8th Annual Practical Software and Systems Measurement Users' Group Conference

"Measurement for Enterprise Excellence"

July 26-30, 2004

Keystone, Colorado

Conference Agenda

Monday, July 26, 2004

7:00am - 8:30am ***Continental Breakfast***

7:00am - 8:30am On-Site Conference Registration

8:30am - 11:30am **Training:**
PSM One-Day Tutorial *(This course is 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 **Training:**
Continuation of morning session

2:00pm - 4:00pm
Fleet Driven Measurement Meeting
During this side meeting, a technical working group (TWG) will be formed to discuss fleet-driven measures, addressing aircraft operational readiness level. This group will address measures such as customer satisfaction, operational defects discovered and resolved, maintenance cost impacts due to operational defects, and readiness impacts due to defects. The TWG will hold a series of workshops in the Fall 2004 through Spring 2005 timeframe, to identify information needs and select and specify appropriate measures in this area. The intent is to produce a white paper by July 2005 addressing this topic. This initial kick-off meeting will establish the TWG and develop a plan of action and milestones.

2:30pm - 3:00pm ***PM Break***

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

Dinner and Evening Activities on Your Own

Tuesday, July 27, 2004

7:00am - 8:30am ***Continental Breakfast***

7:00am - 8:30am On-Site Conference Registration

8:30am - 9:00am
"Conference Welcome", Cheryl Jones, US Army RDECOM
Introductions, Conference Overview, Project Update

9:00am - 9:45am

Keynote Speaker, Larry Putnam, Quantitative Software Management, "Enterprise Measurement"

Larry talks about how to use measurement and the SEI core metrics to find out where you are, how to estimate effectively in a constrained environment, how to use benchmarking to assess how you are doing in a process improvement program and how to avoid disasters, along with using measurement while you are under way in development to control and adaptively update your plan if necessary. Economic benefits of process improvement are presented in the context of achieving Enterprise Excellence

9:45am - 10:15am

"Measuring Customer Satisfaction and Perceptions", Craig Beyers, SETA, Betsy Clark, Software Metrics, Inc., Brad Clark, Software Metrics, Inc.

Customer Satisfaction is one of the seven PSM Information Categories. One of the measures listed in the ICM table is "Satisfaction Ratings". There is little specific guidance in PSM on what goes into a customer satisfaction survey. This presentation discusses the benefits and challenges of using a customer satisfaction survey as an effective means of obtaining insight into organizational performance. The presentation is based on a Measurement Initiative within the Office of Information Technology for Customs and Border Protection. A customer satisfaction survey is being used to establish one facet of a performance baseline for the organization.

10:15am - 10:45am

"Measurement in Higher Maturity Organizations: What's Different and What's Not?", Dennis Goldenson, Software Engineering Institute

What is, or should be, different about measurement in high maturity organizations? And how do organizations go about maturing their measurement capabilities? In this presentation, Dennis will review circumstances where practitioners have had difficulty interpreting the measurement related content in CMMI, and he'll discuss where the treatment of measurement and analysis has been improved by CMMI. Topics include the importance of goal 1 practice 1; using measurement to clarify and refine business objectives and information needs; insuring that data are collected, analyzed, and used to inform technical and management decisions; the importance of starting small; integrating measurement into life cycle processes; the importance of causal thinking, and making a credible case for process improvement.

10:45am - 11:15am ***AM Break***

11:15am - 11:45am

"Applying PSM in an Acquisition Environment", Stephen Hawald, Executive Consultant, Robbins Gioia, LLC, Kevin Mooney, Principle Consulting Manager, Robbins-Gioia, LLC

This presentation will describe how PSM is being applied in a large-scale civilian agency project. The challenge involves merging the information needs of the acquisition organization with those of the supplier organization to develop a comprehensive measurements program that provides visibility into the program help achieve program milestones on schedule and within budget.
By extending the PSM Integrated Analysis Model to cover both the acquisition and supplier organizations, an integrated cause-effect relationship is developed that crosses the organizational boundaries. This enables the organizations to prioritize the information needs and begin the process of developing solutions and selecting measures to track progress in meeting those needs.

