11th Annual Practical Software and Systems Measurement Users' Group Conference

"Defining the Future of Measurement Practice"
23-27 July 2007
Golden, Colorado

Conference Agenda

Monday, 23 July 2007

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 who are new to PSM or who want a refresher course on the PSM principles and information-driven measurement process.)*

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

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

1:00pm - 5:00pm   **Training:**
Continuation of morning session

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

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

                              Dinner and Evening Activities on Your Own

Tuesday, 24 July 2007

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

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

8:30am - 8:45am
"Conference Welcome", Cheryl Jones, US Army RDECOM

8:45am - 9:30am
"Software Measurement: The Art, The Science, and The State of the Practice", Keynote Speaker, Dan Galorath, Galorath Incorporated
This paper discusses how things have changed and how they stay the same in terms of both software measurement and how measurements are applied. Both the art and the science aspects of information based project management are addressed as well as best practices for Data collection and lessons learned. Methods of using data to improve projects and how data driven management can go wrong will be covered. The evolution of size metrics and criteria for judging them will be established. Additionally methods of managing including the strengths and weaknesses of earned value and other specific items that are unique to software systems will be discussed.

9:30am - 10:45am
"Defining the Future of Measurement Practice", Cheryl Jones and John McGarry, US Army RDECOM

Since we began the PSM project, measurement as a practice has made great strides in terms of implementation scope and application. Most programs and organizations are collecting some measures, but only a select few are using the measurement information to improve decision making and performance. Despite all the strides we have made, however, there is still significant room for improvement. During this discussion, we will begin addressing the following questions:
- How has the state of practice advanced in the past decade?
- Where are we now? What issues do we will have?
- What can and can't we influence?
- Where should the PSM project focus our activities in the future?

This presentation will be followed by a workshop on Wednesday morning, and will then be followed up with a 2-day meeting in New Jersey in the Fall.

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

11:15am – 11:55am
"Measuring Program Outcomes", Betsy Clark, Software Metrics, Inc, and Brad Clark, Software Metrics, Inc.,

In 2001, U.S. Customs and Border Protection initiated the development of the Automated Commercial Environment (ACE), a multi-year modernization program. As with any large IT investment, ACE is subject to extensive oversight, including the requirement to demonstrate specific quantitative benefits. We used OMB's Performance Reference Model (PRM) as a framework for defining a set of performance measures that are aligned to agency strategic goals and objectives. In the PRM framework for ACE, there are a total of 42 measures covering seven ACE releases. Effectively implementing this number of measures has required several innovations. This presentation covers the basic framework, provides examples of measures and discusses their use in assessing the benefits of ACE and in identifying areas for improvement.

11:55am - 1:00pm   **Lunch provided**

1:00pm - 1:40pm
"When Does Requirements Volatility Stop All Forward Progress", Jo Ann Lane, University of Southern California

Systems are becoming more complex and requirements less understood and predictable both with respect to the evolutionary processes used to develop these systems and the changing system environment. As a result, "change" is inevitable on these development programs. This presentation looks at sources and timing of changes, when change is good, and how much change can be accommodated at various points in the development cycle.

1:40pm - 2:20pm
"Measurement Journey to Successful Multi-site and Multi-discipline CMMI Level 5", Chris Angermeier, Raytheon

Raytheon Network Centric Systems (NCS) passed a multi-site (5) and multi-discipline (SE, SW, HW) CMMI level 5 appraisal on June 1, 2007. This presentation discusses developing and deploying a common measurement program to five regions and cultures across the US. This major undertaking involved defining a standard set of measures, developing tooling, developing training, and then deploying this across the sites. This includes Quantitative Project Management (QPM) Level 4 activities for establishing statistical control of specific sub-processes. NCS also defined mechanisms for standard

organizational analysis of this data at various levels of management. This presentation will provide information on best practices along that journey from a measurement program perspective.

