Practical Software Measurement

Practical Software Measurement
A foundation for objective project management

PSM Project Update
July 20, 1998

**Office of the Under Secretary of Defense
Acquisition and Technology**

**Joint Logistics Commanders
Joint Group on Systems Engineering**

Practical Software Measurement

PSM Project Objective

Help Software Intensive Projects Succeed By:

Developing Effective Measurement Practices **Which Address Software and Systems Technical and Management Issues, Risks, and Problems**

Transitioning into General Use **an Integrated Measurement Approach Which Results In Measurable Technical and Acquisition Performance Improvements**

Practical Software Measurement

PSM Project Questions

- ## *What Have We Accomplished?*
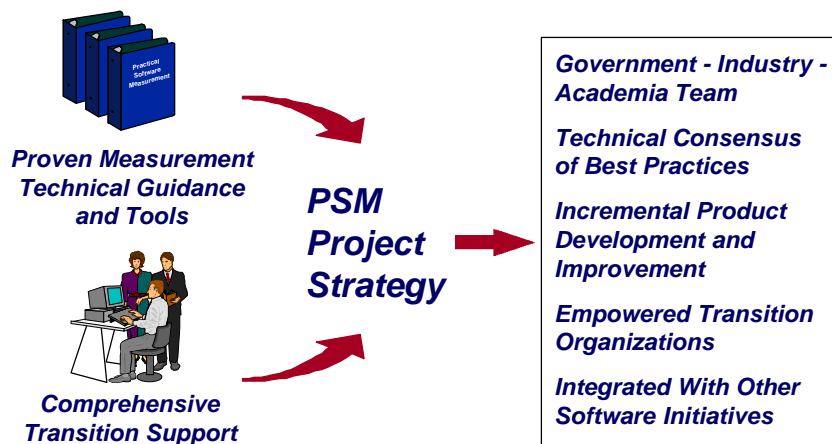
- ## *What Do We Need To Do?*

- ## *How Should We Do It?*

Practical Software Measurement

PSM Project Strategy

Proven Measurement Technical Guidance and Tools

Comprehensive Transition Support

PSM Project Strategy

Government - Industry - Academia Team

Technical Consensus of Best Practices

Incremental Product Development and Improvement

Empowered Transition Organizations

Integrated With Other Software Initiatives

Practical Software Measurement

Accomplishments

- *Products*
    - *Measurement Process*
    - *Software Measurement Guidance*
    - *PSM Insight*

- *Transition*
    - *Coordination and Awareness*
    - *Training Courses and Materials*
    - *Measurement "Startup" Approach*

Practical Software Measurement

Accomplishments

- *Project Approach*
    - *Multiple Sponsors - Contributors*
    - *DoD, Government, Industry Team*
    - *Productive Working Relationships*
    - *Efficient Input-Output Ratio*
    - *Talented Participants*
    - *Continuous User Input - Feedback*

Practical Software Measurement
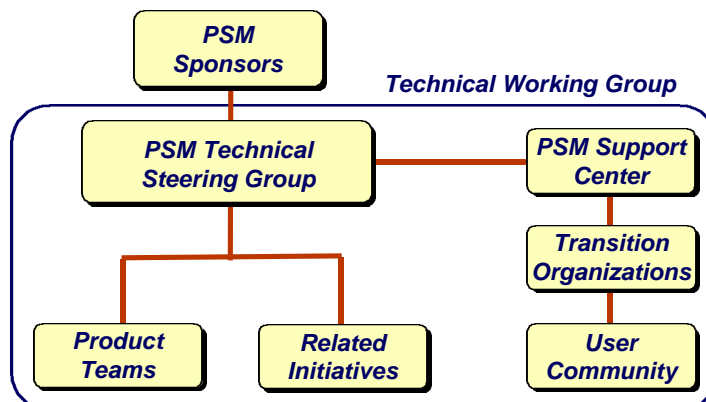
PSM Participating Organizations