11:45am - 12:15pm

"CMMI in Commercial Use", Don Reifer, Reifer Consultants, Inc.

While many high maturity firms have flocked to the CMMI, movement elsewhere has been stymied. Many commercial firms view the CMMI as too DOD-oriented. While the SEI has taken

steps to address their needs, many argue more action is needed. Don will discuss the key questions that need to be answered: "What should DOD do to stimulate greater commercial acceptance? Should the DOD continue the SW-CMM? Should the SEI's commercialization model be changed to address the systems/software issue?"

12:15pm - 1:15pm ***Lunch provided***

1:15pm - 1:45pm
"Estimating System-of-System Integration Effort", Jo Ann Lane, University of Southern California
Today's need for more complex, more capable systems in a short timeframe is leading towards the integration of existing systems into network-centric, knowledge-based system-of-systems (SoS). Software and system cost model tools to date have focused on the software and system development activities of a single software system. As we view the new system-of-system architectures, we find that the effort associated with the integration of these system-of-systems is not handled well, if at all, in current cost models. This presentation will provide an overview of COSOSIMO, USC's Center for Software Engineering (CSE) approach to model and calculate the SoS integration effort.

1:45pm - 2:15pm
"Institutionalizing Enterprise Business & Quality Objectives based on PSM and CMMI Measurement Processes", Tim Pridgen, General Dynamics
GDAIS has developed and implemented a common enterprise measurement program that is based upon the CMMI and PSM measurement processes. The goals of this measurement program are to analyze and evaluate on-going business performance, and to drive continuous improvement throughout the organization. Currently, all sixteen of the company's business areas have developed measures for their processes to ensure customer satisfaction is met when delivering our products and services. This presentation will provide an overview of the GDAIS measurement process and will detail the use of the Business & Quality Objectives. The presentation will also show how to map key indicators to the business model, and methods for effectively presenting the data to management.

2:15pm - 2:45pm
"Personal Software Process/Team Software Process Briefing", Jeff Schwalb, NAVAIR, China Lake
More than a dozen projects across NAVAIR are using Team Software Process^{SM} (TSP^{SM}) to run their projects. The process collects just four measures from which it then derives over 20 metrics. This presentation will discuss how this data is used to effectively track actuals against estimates for time, size and schedule as well as provide quantitative insight on the quality of the product being generated. Furthermore, it will show the relationship between the process and the data that it both collects and uses.

2:45pm - 3:15pm
"Performance Measurement of Application Development & Maintenance", David Garmus, David Consulting Group
This presentation will discuss the successful implementation of a measurement program, which based the metrics to be collected on the goals of the process being measured and then utilized the results in decision making and process improvement. Industry benchmark data will be provided to support project productivity and application support.

3:15pm - 3:45pm ***PM Break***

3:45pm - 4:15pm

"Systems Engineering Cost Estimation: Real Life Experiences from Garland, Texas", John Rieff, Raytheon

As organizations begin implementing CMMI compliant cost estimation processes, greater collaboration between the systems and software organizations and implementation of attribute- or model-based estimation are required. This presentation examines the CMMI requirements for a parametric cost estimation model, the attributes of the systems engineering process that drive systems engineering costs, the status of the COSYSMO model development at Garland, and the lessons learned from Raytheon Garland's experiences as they transition to an attribute-based estimation approach. Through the use of an attribute-based cost estimation model, systems engineering will be able to realize decreased cycle-time and increased reliability in the generation of cost estimates.

