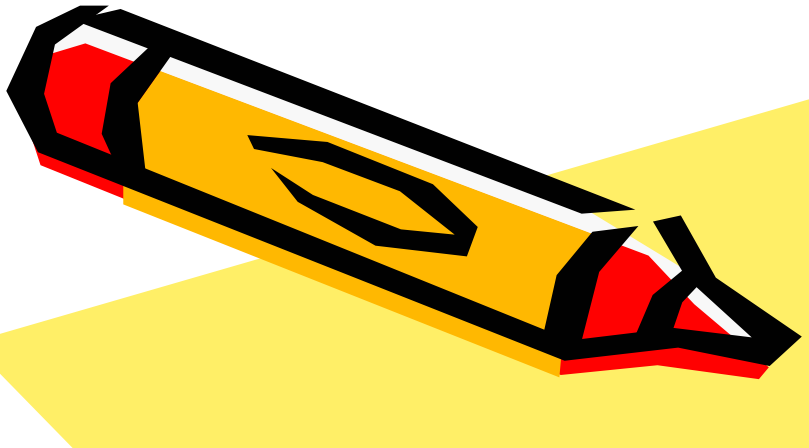
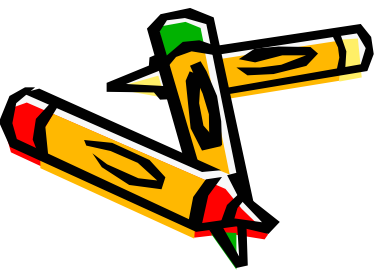


Metrics Package RFP

OMG ADM Task Force
April 2006

Architecture Driven Modernization (ADM)

- Mission: Create a set of meta-models facilitating the interoperability of application modernization tools.
- ADM Task Force meta-model roadmap and scenarios[1]
- Two standards serve as foundation for remaining standards
  - Knowledge Discovery Meta-Model (KDM)
  - Abstract Syntax Tree Meta-Model (ASTM)



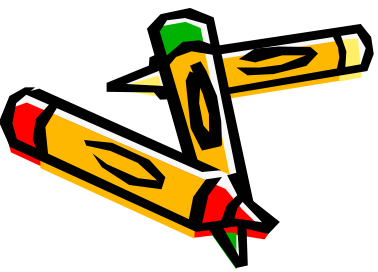
[1]See http://adm.omg.org/ADMTF Roadmap.pdf

Goal of the Metrics Package

Support other ADM packages and scenarios by providing a meta-model or enhancements to other meta-models that enable the interchange of measures of or derived from artifacts defined by other ADM packages, SPEM, SOA meta-model or alternative sources.

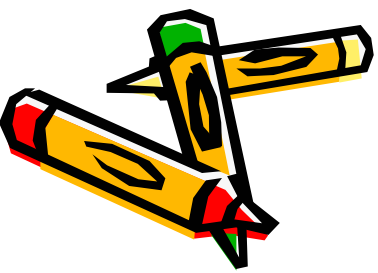
Practical Applications of the Metrics Package

- Measures on KDM and ASTM meta-data provide quantifiable numbers that can be plugged into ADM scenario estimating models
- Estimating models can utilize ADM measures for various ADM scenarios
- Should reflect or consider history or trend measures



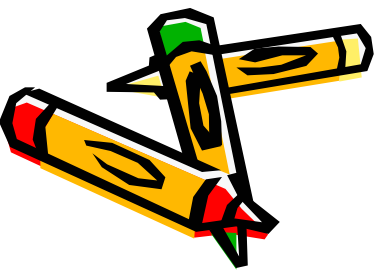
Measure Usage

- Software assessment/triage
- Transformation project planning
- Project monitoring
- Cost/benefit of proposed modernization
- Metric guided learning
- Post-mortem project analysis



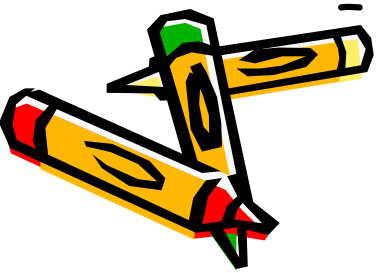
Software Measurement

- Comparable evaluations of existing software artifacts.
- Data for disciplined engineering
- Quantitative basis for assessing software and managing modernization processes.



