnologia, through the Secretaria de Política de Informática e Automação (MCT/SEPIN): "Quality and Productivity in the Brazilin Software Sector";

    - Editions: 1993, 1995, 1997 e 1999;

    - Developed in the scope of the Sub-comitê Setorial de Software do Programa Brasileiro de Qualidade e Produtividade (SSQP/SW-PBQP).

The SEPIN Research

- Aims mainly at giving aid for the monitoring and maintenance of the National Informatics Policy;

- Bases for the "Diagnóstico da Qualidade e Produtividade em Software", part of the "Termo de Referência do SSQP/SW-PBQP";

- Presents a descriptive analysis (quantitative) of the software industry where it concerns to Quality Management.

The SEPIN Research

- ◆ 282 companies in 1993 (5,5 %);

- ◆ 445 companies in 1995 (4,2%);

- ◆ 589 companies in 1997 (3,5 %);

- ◆ 446 companies in 1999 (4,2 %);

- ◆ 446 companies in 2001.

Estimate error $\varepsilon = 5,0$ **%** (**Confidence interval: 95 %**) and estimate population of 2.500 companies.

"The use of formally established methods for the implementation of Quality Programs in software development process may not result in a coherent and effective adoption of the methods and practices proposed by Software Engineering."

Development

Through research based on statistic methods, "know" the reality of the Brazilian software industry in its aspects related to Quality and Software Engineering, checking, this way, the truth of the formulated hypothesis.

Methodology

■ Data source:

  ◆ Data base of the research "Qualidade e
    Produtividade no Setor de Software Brasileiro do
    MCT/SEPIN" for the year 2001.

Methodology

■ Treatment:

- ◆ Qualitative analysis of the Brazilian software industry reality, where it concerns to Quality Management;

- ◆ Statistic tools used in order to compare population proportions and verifying relationship among variables.

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■ Structure:

◆ The whole analysis will be based on the *Goal, Questions, Metrics Paradigm,* proposed by Victor Basili;

Methodology

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- **Unfolding hypothesis into Goals:**

  - Check if the implementation of Quality Programs (formal or not) in the Brazilian software companies results in the adoption the methods and techniques proposed by Software Engineering for the quality in Software Process.

■ **Unfolding hypothesis into Goals:**

– Check if the implementation of Quality Programs (formal or not) in the Brazilian software companies results in the adoption the methods and techniques proposed by Software Engineering for the quality in Software Products.

Methodology

■ **Pertinent Questions (Example):**

– Goal I: *"Does the adoption of formal Quality Programs (ISO 9000, CMM, ect.) lead to an effective use, in the developing process, the Software Engineering tools and techniques considered relevant for the quality in Software Process?*

Methodology

- **Preliminary Survey** (ongoing)**:**

  - ◆ Survey with experts in order to identify which Software Engineering practices, tools and documentation can influence Software Process and Product Quality.

- **Complementary Survey:**

  - ◆ Survey among companies which declared, in the Sepin Survey, adopt Quality Programs (formal or not) in order to deepen the knowledge of the Software and Quality tools, techniques and practices used by them.

■ **Preliminary Research** (ongoing)**:**

 ◆ **Participants profile to the present moment:**

 173 answered question forms;

 123 from industry and 115 from university (among them, 65 in both);

 Average working time = 12 anos;

 Median of the projects number = 10.

■ **Preliminary Survey Profile** (ongoing):

■ **Industry Profile:**

- ◆ 18 company owners;
- ◆ 13 informatics managers;
- ◆ 8 quality managers;
- ◆ 27 project managers;
- ◆ 57 system analysts.

■ **University Profile:**

- ◆ 59 teachers;
- ◆ 3 researchers;
- ◆ 1 consultants;
- ◆ 8 PhD students;
- ◆ 39 Master students;
- ◆ 5 graduation students.

■ **Preliminary Survey Profile** (ongoing):

■ **Qualification Profile:**

- 35 PhDs;
- 36 Masters;
- 26 Specialists;
- 69 Graduated;
- 2 Quality Certified;
- 5 None.

■ **Areas:**

- 46 Software Engineering;
- 105 Informatics or Computation;
- 22 Others.

Relevance

- **For the Software Engineering academic community:** the research will offer substantial data of the effective results and implications due to the use of the techniques and tool recommended by them;

- **For software industry: it will offer an index that can aid their management processes, strategic planning and decision making;**

- **For those who outline industry development policies and strategies: it will allow the drawing of a picture that shows their reality in relation to the precepts of Quality Management, working as a group of indexes of the possible routs to be followed.**

Chronogram

Activity	Sep	Oct	Nov	Dez	Jan	Feb	Mar	Apr	Mai	Jun
Collecting Preliminary Survey data	■	■								
Consistence data analysis	■	■								
Data tabulation	■	■								
Results Analysis		■	■							
Statistic tools developement			■	■	■					
Indexes building				■						
Complementary Survey					■	■				
Results Analysis						■	■			
Draft writing			■	■	■	■	■			
Text revision							■	■	■	
Final writing									■	■

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