14th Annual Practical Software and Systems Measurement Users' Group Conference

"Ensuring the Integrity of Measurement Information"

26-30 July 2010
New Orleans, Louisiana

Conference Agenda

Monday, 26 July 2010

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

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

8:30am - 11:30am **Training for new PSM participants:**
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.)*

8:30am - 11:30am **Training Workshop for Qualified PSM Trainers:**
At this workshop, the DAU on-line course and the revised PSM training materials will be reviewed and new materials to support this training will be updated and developed. See the workshop description for more information.

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

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

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

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

4:30pm – 5:30pm On-Site Conference Registration

Dinner and Evening Activities on Your Own

Tuesday, 27 July 2010

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

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

8:30am - 9:25am
"Conference Welcome and Introductions", Cheryl Jones, US Army RDECOM

9:25 - 10:05am

"The Critical Role of Measurement in Defense Decision Making", Michael H. McLendon, Visiting Scientist, Software Engineering Institute; DDR&E and OSD AT&L

The use of measurement information has always played a critical role in defense decision making at all levels, perhaps never more so than today. Continually refreshing the measurement discipline – knowledge, policy, process, and tools - in the 21st century to keep pace with the rapid changes in the current and future economic, technology, and defense environment is a significant challenge. One of the most critical challenges for the measurement community in this highly complex environment is being able to effectively communicate the meaning of measurement data and information to diverse groups of decision makers to improve the quality of their decisions. The increasing complexity of defense systems and the use of the systems-of-systems and ultra-large scale systems frameworks as program planning and analysis tools present new challenges for the measurement community. Recent legislation and DoD policies have further emphasized the role of measurement with the creation of improved structures and processes to enable advances in the use of measurement to facilitate the decision process. This presentation highlights the important role of measurement in 21st century defense decision making and the impact of recent legislation and DoD policies on the measurement discipline.

10:05am - 10:45am

"Measures for Maintenance", Donald Reifer, Reifer Consultants, Inc. (presenting), paper with Jill Ann Allen, U.S. Army, Brian Fersch, U.S. Air Force, Barbara Hitchings, SAIC, James Judy, U.S. Army, Wilson Rosa, U.S. Air Force

This paper and its associated presentation provides a snapshot of the findings, conclusions and recommendations of a year-long Joint U.S. Army and Air Force study on the topic of software life cycle maintenance and measures. The paper starts by presenting a Work Breakdown Structure (WBS) for maintenance. Using the Practical Systems and Software Measurement (PSM) methodology, the paper next identifies key questions key stakeholders in the maintenance process want answered and their information needs. The paper concludes by providing initial recommendations for a indicators and measures at providing insights aimed at answering these questions. These recommendations will be further refined at the afternoon's workshop.

10:45am - 11:00am **AM Break**

11:00am - 11:40am

"Heuristics for Systems Engineering Cost Estimation", Ricardo Valerdi (MIT)

Engineering cannot wait until all phenomena are explained. Engineers may work effectively, often for centuries, with heuristics. This presentation provides thirty-one heuristics that have been inspired by the development and application of a systems engineering cost estimation model. The objective of the presentation is to present such heuristics in a simple manner so that they can benefit anyone developing, calibrating, and using cost models.

11:40pm - 12:20pm

"We Value Fact-Based Decisions – We Just Don't Have the Facts", Jack McGarry and Joanne Arias, U.S. Army RDECOM-ARDEC

The implementation of an effective measurement process has always been viewed as the basis for objective decision making. Even a perfectly designed and executed process, however, does not ensure that the measurement results will be used to guide organizational decision making. This presentation examines some of the key factors that influence the value of a measurement program within the corporate decision environment. It explains how fundamental organizational process and behavioral constructs can influence the availability, integrity, and use of measurement derived decision information. The presentation addresses the key interfaces between measurement, risk, business process design and implementation, and information technology, and how these factors must play together within the organization.

12:20pm - 12:30pm
Brief Workshop Introductions by Workshop Leads
Brief descriptions of the goals of each planned workshop will be provided.

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

1:30pm - 5:00pm
***Concurrent Workshops* (see workshop descriptions later in this file)**

#1 Workshop #1 - Maintenance Measures and Measurement
Facilitator: Donald Reifer (Reifer Consultants, Inc.)