4:15pm - 4:45pm

"Enhancing Software Estimation Accuracy", David Seaver, PRICE Systems

Software estimation accuracy is enhanced by the availability of historical data. The majority of organizations lack historical data and are limited in their ability to produce reliable and repeatable estimates for software. This presentation will review the following topics: Why process is important for software estimation and characteristics of a good software estimation process, A working example of a software estimation process, Why software size is a critical component, How improved software estimation capabilities can improve communications, and how measurement leads to better decisions

4:45pm - 5:15pm

"Using the OODA Loop (Observe, Orient, Decide, Act) for Measurement & Analysis or "Measure Like a Fighter Pilot", Joe Lindley, Raytheon

This briefing covers the use of the OODA Loop (Observe, Orient, Decide, Act) as an implementation strategy for the Measurement & Analysis (MA) process. Colonel John R. Boyd, both an accomplished USAF fighter pilot and military thinker, developed the OODA Loop as a winning strategy for air combat. It is simple, elegant, and applicable to many fields of endeavor.

Dinner and Evening Activities on Your Own
****Wear/Bring your PSM Shirt tomorrow (for the group picture)***

Wednesday, July 28, 2004

7:00am - 8:30am ***Continental Breakfast***

8:30am - 9:00am

"Costing the Development of Secure Systems", Ed Colbert, Barry Boehm, University of Southern CA

COCOMO (Constructive Cost Model) II is designed to estimate the cost, effort, and schedule of a software project. With security now recognized as critical in software development, cost models must be updated to account for the additional effort needed to develop secure software. USC's Center for Software Engineering (USC-CSE) is also developing, for our FAA sponsor and possibly others, a model to estimate the cost of secure systems, which can be used during acquisition. This presentation will describe USC-CSE research on bringing COCOMO II current with the state of the art in security, and on creating a model for estimating, in acquisition, the cost of a secure system.

9:00am - 9:30am

"Lessons Learned from Collecting Systems Engineering Data", Marilee J. Wheaton, Ricardo Valerdi, University of Southern California

The emergence of the Capability Maturity Model Integration (CMMI) as the de facto process capability standard highlights the importance of the integration of the Systems Engineering function with other engineering disciplines. Estimating Systems Engineering effort, however, is currently not a formalized activity. The Center for Software Engineering at the University of Southern California, in conjunction with its Corporate Affiliates and INCOSE, has been working towards formalizing Systems Engineering cost estimation and developing a parametric cost estimation model. Corporate Affiliates provide historical data from completed projects which play a pivotal role in the development of cost estimation models and help determine the relevant parameters that drive project cost. Lessons learned from the data collection activities and the model development process that will help create a model for improved Systems Engineering cost estimation will be discussed.

9:30am - 10:00am

"Identifying Your IT Organization's Best Practices", David Herron, David Consulting Group

This presentation examines how IT departments can identify current best practices regarding the design, development and deployment of software. Through the application of a rigorous measurement model (PSM) which includes both quantitative and qualitative analysis, organizations can identify high impact areas of performance. By identifying these "high impact" areas of performance, an organization can more effectively align their process improvement programs and realize significant gains in quality and productivity. Case studies from recent client engagements will be a major part of this presentation. Learn what organizations are doing to identify opportunities for reducing costs and producing higher quality deliverables.

10:00am - 10:45am ***AM Break (group picture - location will be announced, please wear your shirt)***

10:45am - 11:00am

"Future Directions of PSM", John McGarry, US Army ARDEC

Join us in a discussion of future direction and initiatives that will be pursued by PSM.

11:00am - 11:30pm

"Estimating All Costs at System Level" Evin Stump, Galorath, Inc.

Cost estimating models often deal well with subsystem level costs, but not as well with integrating subsystems into systems. Today's complex systems usually involve integrating hardware and software, and systems must often operate in coordination with cooperating systems. Galorath Incorporated has recently improved the capability of its SEER-H (hardware) model and its SEER-SEM (software) model to better cope with these issues.

11:30am - 12:00pm

"Estimating Size and Non-Traditional Products", Doug Putnam, Quantitative Software Management

This presentation shows a way to deal with non-traditional sizing where the artifacts to be created are mixes of screens, web pages, Java scripts, data base manipulations. We show how to extract the artifacts from the developers and relate it to what the customer wants and the needs of the estimators. A typical sizing template is shown.