2:20pm - 3:00pm
"Software Assurance Program Importance of Measurement for Software Assurance", Joe Jarzombek, Department of Homeland Security/NCSD
Software Assurance (SwA) is a key element of national security and is critical because dramatic increases in business and mission risks are attributable to exploitable software. A recent CIO Executive Council™ poll indicated that the top two most important attributes of software are "reliable software that functions as promised" and "software free from security vulnerabilities and malicious code."   The presentation will provide an overview of DHS SwA program, industry and regulatory drivers, and programs accomplishments. It will discuss SwA stakeholders, address the need for measurement within the context of SwA, and provides insights into how the industry can help move forward towards SwA goals and objectives.

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

 3:30pm - 4:10pm
"Acquisition and Measurement: Taking GM Lessons to the Community", Joyce Statz, Statz Consulting, and Debbie Yedlin, Borland Software Corporation
Over the last 15 years, General Motors Information Systems and Services (IS&S) has implemented three distinct approaches to acquisition. In this presentation, we review the 3 generations of outsourcing at GM, identifying key lessons learned along the way and how they shaped the next generation.   We discuss the measurement framework that has been established for coordinating the work of GM and its several tiers of suppliers, showing how a minimal set of base measures contribute all that is needed for effective monitoring of progress and for management to the business goals of GM.

4:10pm - 4:25pm
"Systems Engineering and Software Engineering Cost Estimation-State of the Practice, Current Issues, and Moving Forward", John Gaffney, Lockheed Martin
This presentation describes and contrasts top-down and bottom-up or activity-based systems engineering and software engineering cost (effort) estimation models. It also covers some of what the authors perceive to be key problems and challenges to systems and software engineering cost estimation. Some key definitions are provided and model forms are identified. For example, *Cost Estimating Relationship (CER) and Parametric Cost Model (PCM)* are defined. Various parametric model forms are shown and are related to bottom-up models. Also, the key advantages and disadvantages of each type of model are identified. Key factors leading to poor estimates are cited. Finally, a call is made for increased in industry engagement to refine system cost modeling efforts.

4:25pm - 4:40pm
"SE Leading Indicators", Greg Niemann, Lockheed Martin
Today, we have many good leading indicators for the programmatic aspects of engineering, but lack good leading indicators of the more technical aspects of a program. Programs and organizations are looking for leading indicators that provide predictive insight on how their programs are progressing technically. This need, along with the recent DoD emphasis on the revitalization of systems engineering, has been a catalyst for an effort to define Systems Engineering Effectiveness Leading Indicators. This presentation will discuss the recently released SE Leading Indicators Guide that is the result of a collaborative project of the Lean Aerospace Initiative of MIT, INCOSE, PSM, DoD and industry. It is focused on defining a broad set of indicators for evaluating the goodness of the Systems Engineering on a program in a manner that provides information about impacts that are likely to affect the system performance objectives.

4:40pm - 5:00pm
"Enhancements to COSYSMO", John Gaffney, Lockheed Martin
This presentation describes enhancements that have been made to the "Academic COSYSMO" systems engineering estimation model/tool, developed by Dr. Ricardo Valerdi. These enhancements have been implemented in a tool, "COSYSMOR," or "COSYSMO Risk and Reuse." A major driver for the development of COSYSMOR was to get away from "single point" cost estimates in order to better recognize the uncertainty associated with effort, schedule, and cost estimates.

5:00pm - 5:15pm
Brief Workshop Introductions by Workshop Leads (5 minutes each)
Brief descriptions of the goals of each planned workshop will be given.

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

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Wednesday, 25 July 2007

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

8:30am - 12:00pm
>   ***Concurrent Workshops** (see workshop descriptions on pages 8-17)*
>   ***#1 Defining the Future of Measurement Practice***
>   Workshop Leads: Cheryl Jones, US Army RDECOM, and Jack McGarry, US Army RDECOM
>
>   ***#2 Systems and Software Engineering Estimation: Where Are We and Where DO We Need to Go***
>   Workshop Leads: John Gaffney, Lockheed Martin, and Joe Seppy, Systems and Software Consortium
>
>   ***#3 System Engineering Leading Indicators - Extensions and Future Work***
>   Workshop Leads: Garry Roedler, Lockheed Martin, Cheryl Jones, US Army RDECOM

10:00am - 10:30am   **AM Break (group picture - location will be announced, please wear your shirt)**