#2 Workshop #2 - COSYSMO Requirements Volatility Workshop
Facilitators: Ricardo Valerdi (MIT) and Mauricio Peña (USC)

#3 Workshop #3 - Services Measurement
Facilitator: Andy Boyd (SEI)

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

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

Wednesday, 28 July 2010

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

8:30am - 9:20am
Keynote: "Common Problems in CMMI High Maturity Implementations", David Card, DNV ITGS USA
Mr. Card is an internationally recognized expert in software measurement and process improvement, and one of the principal contributors to PSM. He has worked extensively with high maturity organizations where quantitative and statistical methods are essential. Mr. Card is the author of Measuring Software Design Quality (Prentice Hall, 1990), co-author of Practical Software Measurement (Addison Wesley, 2002), and co-editor ISO/IEC Standard 15939: Software Measurement Process (International Organization for Standardization, 2002). His extensive experience in applied measurement is second to none.

This presentation will provide some historical perspective on process improvement and measurement , as well as discuss some of the common problems encountered in implementing CMMI Levels 4 and 5. It will focus on conceptual and technical challenges - not appraisal issues, although the latter must be considered to some degree. Common sources of problems are statistical misunderstandings, overloaded and/or unclear terminology in the CMMI, and "clunky" Level 3 processes. The SEI's high maturity appraisal audit criteria effectively identify the problem areas, but do not offer much explanation of the underlying concepts, intent, or techniques. The common problems are based on five recent experiences in coaching high maturity organizations.

9:20am - 10:00am

"Process Measurement Using PSM", Bill Golaz (Lockheed Martin)

This briefing describes the application of PSM methodology to identify top level process measures for a major program. The approach provides guidance to the program teams in determining their information needs and the related measures needed to manage their processes. The approach is generic enough it can be used for functional process owners as well as program teams.

10:00am - 10:40am

"Improving Enterprise Decision-Making: The Benefits of Measure Commonality", Alissa H. Friedman (MIT)

This presentation identifies a new approach in managing and making internal program-level decisions from externally tracked performance measures. Industry observations indicate the increasing challenge for program managers and internal development teams to identify performance improvement opportunities for products, services, organizations, etc., in an effective and efficient manner based on tracked performance measures by external customers. An exploratory study of a technical product was conducted. The product has multiple customers whose external data drives internal program decisions. This research included historical data analysis, product developer interviews, and product customer interviews.

Findings suggest (1) that measure commonality is plausible, (2) that measure commonality may result in improved product community decision-making and communication as well as lower product maintenance costs, and (3) how these common measures would change over the course of the product's operating life cycle. However, there are a number of limitations within the research, such as (1) its applicability outside of an operational performance measurement system, and (2) the assumption that the most aggregated measures are the only measures that should be made common.

10:40am - 11:00am **AM Break (group picture - location will be announced, please wear your shirt)**

11:00am - 11:40pm

"Introduction of New Ways of Working Driven by Measurements", Antonio Moya (Ericsson España, SA)

By using adequate measurements it can be determined the efficiency and effectiveness of an organization's process. By analyzing those measurements or benchmarking the results with other organizations, it can be envisaged the need of introduction of new processes or ways of working. The presentation shows how an organization has established a huge improvement program changing from a waterfall development process model into a more iterative and agile development model to increase customer responsiveness, to reduce lead time, and to increase quality and productivity.

After the introduction of the new process, a measurement system has been put in place to assess the performance of the new way of working that has involved changing not only the processes but also the organization structure to better adapt to the new way of working. Results show that ambitions and expectations set up at the beginning of the huge change have been accomplished. The new way of working has changed the organization's culture and the perception that a working measurement system is a powerful tool for driving improvements in processes and organization changes with a big impact in the customer satisfaction and the business.

11:40am - 12:20pm

"Organizational Measurement – Not Just Addition", Pete Baxter (Distributive Management)

The use of measurement has become more and more common in systems engineering, especially software-intensive product development. Organizations implementing measurement for systems engineering invariably try to apply measurement at the organization level. They do this to gain valuable insight into their ability to satisfy customers, stockholders as well as to stay competitive in their industry. In this presentation, Mr. Baxter explains that using measurement for organizational purpose requires a clear understanding of goals. He presents four common organizational measurement uses:

- Structural or hierarchical measurement by aggregating measurement data
- Build or validate estimation and planning models by clustering and grouping measurement data
- Benchmarking and acquisition support
- Building or validating risk-based techniques and PPMs by analyzing measurement data

For each approach, he explains how the PSM/ISO-15939 information model is augmented to support common analysis techniques required for each of the four organizational measurement uses. Finally, he describes each organizational use of measurement with specific examples, explaining the techniques and how it differs from process or performance measurement.

