Lessons Learned Implementing Practical Software Measurement

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Objectives

- Discuss our company’s experience implementing PSM
- Share Lessons Learned
  - organizational and project-specific barriers to measurement
  - institutionalizing measurement
- Provide advice for getting started
Outline

- Experience Summary
- Lockheed Martin and PSM
- Lessons Learned
  - Mind the gap
  - Hooked on metrics
  - Drowning in data
  - Don’t ask, don’t tell
- Getting Started

Who We Are

Consultative Engineering provides software measurement and process improvement consulting inside and outside Lockheed Martin. Currently:

- Working as part of transition team implementing PSM within Lockheed Martin
- Working with the PSM Support Center to develop PSM products and provide direct program support to DoD and Government agencies
- Working with commercial organizations to implement PSM-like approaches
PSM Experience to Date

- Have worked with 20+ organizations/projects over last 2+ years
- Types of organizations:
  - MIS/AIS, Real-time, Command and Control
  - Government - Organic development
  - IPT - Government and Contractor
  - Development Teams - Prime and Subs
  - Startup, Development, Maintenance
  - "Distressed" projects

PSM Experience to Date

- **PSM Training**
- **Executive Presentations/Marketing**
- **PSM Workshop Facilitation**
- **Project Measurement Assessments**
- **Project Measurement Consulting**
- **Project Measurement - Hands-on Direct Program Support**
  - Measurement Planning/Tailoring
  - Data Specification, Collection Systems
  - Measurement Application and Reporting
Lockheed Martin’s Use of PSM

- Our biggest customer is adopting PSM
  - DoD expects a PSM-like approach
  - Opportunity for LMCO to align practices with DoD
- Product Development Best Practices Initiative
  Identified “Program Management, Scheduling, and Tracking” as:
  - high priority for LMCO
  - improvement priority for some LM groups
- SSRC has designated PSM a **Best Practice**
- SSRC offers:
  - Training
  - Hands on Measurement Program Startup
  - Measurement Planning Workshops

Some Lessons Learned
Lesson #1: Mind the Gap

Problem:
• Organizational Measurement Initiative has Standard Set of Metrics
• Project Staff Finds no Value in Metrics
• Data is often Fabricated
• PSM Prescribes an Issue-Driven, Project-Specific Approach
• Metrics Group doesn’t want to Lose Control

Translation: There is often a disconnect between the measures currently collected and the issues “real projects” face.

Lesson #1: Mind the Gap (cont.)

Must Address:
• Organizational Metrics as a Static Requirement
• Streamlining of Current Metrics Set
• Differentiate Organizational Requirements from Oversight
• Resolve to “Walk First”
Lesson #2: Hooked on Metrics

Problem:
• How to Get People to Buy-In to Measurement

Must Address:
• Taking Personal Ownership of Project Issues
• Linking Issues and Measures
• Highlight their “Data Depravity”
• Developing Collection/Reporting Mechanisms
• Transition Metrics Group into Consultants

Translation: Making people need measurement is the best first step towards institutionalizing it.

Lesson #2: Hooked on Metrics

Recommendation:
• Use Measurement Tailoring Workshops
  • Project Members build Measurement Plan over 1-2 days
  • Project Specific Issues and Information Needs uncovered
  • Key is to Walk out with Measurement Specs, Ongoing Roles, and Assignments

Project Manager’s Involvement and Commitment
Lesson#3: Drowning in Data

Problem:
- Lose sight of big picture project status
- Presentation of results lacks theme and conclusions

Must Address:
- Remaining focused on issues
- Showing Both Causes and Effects
- Discussing tradeoffs, impacts, and likely outcomes from decisions

Translation: Don’t lose perspective: 1) as the program evolves, 2) when presenting results and 3) when using the information to help make decisions.

Lesson#3: Drowning in Data

Recommendation: Use PSM Analysis Model to Drive Discussions
Lesson #4: Don’t Ask, Don’t Tell

Translation: The project culture will impact the implementation.

Problem:
- Prevailing Culture is Either:
  - Don’t make bad news visible or you’ll get blamed, or
  - Don’t give customer insight - they don’t understand

Must Address:
- Likelihood that Culture can/will Change
- Educating Management regarding Purpose of Project Measurement
- Introduction of New, Cooperative Development Approaches (IPTs)

Other Suggestions for Getting Started

- Market the Approach
  - Tie measurement to process improvement
  - Need project measurement at CMM Level 2
  - Show link to risk management

- Provide Education
  - Educate management in proper use of measurement results
  - Teach basic graphic analysis skills

- Conduct Measurement Planning Workshops
  - Facilitated workshops are best way to get started
  - Combines training with development of project measurement plan
Other Suggestions for Getting Started (cont.)

- Get Project Manager Involved
- Bring in Measurement Analyst for “Distressed” projects
- Focus on a Few Measures
  - Ensure measurement plan is feasible
  - Stress principle of flexible, adaptable, issue-driven measurement program
- Integrate Measurement into Process

Integrate Measurement into Process

![Diagram showing the integration of measurement into the project process]

DEVELOP
BUILD

BUILD SYSTEM

INSTALL BUILD

PERFORM TESTING

REVIEW TEST RESULTS

ACCEPT CHANGE REQUESTS
Internal and External

NEW REQUIREMENTS

APPROVED REQUIREMENTS

NEW REQUIREMENTS