12:00pm - 1:30pm   **Lunch On Your Own**

1:30pm - 5:00pm
>   ***Concurrent Workshops** (see workshop descriptions on pages 8-17)*
>   ***#4 2007: The Breakout year for COSYSMO***
>   Workshop Leads: John Rieff, Raytheon, Ed Casey, Raytheon, Stacy Gore, Raytheon, John Gaffney, Lockheed Martin, and Garry Roedler, Lockheed Martin
>
>   ***#5 A Framework for Software Early Warning Indicators***
>   Workshop Lead: Linda Abelson, Aerospace Corp.
>
>   ***#6 Acquisition Measurement***
>   Workshop Leads: Joe Dean, Tecolote Research, Inc., and Cheryl Jones, US Army RDECOM
>
>   ***#7 Where to go from here? (Enabling Success for the Start-up Measurement Program)***
>   Workshop Lead: Steve Coffman, Paraswift, Inc.

3:15pm - 3:30pm   **PM Break**

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

Thursday, 26 July 2007

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

8:30am - 9:10am
"Optimizing Organizational Measurement and Analysis ROI for Small Diverse Projects", Susanna Schwab, L-3 Communications
This presentation will describe implementation of a measurement and analysis program for an organization consisting of diverse projects of varying size and scope. It will describe in particular

- an organizational baseline of tailorable measurement and analysis process assets
- how projects (especially small resource limited projects) tailor measurement activities from this baseline
- how tailoring is validated by the organization
- how monitoring and control of process areas is efficiently accomplished via organization measurement process assets
- how organization measurement, project QA, and project management roles can contribute to measurement ROI in projects

The presentation will conclude with a sharing of lessons learned.

9:10am - 9:50am
"Measuring the Reliability and Value of a Checklist", Dan Houston, Ph.D., Aerospace
This presentation describes a Six Sigma project that improved a test specification process through the development of a reliable checklist. The project looked at how system test specifications are reviewed, and developed a checklist for the reviews. The reliability of this checklist was measured, and the checklist was deployed when its reliability reached an acceptable level. Upon deployment, use of the checklist triggered discovery of defects that could be fixed before release, thus producing a savings. The presentation describes the phases of the process improvement project, including the process analysis that led to identifying the need for a test specification checklist, the development and testing of the checklist, the statistical approach for measuring checklist reliability, and the approach for calculating savings that resulted through avoidance of costly rework. Particular attention will be given to two measurements: (1) the measurement of checklist reliability and use of the reliability measure to improve the checklist; and (2) the measurement of the project savings.

9:50am - 10:30am
"Measurement and the People CMM® - Using Them to Improve the Capability of Your Workforce", Patrick Rabbath, S-3 Consulting
The People CMM® model identifies specific measurement and analysis practices within all its process areas, as a fundamental driver for institutionalizing the continuous improvement of an organization's workforce capability. The impact that measurement and analysis practices has on the model will be clearly shown in the mapping of measurement throughout the People CMM®. Finally the paper will present some lessons learnt on the barriers that typically prevent organizations in implementing effective measurement programs.

10:30am - 10:50am   **AM Break**

10:50am - 11:30am
"Utilizing Functional Size on Enhancement Projects", Neslie Morrison, US Army Information Systems Engineering Command
This presentation will describe an example of applying Fast Function Point Analysis as a practical methodology for improving program management processes on DoD IT software projects. Based on early requirements, we used Fast Function Points to functionally size two increments of the Defense Personal Property System (DPS) software application. Applying Price Systems' True S, we were able to use size metrics to predict costs and schedules for future software enhancements, updates to existing documentation, on-line help package, and development of the next increment. While this information is currently being used for contractual acquisition estimates, the plan is to apply this model to monitoring defects as a performance measurement and to help mitigate future cost and schedule risks on the program.

11:30am - 12:10pm
"Performance Measurement in CMMI: A Focus on Variation Among Otherwise Similar Programs", Dennis R. Goldenson, Software Engineering Institute
Substantial proof of concept exists that CMMI-based process improvement can and often has led to improvement in performance outcomes that are predictably faster, better, and cheaper. Still, there almost always is variation in the processes, their performance outcomes and the other factors that may affect them both. Comparative analyses are needed, with explicit process models that explain the effects on performance outcomes of differences in how the processes are enacted under varying circumstances. This presentation presents the results of studies into these variations. . It provides practical guidance about how organizations can use "high maturity" measurement methods to improve their own processes and performance outcomes.

