



Software Risk and Estimation Workshop Outbrief

Workshop co-Leads

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Software in Acquisition Workshop
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Panel #2: Software Estimation / Risk – Top Level Summary

- **Panel Theme/Focus:**
 - Policy, guidance, and training for improving software acquisition and program execution through synergistic integration of risk management and estimation approaches
- **2006 DoD Software Summit Findings:**
 - Understand that software is a primary performance, schedule, and cost driver; ...
 - Pressure to rapidly procure new capabilities can inhibit balance of life cycle cost, schedule, and performance expectations to achieve executable programs
 - Software risks and life cycle costs are not consistently accommodated in planning
 - Realistic schedule and effort or cost estimates are often rejected or constrained
 - Reuse, open source, and government off-the-shelf software estimating methods are inadequate
- **Recommendations:**
 - Examine software estimating, seek to improve it
 - Improve risk management over the software life cycle.



Success Factors (1 of 3)

- Customer/User involvement
 - Involved in process
 - Committed, authorized, knowledgeable
- Well defined RFP
 - Customer understanding and knowledge about scope before issuing RFP
 - Appropriate requirements (e.g., mandated reuse may not be appropriate)



Success Factors (2 of 3)

- Requirements understanding
 - Stakeholder interaction
 - Effective systems engineering
 - Differentiate precedented vs. unprecedented efforts
 - Prototyping is key
- Good Risk Management Program
 - Risk management board (including customer)
 - Risk mitigation and handling process
 - Integrated, not tangential
 - Strong decision making process



Success Factors (3 of 3)

- Good Planning
 - Strong and effective WBS
 - IMS at right detail and aligned with WBS
 - Plan (schedule and budget) not overly constrained
 - Mature processes documented and followed
 - Allow for rework
- Strong Development team
 - Experienced
 - Stable
 - Dedicated and Motivated
- Well defined, flexible, reliable Architecture Baseline
- Collection and use of historical data



Example Stakeholders (1 of 3)

- Military Services/agencies
 - PEO
 - PMO
 - User Community
 - Component Acquisition Executive (CAE)
 - Maintenance organization
 - Certification authorities (NSA, DISA, etc)
 - Resources sponsors (submarine warfare, programmers)
- OSD
 - (AT&L) Cost and schedule realism
 - NII
 - Joint Staff
 - PA&E
 - CAIG



Example Stakeholders (2 of 3)

- Government oversight (GAO, OMB)
- Government developers
- Government Test Community
 - Development
 - OT&E
 - OSD and Services
- FFRDCs
- Contractor Community
 - Prime contractor – Business Development
 - Prime contractor – Program Management
 - Subcontractors
 - Contractor engineering
 - COTS Vendors



Example Stakeholders (3 of 3)

- Lead system integrators, external inter-operators
- Cost community
- Academia



Recommendations (1 of 3)

- Investigate principles for organizing WBS-related artifacts that address Software Engineering sufficiently [to better collect, understand, and manage software risks and estimates (cost/sched/etc)]
 - Kathy Lundeen DCMA, Ron Lile OSD/PA&E, **Bruce Amato** OSD/AT&L, Jim Dietz Mitre/DoN, **Al Mink** SRA
 - Concept definition 6 mo, Proposed Language 12 mo, Revised WBS for Mil-Hdbk-881 and related documents
- Investigate strategies and approaches for developing and evolving an integrated software data repository and related tools to address a broad set of stakeholders (government, industry, academia)
 - **Bob Ferguson** SEI, Barry Boehm USC, Ron Lile OSD/PA&E, Mike Barnett MTC, **John Kelly** NASA, Rick Selby Northrop Grumman, Pete Lierni OSD AT&L
 - Concept definition and definition of measures 6 mo, data collection from sample programs 12 mo, Concept of Operations/Business Plan for wide-scale rollout 18 mo.



Recommendations (2 of 3)

- Conduct Root Cause analysis studies to understand the problems in software estimation and the use of estimates in the acquisition process
 - Bob Ferguson SEI, **Gary Hafen** Lockheed Martin, Randy Jensen STSC, **Steven Darcy** OSD AT&L, Reg Bartholomew Rockwell Collins
 - Data gathering of lessons learned and studies 6 mo, Draft analysis 12 mo, Prioritization of high leverage areas for improvement 18 mo
- Develop and implement an incremental acquisition approach (as well as the overall acquisition framework) that accommodates the uncertainty associated with early software estimates and allows for adjustment and refinement over time
 - **Mike Nicol** AF ASC, **Rob Flowe** OSD PA&E, Chris Bohn AFIT, JoAnn Lane USC, Larry Osiecki Army, Gary Hafen Lockheed
 - Data gathering 6 mo., analysis of data 12 mo., proposed changes to DoD policy and guidance documents 18 mo.



Recommendations (3 of 3)

- Establish policy, related guidance, and recommended implementation approaches for software data collection and analysis across all DoD acquisition programs
 - **Ron Lile** OSD PA&E, **Rick Selby** Northrop Grumman, Justin Moul AFCAA, Bruce Amato OSD AT&L, Jim Judy DASA-CE, Susan Wileman NCCA
 - Concept definition 6 mo, initial analysis of data 12 mo, proposed changes to DoD policy and guidance documents 18 mo