12:00am - 12:15pm

Brief Workshop Introductions by Workshop Leads

Brief descriptions of the goals of each planned workshop will be given.

12:15am - 1:45pm ***Lunch on your own***

1:45am - 5:30pm
4 Concurrent Workshops (See workshop chart on page 8 and workshop descriptions starting on page 9)

- ***#1 Acquisition Measurement***
- ***#2 Measurement of Safety and Security Processes***
- ***#3 Systems Engineering Estimation Workshop: SE Size Measures and COSYSMO***
- ***#4 Measurement Guidance for Process Improvement***

3:00am - 3:30pm ***PM Break***

7:00pm ***Conference Dinner / Cash Bar***

Thursday, July 29, 2004

7:00am - 8:30am ***Continental Breakfast***

8:30am - 12:00pm
4 Concurrent Workshops (See workshop chart on page 8 and workshop descriptions starting on page 9)

- ***#1 Acquisition Measurement (continuation of Wednesday afternoon session)***
- ***#3 Systems Engineering Estimation Workshop: SE Size Measures and COSYSMO (continuation of Wednesday afternoon session)***
- ***#5 Implementing & Sustaining a Software Measurement Program***
- ***#6 Measurement in High Maturity Organizations***

10:00am - 10:30am ***AM Break***

12:00pm - 1:00pm ***Lunch Provided***

1:00pm - 5:15pm
3 Concurrent Workshops (see workshop descriptions at the end of this document)

- ***#3 Systems Engineering Estimation Workshop: SE Size Measures and COSYSMO (continuation of Wednesday afternoon and Thursday morning session)***
- ***#5 Implementing & Sustaining a Software Measurement Program (continuation of Thursday morning session)***
- ***#6 Measurement in High Maturity Organizations (continuation of Thursday morning session)***

3:00 pm - 3:30pm ***PM Break***

Dinner and Evening Activities on Your Own

Friday, July 30 2004

7:00am - 8:30am ***Continental Breakfast***

8:30am-9:00am
"A Methodology Implementation for Software System Cost and Risk Estimation", John Gaffney & Jeanne Bridel, Lockheed Martin; Dan McGovern, Federal Aviation Administration (FAA)
The cost, schedule, and cost and schedule risk estimation methodology presented was implemented by Lockheed Martin with the consultation and support of the FAA. It is being used to make estimates of major upgrades of software intensive air traffic management systems under contract to the FAA. Lockheed has found that the methodology and the tool that helps to implement it has saved a considerable amount of money and time in producing estimates

compared to that which would have been required using earlier, essentially manual, methods. Lockheed believes that the approach is especially valuable in fast turn-around situations.