12:10pm - 12:30pm
Brief Workshop Introductions by Workshop Leads (5 minutes each)
Brief descriptions of the goals of each planned workshop will be given.

12:30pm - 1:30pm   **Lunch Provided**

1:30pm - 5:00pm
    Concurrent Workshops (see workshop descriptions on pages 8-17)
    #4 (Continuation of Wed. afternoon session) 2007: The Breakout year for COSYSMO
    John Rieff, Raytheon, Ed Casey, Raytheon, Stacy Gore, Raytheon, John Gaffney, Lockheed Martin, and Garry Roedler, Lockheed Martin

    #6 (Continuation of Wed. afternoon session) Acquisition Measurement
    Workshop Leads: Joe Dean, Tecolote Research, Inc., and Cheryl Jones, PSM

    #8 Measuring Outcomes
    Workshop Leads: Betsy Clark, Software Metrics and Kevin Mooney, ROBBINS-GIOIA, LLC

    #9 RUP for PSM Plug-in Update (with emphasis on adding Systems Engineering Leading Indicators)
    Workshop Lead: Doug Ishigaki

3:15 pm - 3:30pm   **PM Break**

Dinner and Evening Activities on Your Own

Friday, 27 July 2007

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

8:30am - 9:10am
"SwA Measurement Guidance Update", Nadya Bartol, Booz Allen
Measurement is a key enabler of Software Assurance because it facilitates an understanding of the status and its relation to achieving Software Assurance goals. This presentation will describe the status of SwA Measurement Working Group efforts, including the development of Practical Guidance for Software Assurance and Information Security Measurement (aka SwA Measurement Guidance) and the development of Software Assurance Acquisition Quick Reference. The SwA Measurement Guidance provides an approach for quantifying and assessing the level of integration of software assurance techniques into the SDLC and evaluating the results of such integration in terms of increasing trustworthiness of the code. SwA Acquisition Quick Reference provides a summary of essential considerations for acquirers of software with corresponding sample contractor language and implementation techniques, indicators, or measures for evaluating compliance.

9:10am - 9:50am
"Do It Right, Do It Early; Do It Early, Do It Right" -- Measuring Systems Thinking and Technical Planning for Air Force Systems, Jeff Loren, MTC Technologies, Inc.
There is a long history of system developments that have gone over budget and behind schedule as a result of poorly conceived, architected, and specified functional requirements. When system characteristics are inadequately addressed in concept and requirements development, the resulting programs also frequently suffer. When they are shortchanged during design, products and systems often fail to satisfy the business and mission goals (capability needs) that they were intended to achieve.
All attributes that are desired in a system will drive the design of the system (hardware, software, and interfaces), from the highest level of architectures to the lowest level of components. It is therefore essential to elicit and appropriately specify these systems attributes with the stakeholder community early in the requirements phase; it is equally important to manage progress toward meeting them as the system design evolves. Defining appropriate measures of progress to use for these management efforts must be a key part of concept and early requirements development.

9:50am - 10:15am   **AM Break**

10:15am - 11:45am
Workshop Outbriefs
Each workshop lead will have 10 minutes to summarize the results of their workshop and discuss future goals.

11:45am-12:00noon
"Conference Wrap up Session", Cheryl Jones, US Army RDECOM

Workshop #1:   Defining the Future of Measurement Practice

Facilitators: **Cheryl Jones, U.S. Army, and John McGarry, U.S. Army**

Date: **Wednesday, 25 July**
Time: **8:30am - 12:00pm**

Prerequisites
Workshop attendees should have knowledge of measurement and PSM. Attendees should have been involved in a measurement implementation at an organizational or project level. Attendees should have a detailed knowledge of current measurement implementations, including state-of-the practice, issues, and areas that need to be addressed in future guidance.

Materials to Bring
Participants should bring lessons learned on measurement implementations in their projects and implementations. They should bring experiences and ideas related to state-of the practice, problems, key areas of value, and areas that need to be addressed in the future.

