



**4th Annual PSM USERS' GROUP CONFERENCE**  
**"Successful Integration of Measurement**  
**Across Disciplines"**

**CONFERENCE AGENDA**

**Monday, 24 July 2000**

7:00am - 9:00am Continental Breakfast

7:30am - 8:30am On-Site Conference Registration

8:00am - 11:30am **Concurrent Training:**

***PSM One-Day Tutorial*** - This 1 day tutorial provides an overview of the guidance included in Practical Software and Systems Measurement: A Foundation for Objective Project Management, Version 4.0b. The course is intended as an introduction to PSM for those with little or no prior PSM experience.

10:00am -10:30am AM Break

11:30am - 1:00pm Lunch on your own

1:00pm - 5:00pm **Concurrent Training:**

***PSM One-Day Tutorial (continuation of morning session)***

***PSM Qualified Trainers Session*** - This session is for qualified instructors who have taught at least one course. The goals of this session are to share lessons learned and supplemental materials that are used in teaching PSM. Each trainer must bring at least one supplemental item to share.

*Conference sponsored by the PSM Support Center and the  
International Council on Systems Engineering (INCOSE)  
in cooperation with ASQ Software Division*



2:30pm – 2:45pm PM Break

4:00pm - 6:00pm On-Site Conference Registration

4:00pm **Guest Activities Meeting**  
Conference guests are invited to get together and plan group or individual activities in the Vail area.  
Main Lobby  
Coordinator: Tammy, Manor Vail Lodge Activities Director

***Dinner and evening activities on your own***

**Tuesday, 25 July 2000**

7:30am - 8:30am Continental Breakfast  
On-Site Conference Registration

8:30am - 9:00am Conference Welcome, Cheryl Jones, PSM Project Manager

- ◆ Introductions
- ◆ Conference Overview
- ◆ Project Update

9:00am - 9:45am **Keynote Presentation** - *“Measurement: Along the Path to Operational Excellence”*, Jim Sturges, Lockheed Martin.

This presentation will describe some uses of PSM principles and applications that have helped our Lockheed Martin businesses to be more responsive to their customers.

9:45am - 10:30am **Keynote Presentation** - *“Change, Challenges and Opportunities for DoD Software Intensive Systems and PSM”*, Jack Ferguson, Director, Software Intensive Systems OUSD.

Change is happening in DoD weapon system acquisition strategies, as reflected in the new 5000 acquisition regulation series. These changes offer both challenges and opportunities for the DoD software community and the Practical Software and Systems Measurement program. This presentation will highlight these changes and provide some ideas to help seed discussion during the PSM User Group meeting.

10:30am AM Break

11:00am - 11:45am

*“Workshops to Jumpstart Measurement Planning”*, Robert Maclver, Software Productivity Consortium.

Measurement is an evolutionary process, ever growing as the organization matures. This presentation focuses on the use of workshops as a primary tool to accelerate the planning and development of measurement programs at appropriate points as the organization grows in process maturity. Four different workshops are incorporated into a long-term strategy to provide support for the measurement program. Two focus on establishing an effective measurement process and two address issues associated with higher order maturity. The presentation will discuss why the workshops are important, the purpose of each, how they fit together into a strategy and keys to success.

11:45am - 12:30pm

*“Lessons Learned from Applying PSM to Systems Engineering”*, Christopher Miller, Software Productivity Consortium.

Over the last three years, Mr. Miller has been applying principles and aspects of the Practical Software Measurement (PSM) guidance in the Systems Engineering domain. This presentation will describe lessons learned from these efforts on over twelve projects. Some of these lessons learned include: the selection of PSM as an applicable technology for a systems environment, modifications made to the PSM products and services to address systems engineering, identification of subtle language differences between ‘software’ and ‘systems’, and some of the pitfalls experienced from extending PSM beyond its intended scope. Based on these lessons learned, the audience will gain insight as to some of the measurement differences between software projects and systems engineering projects that will facilitate their transition to PSM version 4.1, Practical Software and Systems Measurement.

12:30pm - 1:30pm

Lunch Provided

1:30pm - 2:25pm

*“Overcoming the Challenges of Estimating in New Development Environments”*, Doug Putnam, Quantitative Software Management.

This presentation will focus on the techniques that can be employed to help estimators overcome the challenges that they are confronted with in attempting to estimate totally new development environments. Typical challenges faced by estimators are how to scope functionality, assess realistic developer efficiency and how to tailor the lifecycle processes. Mr. Putnam will illustrate the techniques with case studies to show their practical application.

