

# 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

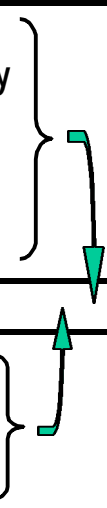
1 - Dependability  
(Reliability)

1 - Risk

1 - Reuse

# Field Guide

Method	Examples	Strengths	Potential Concerns
Interface Checking	StP, RDD-100	<ul style="list-style-type: none"> <li>• Static integrity</li> <li>• Traceability</li> <li>• Some Dependency</li> </ul>	<ul style="list-style-type: none"> <li>• Dynamic integrity</li> <li>• Performance, cost, schedule analysis</li> <li>• Subjective attributes</li> </ul>
Formalized Models	Rapide, Wright, HDM, AAA	<ul style="list-style-type: none"> <li>• Static, dynamic integrity</li> <li>• Security</li> <li>• Interoperability</li> <li>• Dependency</li> </ul>	<ul style="list-style-type: none"> <li>• Model granularity and scalability</li> <li>• Performance, cost, schedule analysis</li> <li>• Subjective attributes</li> </ul>
Scenario Analysis	SAAM	<ul style="list-style-type: none"> <li>• Subjective Attributes                             <ul style="list-style-type: none"> <li>- usability, modifiability</li> </ul> </li> <li>• Human-machine system attributes:                             <ul style="list-style-type: none"> <li>- safety, security, survivability</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Largely manual, expertise-dependant</li> <li>• Scenario representativeness; method scalability</li> <li>• Verification/Validation/Accreditation</li> <li>• Integrity, performance, cost, schedule analysis</li> </ul>
Prototyping			
Simulation; Execution	Network, VOA; UNAS	<ul style="list-style-type: none"> <li>• Performance analysis</li> <li>• Dynamic integrity</li> <li>• Reliability, survivability, accuracy</li> </ul>	<ul style="list-style-type: none"> <li>• Model granularity and scalability</li> <li>• Input scenario representativeness</li> <li>• Verification/Validation/Accreditation</li> <li>• Cost, schedule, subjective attributes</li> </ul>
Parametric Modeling	A4, COCOMO, Queuing Models	<ul style="list-style-type: none"> <li>• Cost schedule analysis</li> <li>• Reliability, availability analysis</li> <li>• Performance analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Subjective attribute</li> <li>• Static, dynamic integrity</li> <li>• Verification/Validation/Accreditation</li> <li>• Input validation</li> </ul>



# Biggest Architecture Evaluation Needs

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