Validation of an Approach for Improving Existing Measurement Frameworks
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Purpose of the article?

Was the article interesting?

Contribution of article?

Measurement Framework (MF)

- “a set of related metrics, data collection mechanisms, and data uses inside a software organization.” p484
- How is this different from Kitchenham’s?
- What is Kitchenham’s definition?

An MF is

- “sound when its metrics and measurement models are valid …”
- “complete when it measures everything that its users need to achieve their goals”
- “lean when it measures what is needed and nothing else”
- “consistent when its metrics are consistent with the user goals”
Definitions

- Application Domain
- Entity
- Attribute
- Measurement
- Metric
- Data
- Data use
- Data user
- Data manager
- User group
- Goal
- Domain knowledge
- Background knowledge
- Discovered knowledge

Goal-Question-Metric (GQM) p485

- “A goal is an operational, tractable description of a user group objective in using the data”
- “Goals are refined in a operational, tractable way, into a set of quantifiable questions”
- “Questions imply a specific set of metrics and data for collection.”
- Figure 1

Measurement Goal p485

- Use the template below to identify the measurement goal. Replace the underlined phrases.

- “Analyze ‘object of study’ in order to ‘purpose’ with respect to ‘focus’ from the point of view of ‘point of view.’”

Measurement Goal for Learning

- Analyze student performance in order to maximize performance with respect to student effort from the point of view of instructor

- What would be questions?
- What would be metrics?

Attribute Focusing (AF) p486

- “An interesting fact is characterized by the deviation of attribute values from some expected distribution or by an unexpected correlation between values of a set of attributes”

- See figure 2, p486

Interestingness Function p487

- Absolute value of the product of the freq of occurrence of x and the freq of occurrence of y minus the freq of joint occurrence of x and y

- | (freq of x)*(freq of y) – (freq of x and y) |
Learning Effectiveness

- What would be surprises in the data?
- How would these be related to the interestingness function?

MF Characterization

- Identifying metrics and attributes
- Identifying available data
- Identifying data uses and user groups

Top Down Analysis (GQM)

- Capturing the user group goal
- Identifying relevant entities and attributes
- Mapping attributes to existing metrics

Bottom-up analysis

- Defining the Analysis
- Running the analysis and organizing the diagrams
- Reviewing the diagrams

Work Validation

Was the article useful?