Practical Software and Systems Measurement

A foundation for objective project management

OO Measurement Field Trials

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OO Measurement Report - I

- *In January 2001 a report on OO measurement was released*
- *The report provides a comprehensive review of OO measurement*
- *Three major issues identified:*
  - *size measurement*
  - *quality measurement (estimation)*
  - *reuse measurement*

OO Measurement Report - II

- ***Includes ICM table of the recommended measures***
- ***Has a list of OO measurement and estimation tools and tool vendors***

OO Measurement Field Trials - I

- ***The purpose is to gather actual experience in using the OO measures to:***
  - ***validate the measures***
  - ***provide case studies***
- ***We have three organizations that are interested in participating in the field trials***
- ***Data has been collected from one of them already - the other two are in progress***

OO Measurement Field Trials - II

- ***The specific objectives of the three trials are:***
  - ***defect prediction***
  - ***cost estimation***
- ***In one of the sites we have design measures***
- ***We have a tool to collect the OO product measures from C++ and Java programs to be used in the field trials (on PSM web)***

Preliminary Findings

- ***In one trial we have data from multiple subsystems - so we can look at subsystem measures as opposed to only class measures***
- ***There were strong associations between the OO measures and the number of defects (integration and field)***
- ***So the measures are potentially good leading indicators of subsystem quality***

Field Trial Challenges - I

- ***Data needs to be collected in a single on-site visit - therefore substantial effort put in preparation***
- ***Matching defect data to class or subsystem data can be very time consuming***
- ***Small samples require specialized data analysis techniques***

Field Trial Challenges - II

- ***The measures across the sites are not going to be the same, so broad generalizations for specific measures will be difficult***
- ***Extraction of useful defect data from version control systems is not so simple***
- ***Questions about accuracy defect counts***

Field Trial Process - I

- ***Management approval to participate***
- ***Teleconference with members of the organization***
- ***The organization selects candidate projects***
- ***Project managers and technical leads fill up a questionnaire***
- ***Organization downloads measurement tool and experiments with it***

Field Trial Process - II

- *On-site visit (approximately 2 days) to complete collecting the OO product measures and the outcome measures (effort or defects)*
  - *this requires organizational staff to be available for that period*
- *Data analysis is performed off-site*
- *We produce an analysis report for the organization*

Benefit to Organization

- ***Customized analysis of their OO systems and projects:***
  - ***cost estimation model***
  - ***risk assessment model***
- ***The basics of a process for collecting OO measures***
- ***Transfer of hands-on knowledge on how to use OO measures***

Cost to Organization

- *Teleconferences (3 x 2hrs = 6p-hrs)*
- *Questionnaire (1p-hr per project)*
- *On-site (14 p-hrs)*
- *Review of report (2x2hrs = 4 p-hrs)*
- *Total for 1 project = 25 p-hrs of effort*

Objectives of the Workshop

- ***Either:***
  - ***Detailed Exposition on OO Measurement***
  - ***Ranking Exercise of OO Measures***