Breakout Group Summary

Architecture Evaluation: Criteria, methods, Tools

Session Chair: Barry Boehm
Scribe: Hoh In

Group Presentation:
Rose Gamble: Interoperability Conflict Analysis
James A. Hager: Object-Oriented Ground System Mgmt.
Debra Richardson: Static and Dynamic Integrity
Charles Simmons: Evaluation Criteria for SGS
Most Important Evaluation Criteria

6 - Cost
5 - Schedule
5 - Adaptability
5 - Understandable, Dependable, Formal/Analyzable
4 - Interoperability
3 - Performance
3 - Scalability
3 - Persistence / Ownership

3 - Testability
1 - Complexity
1 - Mission performance
1 - Tradeoff support
1 - Transparency
1 - Dependability (Reliability)
1 - Risk
1 - Reuse
# Field Guide

<table>
<thead>
<tr>
<th>Method</th>
<th>Examples</th>
<th>Strengths</th>
<th>Potential Concerns</th>
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</table>
| Interface Checking      | StP, RDD-100      | • Static integrity
• Traceability
• Some Dependency                                                         | • Dynamic integrity
• Performance, cost, schedule analysis
• Subjective attributes                                                   |
| Formalized Models       | Rapide, Wright, HDM, AAA | • Static, dynamic integrity
• Security
• Interoperability
• Dependency                                                              | • Model granularity and scalability
• Performance, cost, schedule analysis
• Subjective attributes                                                   |
| Scenario Analysis       | SAAM              | • Subjective Attributes - usability, modifiability
• Human-machine system attributes: - safety, security, survivability       | • Largely manual, expertise-dependant
• Scenario representativeness; method scalability
• Verification/Validation/Accreditation
• Integrity, performance, cost, schedule analysis                          |
| Prototyping             |                   |                                                                           |                                                                         |
| Simulation; Execution   | Network, VOA; UNAS | • Performance analysis
• Dynamic integrity
• Reliability, survivability, accuracy                                     | • Model granularity and scalability
• Input scenario representativeness
• Verification/Validation/Accreditation
• Cost, schedule, subjective attributes                                     |
| Parametric Modeling     | A4, COCOMO, Queuing Models | • Cost schedule analysis
• Reliability, availability analysis
• Performance analysis                                                    | • Subjective attribute
• Static, dynamic integrity
• Verification/Validation/Accreditation
• Input validation                                                          |
Biggest Architecture Evaluation Needs

• Understandable by all stakeholders
  Consensus on key constructs
  Standard terminology
  Better abstraction / View support

• Architecting process (role of evaluation) - 9
• Elaborated evaluation criteria/policies - 7
• Round-trip engineering - 6
Biggest Architecture Evaluation Needs

- Better attribute metrics - 5
- Ability to evaluate incomplete architectures - 5
- Universal ADL - 2
- Architecture evaluation policy - 2
- Ability to evaluate architecture patterns - 1
- Architecture description interchange - 0
- View reconciliation, transformation - 0