Assessing the Impact of MDE on SCS (AIMS)

State of the Practice

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Agenda

1. Introductions
2. Recruited domain experts
3. Planned publications
4. High level view
5. Ranking software
6. Measurement options
7. Brainstorming
8. “Homework”

High Level View

1. Identify client
2. Identify software (10–30 packages)
3. Measurements
4. Ranking/assessment
5. Report and paper writing
6. Meta-analysis
7. Apply similar techniques to MDE developed software

Ranking

- Analytic Hierarchy Process (AHP) for decision making with multiple options and multiple criteria
- Options = software products, Criteria = Qualities
- Relative comparisons
- *n options* (software products) and *m criteria* (qualities)
- For each quality a pairwise comps between each software
- Forms an *n*x*n* matrix *a*. The value of a_{jk} ranges from:
  - 1, when options *j* and *k* are equally successful, to
  - 9, when option *j* is extremely more successful than option *k*
- Prioritize qualities to select the best software
- Previously calculated *a* from a measure out of 10
- Recommend - pairwise comparision with domain experts

Measurement Options

- Previous Measures
- Functionality of family members - commonality analysis
- Empirical measures of code
  - Lines of code
  - Cyclomatic complexity
  - etc.
- Empirical measures of documentation
  - Presence or absence of types of documents
  - Number of lines of documentation
  - Traceability
  - etc.
- Empirical measures of issue tracking
  - Number of open issues
  - Number of closed issues
  - etc.

Measurement Options: Qualities of Artifacts

- Completness
- Consistency
- Modifiability
- Traceability
- Unambiguity
- Correctness
- Verifiability
- Abstract

Brainstorming Metrics

- Usability?
- Correctness?
- Performance?
- Maintainability?
- Reproducibility?
- Quality of documentation?

Homework

- Define sustainability
- Measures for each quality
  - Installability
  - Correctness
  - Verifiability
  - Reliability
  - Performance
  - Usability
  - Maintainability
  - Reusability
  - Understandability
  - Reproducibility
  - Productivity
  - Sustainability