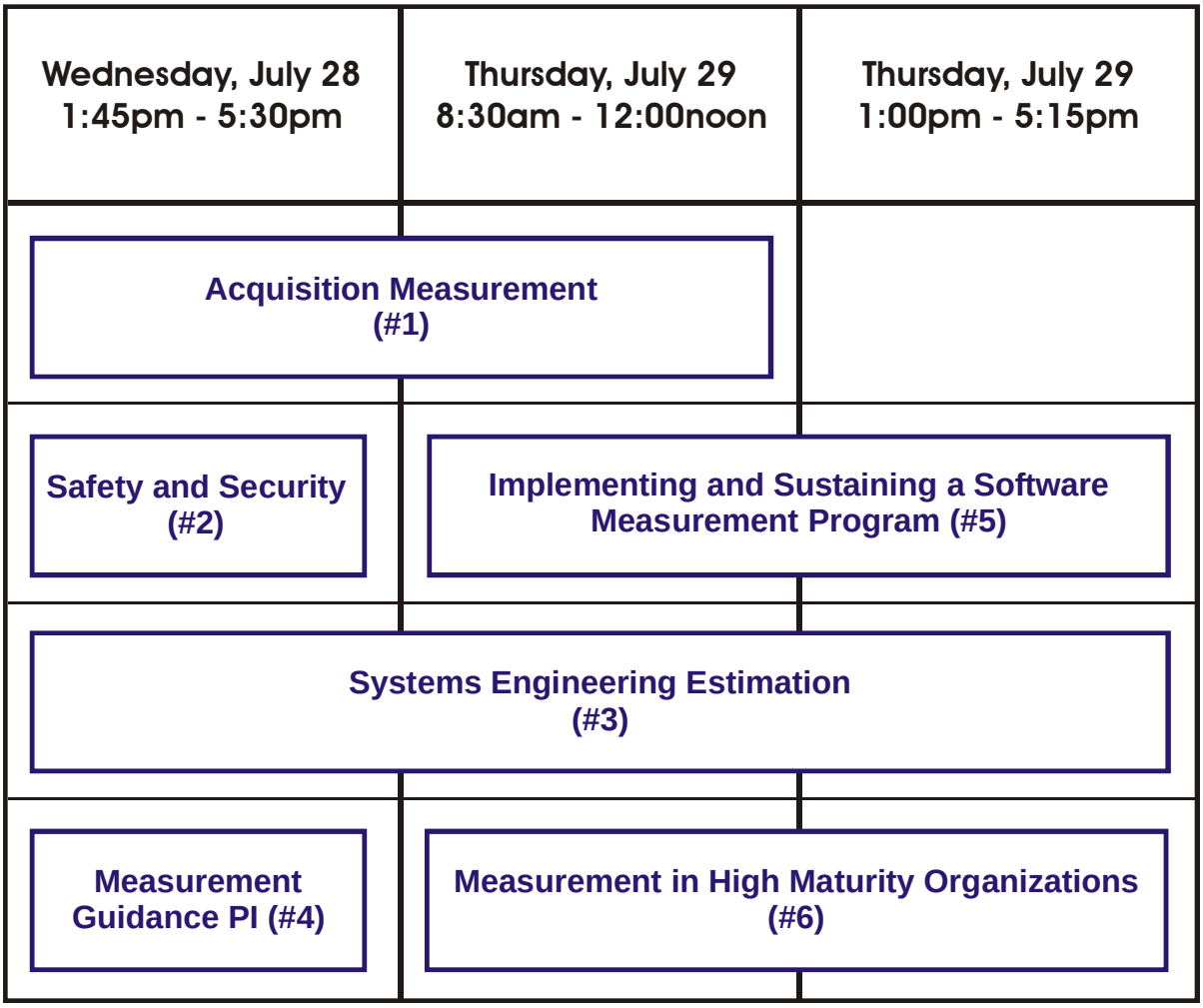
9:90am-10:00am
Workshop Outbriefs
Each workshop lead will have 10 minutes to summarize the results of their workshop and discuss future goals.

10:00am-10:30am ***AM Break***

10:30am-11:00am
"Conference Wrap up Session", Cheryl Jones, US Army RDECOM

PSM (Concurrent) Workshops

(See workshop details on pages 9-14)



The workshops will be small workgroups with well-defined deliverables. We hope to generate useful results and have some interesting discussions. Workshop attendees will be asked to bring relevant materials from their project or organization that can be shared. If necessary, attendees can generalize materials (for example to change names of components or builds), but all should be based on actual use. Any read ahead material mentioned in the following workshop descriptions will be posted on the PSM web site, www.psmsc.com

Attendees in the workshops will include both people with a problem and people who've been able to solve that problem. The workshop groups will build material that is used for examples on the Web site and/or information in the Guide.

At the end of the workshops, there will a session where the results of each workshop are briefed to the full group. All materials generated for or during the workshop will be posted to the web site following the meeting.