2:25pm - 3:10pm

“*Quality Costs and PSM*”, Mike Bown, Software Improvements Pty Ltd.

Australian Standard AS 2561-1982, Guide to the Determination and Use of Quality Costs, provides methods whereby the costs incurred in producing high quality products may be identified, controlled and minimized. The standard defines Quality Cost as the sum of Prevention, Appraisal and Failure costs. Prevention costs are incurred to reduce Failure and Appraisal costs to a minimum. Appraisal costs are incurred in ascertaining conformance to quality requirements. Failure costs are the result of inadequate quality, discovered before or after delivery of the product to the customer. While the Standard is aimed primarily at the manufacturing sector, it can be interpreted and adopted for other industries. This presentation proposes how the Standard can be applied to software engineering activities, and how it can support the PSM method.

3:10pm - 3:30pm

PM Break

3:30pm - 3:45pm

“International Standards Report”, Jim Moore, Chairman, US Technical Advisory Group to ISO/IEC JTC1/SC7

ISO/IEC JTC1/SC7 is the international standards committee responsible for software and systems engineering. They have already produced the well-known ISO/IEC 12207 standard on software life cycle processes. They are currently producing standards on system life cycle processes, process assessment, software process quality models, and measurement. They are considering additional work on risk management and dependability. The briefing will outline the status of selected projects and will note opportunities for participation.

3:45pm - 4:05pm

“*15939 Information Model*”, Jack McGarry, Practical Software and Systems Measurement.

This presentation will describe the information model from ISO/IEC 15939, Software Measurement Process. The information model describes a set of measurement terminology and provides a clear distinction in vocabulary.

4:05pm - 4:45pm

“*Objective Demonstration of Process Maturity through Measures*”, Perry Deweese, Lockheed Martin.

Various techniques have been suggested to identify or verify a contractor’s process maturity during source selection. These techniques include the Software Capability Evaluation (SCE) and The Software Development Capability Evaluation (SDCE). While these techniques are effective indicators of process maturity, they are expensive to both the contractor and the acquisition activity to prepare for a contract. Another issue about these techniques is

that they provide a large amount of data that may not provide the information the Program Office needs to make the correct acquisition decision.

An alternate approach is to define a standard set of measures that reveal information about the contractor's process maturity. These measures would be agreed to by the Government and the Contractor community as representative of an organization's behavior that the institutionalized SEI SW-CMM Level 3 or higher process maturity. The resulting set of measures will provide to both the acquirer's and the supplier's respective Program Managers objective evidence of process maturity through the use and application of these measures.

These measures would form a routine part of a contractor's measurement program and they would be available for review with no additional cost to either party. There is of course initial costs needed to set up and agree on the measures, but this cost will pale in comparison to the recurring costs of either an SC E or SDCE.

4:45pm - 5:15pm

*"Project Software and Systems Measurement and Analysis"*, Cheryl Jones, Paul Janusz, US Army, TACOM-ARDEC.

The US Army TACOM-ARDEC Quality Engineering Directorate (QED) is embarking on an aggressive process improvement initiative designed to maintain its leadership in armament systems. Part of its challenge is to be compliant with the criteria of the Integrated Capability Maturity Model (CMMI), including both systems and software aspects of its product line.

As part of this initiative, the Software Intensive Systems Evaluation (SWISE) Team has developed a Performance Management Policy that covers the management of all acquisition, development or support projects for which QED is responsible. It prescribes the technical and management actions for planning and implementing an issue-driven measurement process, risk management, and decision analysis. A Software and Systems Measurement and Analysis Procedure was developed, including outlines for a Project Measurement Plan and Measurement Specification. This presentation will provide an overview of the policy and associated procedures.

5:15pm - 5:30pm

*"Department of Defense Enterprise Software Initiatives"*, LTC Tom Loper, Office of the Director for Information Systems for Command, Control, Communications and Computers.

LCOL Loper will describe the Army's Enterprise Software Initiative (ESI). The vision of the ESI is to provide DoD managers with "Point & Click" Information Technology shopping at the lowest cost. The ESI Working Group is implementing a two-phased

strategy. First, the Working Group will exploit “Quick Hit” agreements to leverage existing relationships and create the E-mall IT Corridor. Next, the Working Group will address the overall domain of Software Asset Management.