12:20pm - 12:30pm

Brief Workshop Introductions by Workshop Leads

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

12:30am - 1:30pm **Lunch on Your Own**

1:30pm - 5:00pm

Concurrent Workshops (see workshop descriptions later in this file)

#5 Workshop #5 – Executability Measures
Facilitator: Frances Anderson (The Aerospace Company)

#6 Workshop #6 – Systems Engineering Size and Stability
Facilitator: Peter Baxter (Distributive Management)

#7 Workshop #7 - Process Performance Measurement
Facilitators: Mauricio Aguiar (ti Metricas), Antonio Moya (Ericsson Espana), Bill Golaz (Lockheed Martin)

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

6:00pm **Awards Dinner with cash bar**

Thursday, 29 July 2010

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

8:30am - 9:10am

"Improving ERP Cost Estimating in the DoD: Practical Measures for Estimating ERP Acquisitions, Wilson Rosa (AFCAA), Capt. Charles Silvanic (AFCAA), Travis Packard (AFCAA), Max Hodal (Wyle), and Brian Kolstad (MCR)

AFCAA will present the results of several years of data collection and study of ERPs, with the intention of improving ERP estimating. Five years ago at DODCAS, the cost agencies for the Air Force, Navy and Army gave two presentations on estimating DOD ERP projects which, at the time, were relatively new to DOD. The first presentation gave the state of affairs for DOD ERPs and ERP estimating, and the second presentation laid out a four point plan for improving ERP estimation. The first section of this paper will recap and update the first DODCAS presentation by reviewing the current state of DOD ERP cost estimating.

The second section of this paper will present the significant progress the cost agencies have made on all four areas for improvement proposed in the second DODCAS presentation, and communicate that progress to the cost community. An important part of this progress has been the development of practical measures of use to estimators. The third section of this paper will discuss some of the lessons learned. The fourth section will explore areas for future exploration. This paper provides useful information to the cost estimating community. The service cost agencies expended great effort collecting this information, and relish the opportunity to provide these insights to the community, with the ultimate goal of cost analysis improvement for everyone.

9:10am - 9:50am

"Software Development Profile Model – A Case Study: Software Development Profile Model", Arya Khoshkhou, Lockheed Martin

This paper describes the Software Development Profile Model (SDPM) as a framework for estimating the reliability of software constructs based on the software change history. Recent empirical studies show a strong correlation between the change history of a file and its fault-proneness. Statistical data analysis techniques such as regression analysis have been applied to validate this finding and tools have been developed to predict the probable fault-prone files based on the software change history. Our model describes the relationship between the reliability of software constructs based on their change history and software development process. SDPM is independent of the type of construct, which can be a module, class, function point, line of code (LOC), source statement (SS), or other types of software unit for which data has been collected. The proposed model is based on the assumption that anytime a software construct is touched, it has a chance to become defective. Under this assumption, the model estimates the reliability of software constructs based on the change history and software development activities. The reliability estimate of software constructs are then used to estimate the level of defect proneness of various software artifacts such as source files or software modules. This presentation provides a case study to show how SDPM is used in an actual software development project.

9:50am - 10:30am

Building Cost Estimating Relationships for Acquisition Decision Support, Brad Clark (USC/ Software Metrics, Inc.), Ray Madachy (Naval Postgraduate School)

This presentation discusses the Air Force Cost Analysis Agency's (AFCAA) research to improve the quality and consistency of estimating methods across United States Department of Defense (DoD) cost agencies and program offices through measurement guidance, standardization, and knowledge sharing. The goal is to establish a robust and cost effective software measurement collection process and knowledge base that supports the data needs of the DoD, enhance the utility of the collected data for program oversight and management, and support academic and commercial research into improved cost estimation of future DoD software-intensive systems. This project is led by AFCAA, working with service cost agencies, and assisted by University of Southern California and Naval Postgraduate School. Data analysis challenges, interim results and emerging public tools for cost analysis and estimation will be presented.

10:30am - 11:00am **AM Break**

11:00am - 11:40am
"Historical Data Use in Software Estimation – Caveat Emptor!", David DeWitt (Galorath):
Imagine an ice cube that's begun to melt - most people can imagine how long it will take to fully liquefy and the likely shape and size of the puddle that will remain behind. Now imagine a different puddle of water created by ice. What was the shape of the ice cube? How many ice cubes? How long did it take for them to melt? A post-mortem on just the puddle is impossible.