Workshop #1: Acquisition Measurement
Facilitator(s): Joe Dean, Tecolote Research, Inc., Rita Creel, Aerospace

First Session
Date: Wednesday, July 28, 2004
Time: 1:45 PM - 5:30 PM
Second Session (continuation)
Date: Thursday, July 29, 2004
Time: 8:30 AM -12:00 Noon

Prerequisites
Participants should review the workshop materials available on the PSM web site, including the acquisition measurement guidance, draft ICM table, sample measurement specifications, and updated acquisition cost model. Workshop attendees should have a general understanding of systems acquisition and program office requirements for supporting system acquisitions. An understanding of parametric cost models, statistical analysis methods, and development of cost estimating relationships is desirable.

Materials to Bring
Participants should bring their knowledge and/or information of program office functions, experiences, and lessons learned in acquisition management. Participants should also bring practical examples of acquisition measures that they have used within their organizations.

Discussion:
This workshop will continue work on acquisition measurement guidance, recommended ICM table and measures, and a cost model for acquisition organizations.

Acquisition Measurement Guidance
Lessons learned are valuable for any organization in order to not repeat mistakes made by others. This workshop will bring the experience of those "Acquisition Warriors" who have "been there and done that". This workshop will leverage off of some initial lessons learned that we have collected and a strawman that will be available on the PSM web by 15 July 2004. During the workshop, we will discuss the strawman, brainstorm, and develop additional inputs.

Acquisition ICM Table and Measures
An acquisition organization needs to know how it is doing and what it needs to improve on at any given time in the acquisition process. Of course, measurement is the key to addressing these needs. This workshop will leverage off of the work completed in July 2003 to finalize an acquisition measurement Information Need - Measurable Concept - Measures (ICM) table. Initial acquisition measurement specifications will be reviewed, and volunteers will be identified to develop other sample specifications.

Acquisition Cost Model
A draft acquisition cost model has been developed by the Air Force Material Command to be used by the Air Force Program Offices to estimate their expected resources to implement future Air Force programs. While it currently has defined input parameters, it is focused entirely on Air Force environments. We are converting it to a generic model so it can become a useful tool for any acquisition organization. At this workshop, the model parameters will be reviewed and refined based on participant experiences.

Goals/Products
The goals of this workshop are to:
- Solicit practical lessons learned and experiences in program office acquisitions.
- Review the draft ICM table and identify practical measures for acquisition projects.
- Get comments on and recommendations for the Program Office Acquisition Support Cost Model.

Workshop #2 Measurement of Safety and Security Processes
Facilitators: Paul Caseley, UK MOD, John Murdoch, University of York

Date: Wednesday, July 28, 2004
Time: 1:45 PM - 5:30 PM

Prerequisites
Those with experience or interest in the measurement of information security processes are warmly invited. Delegates with experience of applying measurement to novel, or new, system processes would provide useful insights. Awareness of the current draft of the PSM TWG *Safety & Security White Paper* and of the FAA-iCMM / CMMI work on a safety & security assurance application area would be useful, though not essential. Also useful is the SEI report on common concepts involved in safety and security engineering (CMU/SEI-2003-TN-033).

Materials to Bring
Knowledge and/or experience of information security processes and their measurement (deployed and potential) on any project or service. Proposals or ideas for security-related information needs, measures and/or indicators, if possible.

Discussion
The group will continue work started at the February 2004 workshop on security process measurement. The following will be reviewed in discussion:

1. information needs related to security process performance;
2. draft measurable concepts to inform the identified information needs;
3. typical working practices in the security domain, with the objective of identifying measurable artifacts and their attributes;
4. draft measurement constructs, mapping the measurable concepts onto artifacts etc.

The group will peer review material developed as a draft update (to version 3) of the *Safety & Security White Paper*, available mid-July.

Some points that may get discussed are:

- harmonisation with CMMI/ iCMM work on safety & security;
- the treatment of risk/ uncertainty in the PSM framework;
- how to validate proposed measures (where not currently deployed); trial project identification etc.