Measurement Examples

- Size
  - Lines of Code
  - Number of screens
  - Number of operators and operands
- Complexity
  - McCabe, Halstead
- Cohesion
  - Number of called internal routines
- Coupling
  - Number of called external routines



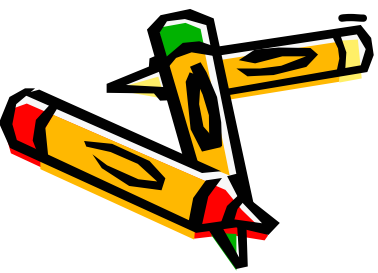
Potential measurement categories

- Architectural
  - Call nesting level
- Environmental
  - No. executable batch steps
- Data Definition
  - No. I/O data groups
- Software Assurance
  - Risk-Reliability
  - Risk-No. of exposures
- Quality
  - Uptime
- Performance
  - Online response time
- Functional
  - Bus. data / all data
- Cost
  - Operational Cost

[1]Source:http://www.comsysprojects.com/SystemTransformation/tmmetricguide.htm

Aspects of Measures

- Unit of Measurement
- Measured artifact
- Measured artifact feature
- Measurement process
  - Count
  - Aggregation
  - Named
  - Transformation



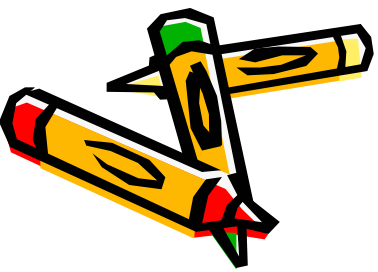
Aspects of Measures

- Name: McCabe's Cyclomatic Complexity
- Unit: Independent path
- Measured artifact: Program, control flow graph
- Measured feature: Independent path
- Measurement process:
  - Count
  - Choice point count + 1
  - (Arc count – node count + 2) of strongly connected

Measurement Grades

Map measurement intervals to symbols

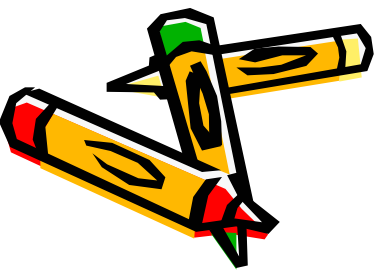
- Small, medium, large
- Cold, warm, hot
- A, B, C, D or F
- Reliable / Unreliable



Measurement Ratios

No unit of measure

- Uptime percentage
- Business data percentage of all data
- Halstead volume / potential volume



Metrics Package Premises

- Metrics Package should incorporate other measure standards to avoid reinventing the wheel
- Measures should include cross-section of modernization measures that already exist [1]
- Certain ADM measurement categories and measures may be identified or established
- Measurement categories should be clearly mapped to ADM packages

[1] See http://www.comsysprojects.com/SystemTransformation/tmmetricguide.htm

Metrics Package Objectives

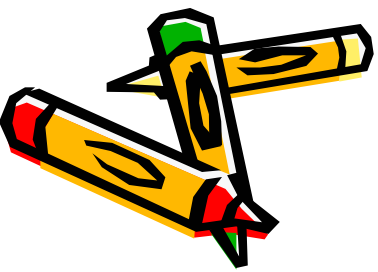
- Propose software measure abstraction for artifacts of other ADM packages
- Propose extension mechanism to allow Metrics Package to evolve as other ADM packages emerge
- Identify measures that support or complement other ADM packages
- Ensure that Metrics Package clearly supports various ADM scenarios

Requirements

- Ensure that Metrics Package is synchronized with other ADM packages
- Ensure that Package is flexible enough to adapt to useful measures a given vendor may incorporate later
- Consider existing or emerging industry measures and standards
- Reflect scope of systems from which measures were derived

Relationship to Other ADM Roadmap Standards

- Metrics Package should initially support the KDM and ASTM via meta-model extensions or additions
- Metrics Package will need to evolve with additional ADM packages
- Should reflect measure associations between KDM and ASTM



Potential Next Steps

- Identify ADM measurement categories based on ADM Packages and Scenarios
- Define measures to be plugged into each measurement category
- Identify how measures would be represented within specific ADM meta
- Establish meta-models or extensions to existing meta-models to support various ADM Packages

Measure Mapping Implications

- Mapping approach
- Facilitates process of identifying various measures as they pertain to a given ADM scenario
- Requires clear and concise mapping of how each ADM package supports each scenario
- Suggests more detailed Scenario Whitepaper needed to fully understand measures relationships among ADM packages

In Summary

- Due to relationship between Metrics Package and other ADM packages, creation of this package will require a unique approach
- Metrics Package could be absorbed as enhancements to other ADM packages
- Should minimally be common thread to ensure that all measure meta-data is consistently deployed across various ADM packages