Discussion:
Since we began the PSM project, measurement as a practice has made great strides in terms of implementation scope and application. Most programs and organizations are collecting some measures, but only a select few are using the measurement information to improve decision making and performance. Despite all the strides we have made, however, there is still significant room for improvement. At this workshop, we will try to answer these questions:
1. How has the state of practice advanced in the past decade?
2. Where are we now? What issues do we have?
3. What can and can't we influence?
4. Where should the PSM project focus our activities in the future?

To address these questions we will discuss the following aspects of measurement practice:
- Technology: Do we know the technically correct way to implement measurement (process model, information model)? Have we described those adequately through experience-based guidance and examples?
- Relevance: Can we deliver information that supports both project and organizational objectives across multiple domains (e.g. software, systems engineering). Do we have a principle-based practice?
- Adaptability: Can the practice be easily modified to address new requirements? Is it flexible, tailorable, and responsive?
- Acceptance: How well is the practice accepted and used? Is it considered a way of doing business?

Following this workshop, we will convene a 2-day meeting in New Jersey to continue this work.

Goals/Products
The goals of this workshop are to:
- Identify current state-of-the-practice in measurement, including issues and successes.
- Identify areas of focus for future PSM activities – areas that need guidance, items that need to be updated to reflect current practice, and areas for improvement
- Develop an action plan for the next year

Workshop #2:   **Systems and Software Engineering Estimation: Where Are We and Where Do We Need to Go**

Facilitators: **John Gaffney, Lockheed Martin, and Joe Seppy, Systems and Software Consortium**

Date: **Wednesday, 25 July**
Time: **8:30am - 12:00pm**

Prerequisites
Workshop attendees should have some experience and/or knowledge or familiarity of the estimation of labor and schedule for systems engineering and/or software engineering.
An important prerequisite is to have opinions about the subject, and be willing to share your experiences with other workshop participants.

Materials to Bring
Participants should also bring practical examples of estimation, both in the proposal stage and during the execution of projects.

Discussion
This workshop is intended to provide a forum for determining the state of practice in systems and software engineering, and perceived deficiencies in the state of the practice. Also, the state of the art in these disciplines will be identified. A major objective is to identify a path to move the state of practice toward the state of the art. In other words, we will try to collectively identify where we are, where we need to go, and how we might get there.

We believe that the PSM Users' Group offers a unique venue for pursuing such discussions.

Goals/Products
The goals of this workshop are to produce a brief report that:
- Identifies challenges to achieving good estimates (e.g., having relevant past project experience; how to you estimate unprecedented systems?)
- Produces recommendations for: new products, new approaches, types of training, best types of models to use
- Identifies; relations/synergies between software and systems engineering estimation methods that can be employed to improve estimation.

Workshop #3:   System Engineering Leading Indicators - Extensions and Future Work

Facilitators: Garry Roedler, Lockheed Martin, and Cheryl Jones, U.S. Army

Date: Wednesday, 25 July
Time: 8:30am - 12:00pm

Prerequisites
Participants should be familiar with the PSM measurement process and have a need for more information on leading indicators of the effectiveness of systems and software engineering. Workshop attendees should have a general understanding of system and software engineering measures currently in use across their projects or organization. It is recommended that attendees read the SE Leading Indicators Guide prior to the workshop.

Materials to Bring
Bring a list of key system and software engineering issues for their programs for which early predictive insight would help manage those issues. Also, bring any candidates indicators or ideas for indicators that would add value to the current documented set.

Discussion
More and more projects and organizations are looking for measures of effectiveness to demonstrate that their projects are progressing technically, as required. These measures generally need to go beyond the common measures of schedule and cost, to include measures that provide indications of the effectiveness of systems and software engineering in meeting contractual requirements.   With DoD emphasis on the revitalization of systems engineering, it is important to understand whether the systems engineering effort being applied is effective or likely to be effective in providing the desired system solution. The set of indicators need to be predictive; truly providing leading insight. The PSM analysis model is helpful in identifying the leading relationships.

Goals/Products
The goals of this workshop are to document additional information needs/issues and indicators that are not currently addressed by the SE leading indicators in the guide.   In addition, additional opportunities to use these indicators will be identified.