Goals/Products
The goals of this workshop are:

- to review work progress on security measurement;
- to plan further updating of the *Safety & Security White Paper* to include security measurement and subsequent trials, development etc.

Workshop #3: Systems Engineering Estimation Workshop: SE Size Measures and COSYSMO

Facilitator(s): Barry Boehm, University of Southern CA, Ricardo Valerdi, University of Southern CA, Gary Thomas, Raytheon, Chris Miller, Software Productivity Consortium

First Session
Date: Wednesday, July 28, 2004
Time: 1:45 PM - 5:30 PM
Second Session (continuation)
Date: Thursday, July 29, 2004
Time: 8:30 AM - 12:00 Noon
Third Session (continuation)
Date: Thursday, July 29, 2004
Time: 1:00 PM - 5:15 PM

***Prerequisites*:**
Attendees should read the "COSYSMO Primer" presentation located at: http://valerdi.com/cosysmo/COSYSMOdrivers.ppt. Participants are also asked to download the current version of *myCOSYSMO* from http://valerdi.com/cosysmo/ (current version as of 4/6/04 is 1.19). The tool will be used as part of an activity during the workshop. Additional information for the workshop may be posted to the PSM web site one week prior to the workshop.

Materials to Bring:
- Bring your laptop computer with *myCOSYSMO* on it (file size is 1.5Meg).
- Bring examples of SE size measures that you have used within your organization and projects.

Discussion:
This workshop will be broken into three parts. During the Wednesday afternoon session, the size measures that have been defined for the COSYSMO model will be discussed, and detailed measurement specifications for these measures will be drafted. At the end of the Wednesday session, a brief overview of COSYSMO will be presented, and the *myCOSYSMO* prototype will be demonstrated. This will prepare participants for the case study that will be conducted on Thursday. During the Thursday session, the group will discuss current issues related to the Constructive Systems Engineering Cost Model (COSYSMO) including Delphi data from Round 3, driver definitions, data collection, and model calibration. The remainder of the day will be spent performing an exercise with the *myCOSYSMO* prototype.

Issues for discussion include:
- Definition of SE size measures
- Tutorial on *myCOSYSMO* (will be done through a case study)
- Review of action items from March meeting at USC
- Team presentations on case study results
- Identification of inconsistencies & possible weaknesses of the model

Goals:
The goals of the workshop are to:
- Detail SE size measures
- Introduce user to *myCOSYSMO*
- Improve the model by “test driving” the prototype and identifying issues

Workshop #4: Measurement Guidance for Process Improvement
Facilitator(s): Joyce Statz, Teraquest

Date: Wednesday, July 28, 2004
Time: 1:45 PM - 5:30 PM

Prerequisites:
Prior to the User Conference, participants will be asked to read a white paper and supporting materials that are being submitted as measurement guidance for process improvement. This will be provided to those interested in being workshop participants about July 1, along with a set of review questions to be addressed in the workshop.

Materials to Bring:
As described in the review questions, participants will also be asked to bring any relevant examples of measurement plans and measures they have used for process improvement efforts.

Discussion:
This workshop will review a white paper and supporting documentation being submitted to PSM in support of measurement for process improvement. It is a summary of work that has been done over the last 5 years in team sessions at PSM conferences and technical working group meetings, along with industry experience gleaned elsewhere. Participants in this workshop will be asked to do a careful review and critique of the material, to make it usable as PSM reference material.

Goals:
Participants in the workshop will perform a peer review of the provided materials, focused on the review questions provided. Feedback will be collected and incorporated into the materials, which will then be submitted to the PSM program team for their use. Depending on the amount and type of feedback, and additional review cycle may be incorporated before handing the material over to the PSM team.

Workshop #5 Implementing & Sustaining a Software Measurement Program
Facilitator(s): Janet Russac, David Consulting Group, Betsy Clark, Software Metrics, Inc., Brad Clark, Software Metrics, Inc.