5:30pm - 6:30pm Free time  
6:30pm Cash Bar  
7:00pm Conference Dinner

### **Wednesday, 26 July 2000**

7:30am - 8:30am Continental Breakfast

8:30am - 9:15am “*Object Oriented Measurement*”, Khaled El Eman, National Research Council, Canada

This talk will present some of the more popular object-oriented measures, and explain how they can be used for quality management. For instance, it will explain how object-oriented measures can be used in identifying faulty classes and in estimating overall system quality. Examples from five projects in C++ and Java will be used to illustrate these applications.

9:15am - 10:00am “*DCMA CAS Process Guidebook Abstract*”, Guy Mercurio, Defense Logistics Agency, DCMA Software Center.

This presentation will focus on the importance of measurement for Acquisition Agencies, how to start and maintain a measurement process, and the importance of the relation of IPTs and measurement. Examples of measurement techniques as described in PSM will be given.

10:00am AM Break

10:15am - 10:35am “*Contractor Cost Data Reporting (CCDR) System*”, Tom Coonce, OSD/PA&E/Weapon Systems Cost Analysis Division.

The CCDR project is attempting to create a common measurement reporting form to be used by all DoD projects. The intent is to collect information from each project, and use that information to develop realistic cost and schedule estimates for DoD projects. During this presentation, an overview of the CCDR software measurement proposal will be provided.

10:35am - 11:15am “*FAA’s Experience with Process Improvement and Measurement*”, Joe Caravello, Federal Aviation Administration, Keith Krazert, Federal Aviation Administration, and Don Gantzer, TRW.

The FAA has been implementing a Process Improvement Program for almost 4 years, using their own developed integrated CMM (FAA-iCMM). The first complete major assessment was completed in March 2000 to determine which selected projects met Level 2 maturity. Among the major findings were those related to strengths and weaknesses of measurement. These findings will be summarized, and lessons learned in attempting to apply the PSM approach will be highlighted, particularly to process measurement as well as Project Management. In addition, current activities to fix weaknesses in the measurement area will be described. The FAA has had to replan how it will implement measurement. The core approach will be based on the new version of the PSM with the system upgrades.

11:15am - 12:00pm

*"The Rapid Assessment of Software Process Capability"*, Terry Rout, Software Quality Institute, Griffith University, Queensland, Australia

There is a strategic need for a cost-effective method of conducting ISO/IEC 15504 conformant assessments of the capability of software development projects. This applies particularly in the case of SMEs for whom the cost of a full three to four day assessment may be prohibitive. The Rapid Assessment for Process Improvement for software Development (RAPID) has been developed to address this need. The RAPID method, which is intended for use by experienced ISO 15504 assessors is specifically for process improvement and is not suitable for supplier management. By limiting the scope of the assessment to eight key processes and limiting the collection of evidence to facilitated discussion between key organizational personnel and the assessors, a RAPID assessment can be conducted in one day. This presentation discusses the key features of RAPID, and presents results from its initial application.

12:00pm - 12:15pm

Group picture (location TBA—wear your shirt!)

12:15pm - 1:45pm

Lunch on your own

1:45pm - 5:30pm

### **Concurrent Workshops:**

#### ***#1 - Interoperability***

This workshop will address the use and value of various measures and indicators of interoperability. Additionally, it will identify the information needs related to this type of development, including questions that need to be answered and decisions that need to be addressed by measurement. These information needs will then be mapped to existing measurement approaches.

Workshop Lead: Jim Oblin,dkdger

## ***#2 - Project Justification Measures***

During the February 2000 TWG discussions about process improvement (PI), a sub-team considered measures of impact of PI projects. While doing so, the group decided that these measures were a subset of measures used to justify starting or continuing any type of project. Thus this area appears to be an organization-level area that should be dealt with as a Common Issue Area for Organizational Measurement. This workshop will continue the discussion in this common issue area, as a start for PSM work in organizational measurement.

Workshop Lead: Bob Maclver

## ***#3 - COTS Integration Costs***

This workshop will discuss the integration COTS of COTS software. Discussion will center on additional cost drivers for both development and maintenance of COTS-intensive systems.

Workshop Lead: Betsy Bailey

## ***#4 - Tools for Project Management***

Attendees will discuss the benefits and drawbacks of various tools such as PSM Insight. There will also be a discussion of how to extend the functionality of PSM Insight to better meet user needs. Attendees will have an opportunity to discuss their requested requirements for the next features of PSM Insight with the tool builders.