Workshop #4:   2007: The Breakout year for COSYSMO

**Facilitators: John Rieff, Raytheon, Ed Casey, Raytheon, Stacy Gore, Raytheon, John
                    Gaffney, Lockheed Martin, and Garry Roedler, Lockheed Martin**

First Session
Date: Wednesday, 25 July
Time: 1:30pm - 5:00pm
Second Session
Date: Thursday, 26 July
Time: 1:30pm - 5:00pm

Prerequisites
- Knowledge of the COSYSMO model
- Deployment experience with the COSYSMO model (any level is acceptable)
- Knowledge of your organization's needs and techniques for SE cost estimation
- Materials prepared by facilitators will be made available on the PSM Website prior to 23 July 2007
- Workshop participants should review these materials prior to the start of the workshop

Materials to Bring
- Deployment experiences
- Enhancement/refinement recommendations
- Results of data collections
- Deployment Lessons Learned

Discussion:
Systems engineering continues to play a critical role in the design and operation of large complex systems. To date, the refinement of traditional systems engineering cost estimation has not reached the same level of maturity as its end item counterparts (i.e., hardware and software). Industry and government have traditionally bundled the costs of systems engineering with other program management, test, and integration costs. This approach poses two problems. First, it does not allow for sufficiently quantifiable justification for assigning systems engineering costs. The absence of a robust quantifiable approach can prevent programs from adequately staffing systems engineers for their programs. Second, it fails to consider the technical and programmatic drivers that have an impact on systems engineering cost, thereby relying on estimation techniques that lack the necessary repeatability, fidelity, and objectivity.

The evolution of systems engineering as a formal discipline is evident by its increased emphasis in academia, industry, and government. The number of degree programs in systems engineering have increased considerably in the last 20 years which has created an increased pool of systems engineers, most of which have chosen to pursue careers with aerospace/defense contractors and the military. The growth of the systems engineering discipline is also accentuated by the development of standards by commercial (ANSI/EIA and IEEE), government (MIL-STD and CMMI), and international (ISO) bodies. To complement the rapid spread of this widely used discipline, it is essential to develop tools that help measure and manage systems engineering resources.

Even though systems engineering is experiencing a growth trend, numerous organizations are identifying it as one of the principal sources of program failure. The Government Accountability Office has cited chronic overspending on large programs largely attributed to poor execution of systems engineering. As a reaction, the US Air Force initiated a program focused on *Systems Engineering*

Revitalization which is aimed at restoring fundamental systems engineering processes within the acquisition community. Moreover, the incorporation of systems engineering in the Capability Maturity Model Integrated by the Department of Defense is a clear message that the government is assessing the maturity at which systems engineering is being performed by its contractors.

In 2005, the COSYSMO dissertation was successfully defended at the University of Southern California. Numerous members of the systems engineering community contributed to that success and immediately started to search for ways to implement the COSYSMO model. In 2006, a very successful workshop was held concerning the initial and expected deployments of the COSYSMO model for systems engineering cost estimation. Since then, we have observed significant development of COSYSMO related activities within the systems engineering community. We have also started to see the glimmers of advancement of the COSYSMO model through its incorporation in commercially available tools. There have also been rumors about a book on COSYSMO being published.

The 2006 workshop provided significant insight into the deployment experiences of the COSYSMO community. The workshop identified weaknesses as a result of these deployments and actions were created in order to close these weaknesses. Some of these weaknesses centered on how the model handled different aspects of the size drivers (new, modification, reuse) and uncertainty. This workshop will review the work that has been performed over the past year that addresses the concerns and weaknesses identified in 2006. The workshop participants will learn about recommended changes to the sizing parameters that address reuse, modification, deletion, and uncertainty. Using a scenario-based approach, the workshop participants will learn how the different types of drivers (new, modified, reuse, deleted) and uncertainty interact in the development of an estimate for either a proposal or EAC. Workshop participants will again review their deployment experiences, the highs and lows, and lessons learned. Based on last year's experiences, COSYSMO users differed on their understanding of the definitions of the various key model parameters. Workshop participants in 2007 will work through facilitated sessions to refine and improve these definitions. The workshop participants will have the opportunity to review the final installment of the COSYSMO User's Guide. The workshop participants will identify model deficiencies they have discovered, improvements that could benefit users, and recommendations on how to resolve/address these deficiencies/improvement opportunities. The workshop participants will develop a set of recommendations for extensions to the COSYSMO model and a roadmap for the COSYSMO evolution. The workshop will also review academic work that has been performed or planned since the release of the first dissertation. If time permits, the workshop participants will review data that has been collected by the user community and submitted to USC for incorporation into the calibration database. Techniques for data collection will be discussed.