First Session
Date: Thursday, July 29, 2004
Time: 8:30 AM - 12:00 Noon
Second Session (continuation)
Date: Thursday, July 29, 2004
Time: 1:00 PM - 5:15 PM

Prerequisites
Review the "Establish and Sustain Commitment" chapter in the PSM book. This workshop is opened to both individuals who have had experience in software measurement programs as well as though who are about to embark on such an experience.

Materials to Bring
Bring examples of:

- Problems encountered while trying to implement a software measurement program and how those problems were overcome
- Potential problems that might arise within your organization while trying to implement a software measurement program
- Plans and strategies that worked in your organization to set-up, implement and sustain a measurement program

Discussion:
This workshop will encourage interaction and problem solving by sharing personal experiences in beginning a measurement program within an organization.

Goals/Products
The goals of this workshop are:

- to identify common problems, obstacles, pitfalls and challenges in establishing and sustaining a measurement program and suggested ways to avoid or come them
- to identify "best practices" and share success stories for measurement programs that were or are successful

Workshop #6: Measurement in High Maturity Organizations
Facilitator(s): Dennis Goldenson, Software Engineering Institute

First Session
Date: Thursday, July 29, 2004
Time: 8:30 AM - 12:00 Noon
Second Session (continuation)
Date: Thursday, July 29, 2004
Time: 1:00 PM - 5:15 PM

Prerequisites:

- Prior to the User Conference, participants will be asked to read three papers and a conference presentation
- Participants should have personal experience using CMMI or the SW-CMM, in their own organizations' process improvement efforts, as consultants, or on appraisal teams.
- Participation is particularly invited by representatives of high maturity organizations, as well as those who have emphasized measurement prior to attaining high maturity status.

Materials to Bring:

- Questions about the intent of CMMI with respect to measurement and analysis
- Notes or other documentation about how you have resolved those questions
- Sanitized appraisal findings related to measurement and analysis

Any materials that you already have prepared to provide guidance about interpreting measurement and analysis will be especially useful.

Discussion:

What makes measurement different in high maturity organizations? What does it take to grow an organization's capabilities to attain high maturity status? Members of this group will discuss their experiences and/or expectations with higher capability measurement practices and what it takes to build them. Issues for discussion include, for example:

Maturing measurement and analytic capabilities

- Do measures change substantively as organizations move up the maturity levels? Are there differences in focus or granularity of the measures, e.g., collecting data at the phase level as opposed to activity level, or moving from defect density data to mean-time-to-failure data for measuring quality?
- How do analytic capabilities improve as the organization matures? Is it all about Statistical Process Control? What do we know about other kinds of analytic methods that are or can be used by higher maturity organizations?
- What does it take to establish and sustain a successful measurement program? Does an early focus on "higher maturity" measurement practices help or hinder things? What "lower maturity" measurement issues still trouble higher maturity organizations?
- Can Six Sigma accelerate the use of measurement for process improvement?

Aligning measurement and information needs

- How can the Measurement and Analysis Process Area help people decide what and when it makes sense to measure? What kinds of measures and analyses can make sense in the context of enacting processes that map to the various CMMI Process Areas? What kinds of measurements are needed for enacting *versus* improving processes?
- What are the business drivers that high maturity organizations set as their top measurement priorities? How many "false starts" does it take to establish standard measures?
- Has moving to Levels 4 and 5 been worthwhile in terms of meeting organizational business objectives? For that matter, can measurement accelerate process improvement?
- Does CMMI contribute to a combinatorial explosion? Not all organizations are structured around large, long lived projects: What are the implications of the project centered nature of CMMI models and appraisals? Does CMMI require measurement for all projects? Must there be separate evidence about how the generic practices are applied to all Process Areas?

Goals:

- Identify and document key issues that require additional guidance about maturing measurement and analytic capabilities in CMMI
- Identify and document existing resources that can be used or modified to provide such guidance
- Identify individuals to collaborate on related papers, presentations, and to build material that will be used for examples on the PSM Web site and/or information in the PSM Guide