Workshop Lead: Dave Morris

3:30pm

PM Break

***Dinner and evening activities on your own***

## **Thursday, 27 July 2000**

7:30am - 8:30am

Continental Breakfast

8:30am - 12:00pm

### **Concurrent Workshops:**

#### ***#5 - OOD Measures***

During this workshop, the use and value of various OOD measures will be addressed. Additionally the information needs related to object oriented developments will be addressed, including questions that need to be answered and decisions that need to be addressed by OO measurement. These information needs will then be mapped to existing OOD measurement approaches. Effective measures and indicators that support these information needs will be identified, along with any gaps in existing technologies. The measurement approach will address estimating and tracking for OOD projects.

Workshop Lead: Khaled El Emam

#### ***#6 - Process Improvement Readiness Measures***

This workshop will extend the effort started in the February 2000 TWG, where a team brainstormed a set of useful measures in a common issue area entitled Process Improvement Readiness. The categories considered and many of the measures suggested then were said to be part of the Process Improvement Process Area of ISO 15504.

Workshop Lead: Joyce Statz

#### ***#7 - Measurement Plan Template***

One of the significant challenges to measurement success is effective measurement planning. Many organizations don't know how to begin the planning process, or have challenges "conquering the white page" in creating a measurement plan. Questions persist like "What do we include?" and "How do we make the connection between technical measures and management needs?" Many organizations have requested a 'jump start' to the measurement planning process. This workshop intends to continue the work already started to develop a clear, concise, useful Measurement Plan Template that provides guidance for implementing a measurement program consistent with ISO 15939 and the measurement-related practices in the Capability Maturity Model Integration (CMMI) being released 31 July 2000. During the workshop, the CMMI Measurement & Analysis Process Area and measurement-related practices will be

discussed, as well as how generic practices (or common features) are applied to mature the measurement capability. Most of the workshop will provide a focus for the existing DRAFT Measurement Plan Template that will be presented, and a document review on the template will be done. Feedback from workshop participants will be collected, compiled, and synthesized.

Workshop Lead: Kevin Richins

### ***#8 - Earned Value***

Earned Value Project Management has been with us for years, mostly at the system level. Suppose you have a customer who requires EVPM and you're used to doing it for systems level financial management, but you want to get the value out of doing it at the software level, too. However... your history is that you get the data too late for it to be helpful, and you have it at too high a level of abstraction to mean anything to the project team members. What do you do to change the measurement and monitoring the indicators of the WBS elements related to systems and software?

Workshop Lead: Keith Krazert

10:00am - 10:15am

AM Break

12:00pm - 1:00pm

Lunch Provided

1:00pm - 5:00pm

### **Concurrent Workshops:**

#### ***#9 - Measures for Spiral/Evolutionary Developments***

This workshop will identify the information needs related to this type of development, including questions that need to be answered and decisions that need to be addressed by measurement. These information needs will then be mapped to existing measures. Effective measures and indicators that support these information needs will be identified, along with any gaps in existing technologies.

Workshop Lead: Dave Zubrow

#### ***#10 - Process Improvement Project Measures***

This workshop will work through the PSM V4 measurement specifications and add a segment to each relevant measure that describes its use for process improvement projects.

Workshop Lead: Wendell Mullison

#### ***#11 - Measuring SE Products and Processes***

The focus for this workshop is on the creation of a set of guidelines that can be followed when using the PSM process to identify and apply measures that are specific to SE products and processes. The approach will be to first identify specific practices and techniques that have been proven effective by workshop participants in identifying and applying SE product and process

measures. Then the group will map those practices and techniques to the relevant PSM activities, tasks, and steps. Finally, workshop participants will help articulate these practices and techniques as SE-specific guidance statements that may be suitable for inclusion into the next version of PSM.

Workshop Lead: Ken Stranc

***#12 - Contractor Cost Data Reporting (CCDR) System***

At this workshop, an overview of the CCDR software metrics proposal will be provided. Attendees are asked to bring a completed form for at least project within their organization, along with comments about the ease of use of the form.

Workshop Lead: Tom Coonce

3:15pm - 3:45 pm

PM Break

***Dinner and evening activities on your own***

**Friday, 28 July 2000**

7:30am - 8:30am

Continental Breakfast

8:30am - 12:00pm

***Workshop Leads Session***

Workshop Leads will summarize the results of each workshop and prepare materials for posting on the web.

10:00am - 10:15am

AM Break