Goals/Products
- Review of changes to the model since the 2006 workshop
- Review of outstanding issues that were identified at the 2006 workshop
- Refinement of model definitions for key model parameters
- Lessons Learned from model deployment
- Recommendations for model improvement and extension
- Recommendations for model extension
- Recommendations for changes to the User's Guide or other documentation
- A Process for communicating problems and future enhancements, including an ongoing user group forum
- A roadmap for the next year

Workshop #5:   A Framework for Software Early Warning Indicators

Facilitator: Linda Abelson, Aerospace Corp.

Date: Wednesday, 25 July
Time: 1:30pm - 5:00pm

Prerequisites
Participants should review the workshop materials available on the PSM website, including "*A Framework for Software Acquisition Early Warning Indicators*". Workshop attendees should have a general knowledge of PSM, Acquisition Lifecycle, and Measurement. (Materials will be posted by 23 July 2007).

Materials to Bring
Participants should bring information on *relevant and useful metrics*. Participants should also bring practical examples of contracting organization structures, relevant contracting guidance/direction, creative techniques for directing the contractor and any novel approaches to either.

Discussion:
The workshop will be divided into 4 distinct segments.
1) **Overview:** Provide an overview of the framework its structure and content; including a questions/answer session. Provide an introduction to the goals and objectives of the workshop. (40 min.)
2) **Partitioning:** Provide an overview of the framework (20 min.); break up into group discussions (20 min.); solicit feedback on model partitioning (20 min.).
3) **Measurable Attributes and Potential Metrics:** Provide an overview of the identified measurable attributes of each of the partitions (20 min.); break up into group discussions (20 min.); solicit feedback on measurable attributes and potential metrics (50 min.)
4) **Conclusions:** Outline conclusions White Paper (40 min.).

Goals/Products
The goals of this workshop are:
- Feedback on Model Partitioning
- Identification of additional Measurable Attributes
- Identification of additional Potential Measurements
- White Paper outline.

Workshop #6:   Acquisition Measurement

Facilitators: Joe Dean, Tecolote Research, Inc., and Cheryl Jones, U.S. Army

First Session
Date: Wednesday, 25 July
Time: 1:30pm - 5:00pm
Second Session
Date: Thursday, 26 July
Time: 1:30pm - 5:00pm

Prerequisites
Participants should review the workshop materials available on the PSM website, including the acquisition measurement guidance, ICM Table, and WBS. (Materials will be posted by 18 July 2007). Workshop attendees should have a general understanding of systems acquisition and program office requirements for supporting system acquisitions, knowledge of and/or information on program office functions, experiences, and lessons learned in acquisition management.

Materials to Bring
Participants should bring practical examples of acquisition measures that they have utilized within their organizations. Participants should bring a documented list of suggestions for topics for additional focus in a future update.

Discussion:
In July 2007, version 1.0 of the Acquisition Measurement white paper will be released. This documents a set of guidance, potential measures, and WBS of acquisition activities. At this workshop, attendees will review and finalize details of activities, products and notes for the detailed WBS. In addition, attendees will begin defining some sample measurement specifications for selected acquisition measures.

Finally, during this workshop, we will discuss topics for additional focus in a future update. Topics that have been proposed to date include:
- Enterprise measurement coverage
- System-of-system recommendations
- Cost model (based on the detailed WBS)

Goals/Products
The goals of this workshop are to:
- Finalize the detailed WBS (activities, products, notes).
- Begin development of sample measurement specifications
- Identify topics for additional development
- Define actions items to complete the acquisition cost model.

