Applying a Functional Measurement Method

Cognitive Issues

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Measurement process

Phase 1 is about the construction of the measurement method. It was applied during the construction of the functional measurement method COSMIC-FFP

Phase 2 includes three activities:
• gathering the data
• modeling the software
• application of the numerical rules

Phase 3 analyzes the results
• Checking the results
• Using a validation process

Phase 4 uses the results:
• Productivity models
• Estimation models
• Quality models
Activities

- Procedure of data-gathering:
  - Is specific to each organization
  - Not systematized in the measurement method documentation
  - The quality of the documentation about the software to be measured is a factor to consider

- Application of numerical rules is relatively easy
Path of the measurer

- Understanding the information (documentation and/or specialist)
- Finding the rules of the method the measurer will need to interpret the problem
- Using all that can be useful in the measurement method in connection with the problem to be solved (include local rules)
- Finding the solution
Phase 2 activities and path of the measurer

- Understanding and interpreting correspond to the activity of data-gathering

- Using and solving correspond with the activity of constructing the model of the software or with the activity of the numerical assignment rules
Quality of the documentation

- The quality of the documentation facilitates (or not) the understanding of the software for the purpose of the measurement.
- The measurer then must question the specialists who carried out the software in order to fill out the lack of information.

Documentation
- incomplete
- obsolete
- wrong

Models
- different model
- different vocabulary
Topology of COSMIC-FFP method

Mapping

Step 1
- Identifying the layers
  - Identifying the users

Step 2
- Identifying the boundary

Step 3
- Identifying functional processes
  - Identifying the triggering event
  - Identifying the data group
    - Help to interpret the rules
    - Link problems together
    - There is a place for new types of problems

Step 4
- Identifying the sub processes
  - Entry
  - Read
  - Write
  - Exit

Step 5
- Adding the sub processes
Application procedure

- Identify the problem and locate it in the topology
- Locate each problem in relation with others problems if there is more than one potential problem
- For each problem, ask the suitable questions to well understand and interpret the problem
- Answers to the questions lead to the solution
- The solution can lead to another problem or with relevant information which will contribute to the solution. It can also lead to a new potential case.
Case-Based Reasoning Cycle

- Retrieve the most similar case or cases that will help to solve the problem
- Reuse the information and knowledge in that case to solve the problem
- Revise the proposed solution
- Retain the parts of this experience likely to be useful for future problem solving
A parallel between the CBR approach and the application procedure.

- Identify the problem
- Retrieve one (or many) cases
- Propose a solution
- Test/reorganize the cases
- Identify the problem in the topology
- Locate each problem
- Ask suitable questions
- Find a solution
- Identify a new problem or a new case

Assume the measurer understand the information
User interface of Help CPR

- **Query** = identify
- **Problems** = retrieve
- **Bar** = solve
- **Questions** = retrieve
- **Bar** = priority
- **Actions** = solve or help
Help CPR versus CBR approach

CBR Approach

Identify the problem

Retrieve one (or many) cases

Propose a solution

Test/reorganize the cases

Help CPR

Object « Query »

Objects « Problems » « Questions »

Answers (Green or red boxes)

Expert Interface