- US Air Force AFMC
- US Air Force SSSG
- US Air Force STSC
- US Air Force ESIP
- US Air Force STRATCOM
- US Army AMC
- US Army ARDEC
- US Army CECOM
- US Army OPTEC
- US Army PEO STAMIS
- US Army ISSC
- USMC MCTSSA
- US Navy NAVAIR
- US Navy NAWC
- US Navy NSWC
- US Navy NUWC

- US Navy OPTEVFOR
- US Navy PEO(CU)
- US Navy SPAWAR
- DLA
- DISA
- DSMC
- NDU IRM College
- OUSD - A&T
- FAA
- NASA SATC - GSFC
- National Park Service
- BDM
- BOEING
- GTE
- Raytheon - Hughes
- IDA

- INCOSE
- ITABHI
- Independent Engineering
- Logicon
- Lockheed Martin
- MITRE Corporation
- PRC - Litton
- Tecolote Research
- SEI
- Sentel
- Software Metrics Inc.
- SPC
- Sverdrup Technology Inc.
- TeraQuest Metrics, Inc.
- TRW
- VPI - State University
- West Virginia University

Practical Software Measurement

Project Structure

Practical Software Measurement

PSM Structure

- **PSM Sponsors**
  - *OUSD(A&T)*
  - *JLC JGSE*
  - *Army Software Metrics Office*
  - *U.S. Air Force ESIP Program*
  - *FAA*

- **Related Initiatives**
  - *OUSD(A&T) Systems & Software Initiatives*
  - *SEI SEMA*
  - *CMMI*
  - *ISO SC7 Standards*
  - *Industry Initiatives*

Practical Software Measurement

PSM Transition Organizations

- *Air Force Materiel Command (AFMC) Metrics WG*
- *Army Software Metrics Office*
- *Defense Contract Management Command*
- *Federal Aviation Administration*
- *Lockheed Martin*
- *PSM Support Center*
- *Software Engineering Institute*
- *Software Productivity Consortium*
- *Software Technology Support Center (STSC)*
- *TeraQuest Metrics, Inc.*
- *USAF Space Systems Support Group*
- *USN Fleet Material Support Office (FMSO)*

Practical Software Measurement

PSM Work In Progress - 1998

- *Systems Engineering Measurement*
- *Software Product Engineering Measurement*
- *COTS Integration Model Support*
- *CMMI Development Support*
- *Risk-Based Performance Measurement*
- *PSM Insight Updates and Extensions*
- *General Guidance Updates*
- *PSM Advanced Training Course*
- *Expanded Transition Efforts*
- *PSM Publication*

Practical Software Measurement

New Measurement Challenges

- *COTS Software Measurement*
- *Program Oversight Refocus*
- *Unique Domain Measurement Requirements*
- *Commercial Applications*
- *Executive Information Requirements*
- *Multi-Level Measurement Integration*
- *Project Insertion Strategy*
- *Measurement Performance Assessment*
- *Measurement Process Improvement*

Practical Software Measurement

Multi-Level Measurement Requirements

Enterprise Management	• *Performance Measurement* • *Normative Performance Baselines* • *Technical and Business Policy* • *Investment Decisions & Analysis*	*Risk Management Process*
Organizational Management	• *Process Improvement* • *Project Planning Guidelines* • *Performance Based Acquisition* • *Organizational Norms & Benchmarks*	*Performance Measurement Process*
Project Management	• *Project Estimation and Planning* • *Project Performance Tracking* • *Project Tradeoff Analysis* • *Resource Management*	

Practical Software Measurement

Some Ideas

- **PSM Project Changes to Address:**
    - **Long term technical objectives**
    - **Day to Day management**
    - **Expanded transition efforts**
- **Smaller Incremental Product Releases**
- **Practical Measurement "R&D"**
- **Maintain User Focus and Involvement**

Practical Software Measurement

Summary

- *Technology Drivers - Requirements*
- *Business Environment - Needs*
- *Project Response - Strategy*
- *PSM Objectives*