Workshop #7:   **Where to go from here? (Enabling Success for the Start-up Measurement Program**

Facilitator: **Steve Coffman, Paraswift, Inc.**

Date: **Wednesday, 25 July**
Time: **1:30pm - 5:00pm**

Prerequisites
For individuals who are establishing a new (or revamped) measurement program and have concerns that theirs might not be successful. Individuals must have a specific example that they are working on (not a generic case study filled with what-if's, maybe's, or how about's).

Materials to Bring
Three weeks prior to conference - Submit listing of top concerns and anticipated roadblocks to successful program implementation. This can include issues of team/management expertise, tool limitations, company history with measurement, program constraints, or whatever are your program's particular issues.

Interaction with facilitator prior to conference will refine this listing and background material to share with all workshop participants.

Discussion:
This workshop is to get past the generic set of answers to common problems that sound good but do not yield the desired results and to quickly develop a workable set of next steps, traps to look out for, and successes to highlight for each participant. Building on pre-conference work performed by the participants and facilitator, a group review and discussion of each case will occur.

Goals/Products
The goal of this workshop is to provide specific and practical take away actions for the participants to apply back at the office that increases the participant's confidence for a successful measurement program.

Workshop #8:   Measuring Outcomes

Facilitators: Betsy Clark, Software Metrics, Inc, and Kevin Mooney, ROBBINS-GIOIA, LLC

Date: Thursday, 26 July
Time: 1:30pm - 5:00pm

Prerequisites
General knowledge of common business processes in the information technology industry.

Materials to Bring
None

Discussion:
PSM has traditionally focused on project measures during system development and maintenance. A different and equally important perspective comes from measuring the outcomes of systems' deployment. These measures can be used in to show return-on-investment as well as to quantify other, non-monetary, benefits. For large IT investments by federal agencies, there is increasing pressure to show objective, measurable benefits. We believe this an area that will see increased attention in the future and that has a need for measurement expertise.

This workshop will discusses alternative approaches to measuring program outcomes, including the following topics:

- What is outcome measurement?
- Is anyone else at the conference doing this?
- To what extent does outcome measurement occur in the private sector or is this primarily a government initiative?
- How does outcome measurement relate to return-on-investment (ROI)?
- Measuring efficiency versus effectiveness
- Establishing causal links between measures to tie technology to organizational performance
- Setting Targets

Goals/Products
The output of the workshop will include lessons learned and areas needing additional development.

Workshop #9: **RUP for PSM Plug-in Update (with emphasis on adding Systems Engineering Leading Indicators)**

Facilitator: **Doug Ishigaki**

Date: **Thursday, 26 July**
Time: **1:30pm - 5:00pm**

Prerequisites
- Basic familiarity with RUP.
- (Optional but highly recommended) Download and review the RUP Plug-in for RMC. If you do not have Rational Method Composer, you can download a 30-day evaluation copy from IBM.com.
- Review the Systems Engineering Leading Indicators Guide.

Materials to Bring
Current users of the RUP for PSM plug-in (v1.0 or v2.0) are welcomed to share their experience.

Discussion:
The IBM Rational Unified Process©, or RUP© plug-in for PSM was jointly developed by PSM and IBM, released in January 2004, and has been available for download at the PSM Web site. This plug-in integrates the measurement activities, artifacts, and concepts as described by PSM, replacing the measurement concepts provided by the RUP base framework.

In January 2006, a new version of the plug-in was released based on the Rational Method Composer (RMC), which is the next generation of the RUP platform and includes the new RUP v7.0 process framework. This new version 2.0, can be downloaded from here.

The next version is planned for the Fall of 2007 and will add content for Systems Engineering – in particular, include content from the Systems Engineering Leading Indicators Guide. The primary focus for this workshop is on this next version. In particular, we plan to add content from the SE Leading Indicators Guide, so how to best integrate the content into the plug-in will be discussed.

Time permitting, additional updates can also be discussed.

Goals/Products
The goals of this workshop are:
- Identify recommended enhancements for the next release of the plug-in with emphasis on SE Leading Indicators.
- Identify additional updates for future releases.
- Identify field sites for validating the PSM Plug-In.