Now imagine a repository of "historical" software projects. Too often the data is no more than a collection of puddles of various sizes. There is little indication as to the initial shape of those projects or how they evolved. Did they start as fifty-pound blocks, a ten-pound bag, or a never ending backlog of freezer trays? Is the integrity of data sufficient to substantiate or refute a software estimate?

The audience will be provided with anecdotal representation of the potential traps that may be encountered when using historical data. The message to be conveyed is that only project data that was properly collected, validated, normalized, and then sufficiently articulated is suitable for use; for all other "historical" data the utility is limited.

11:40am - 12:20pm
"Maximizing Value for Cost in Software Development", Paul Below, Quantitative Software Management
Now, more than ever, software projects need to efficiently deliver reliable software. However, many development plans unintentionally guarantee a less than optimal result. In addition, the plans either do not specify required system reliability or, if they do, the plan is not based on forecasts of when the minimum acceptable reliability will be reached. This presentation describes how to maximize value by establishing minimum acceptable reliability and how to take advantage of the apparent paradox between software size and productivity through appropriate selection of team size and schedule duration.

12:20pm - 12:30pm
Brief Workshop Introductions by Workshop Leads
Brief descriptions of the goals of each planned workshop will be given.

12:30am - 1:30pm **Lunch provided**

1:30pm - 5:00pm

Concurrent Workshops (see workshop descriptions later in this file)

#8 Workshop #8 - Agile Measurement
Facilitator: Dan Beisel (Northrop Grumman IS)

#9 Workshop #9 - Affordability
Facilitators: Peter McLoone and Jim Hoxsie (Lockheed Martin)

#10 Workshop #10 - Enterprise Resource Planning (ERP) Measures
Facilitators: Celia Modell (Boeing)

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

Dinner and Evening Activities on Your Own

Friday, 30 July 2010

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

8:30am - 8:50am

"Information Category – Measurable Concept – Measure (ICM) Table Update", Cheryl Jones, U.S. Army

Over the last year, the PSM Information Category – Measurable Concept – Measures (ICM) Technical Working Group (TWG) has updated the PSM ICM table, based on lessons learned to date and new technologies that are being used. This presentation will present the results of that activity, and detail plans for the coming year.

8:50am - 9:10am

"Practical Software and Systems Measurement (PSM) On-Line Course", Mike Denny, Defense Acquisition University (DAU)

Over the last year, the U.S. Department of Defense, Defense Acquisition University has developed an on-line measurement course in conjunction with PSM. This course is now available on-line. This presentation will provide an overview of this on-line course, and discuss plans for the future.

9:10am - 9:50am

"Managing an Established Measurement Programme", Peter Thomas, Steria

IT is a very sophisticated endeavour. Measuring the delivery of IT is therefore a complex activity which frequently fails. This presentation looks at each of the components that make up a measurement programme and reviews the risks and issues with each component. Peter will provide guidance on how to avoid and resolve them based on several years experience.

9:50am - 10:30am

Workshop Outbriefs

Each workshop lead will summarize the results of their workshop and discuss future goals.

10:30am - 10:45am **AM Break**

10:45am – 11:45am

Workshop Outbriefs (cont.)

Each workshop lead will summarize the results of their workshop and discuss future goals.

11:45am-12:00pm

"Conference Wrap up Session", Cheryl Jones, US Army RDECOM

PSM Users' Group 2010 Workshops
Descriptions on following pages

Workshops to be held afternoons from 1:30pm to 5:00 pm

Tuesday, 27 July	Wednesday, 28 July	Thursday, 29 July
#1 - Maintenance Measures and Measurement Don Reifer	#5- Executability Measures Frances Anderson	#8 - Agile Measurement Dan Beisel
#2 - COSYSMO Requirements Volatility Workshop Ricardo Valerdi and Mauricio Peña	#6 - Systems Engineering Size and Stability Peter Baxter	#9 - Affordability Peter McLoone and Jim Hoxsie
#3 - Services Measurement Andrew Boyd	#7 - Process Performance - Project Level (Productivity, Efficiency, Effectiveness) Mauricio Aguiar, Antonio Moya, Bill Golaz	#10 - Enterprise Resource Planning (ERP) Measures Celia Modell

Workshop: ***Maintenance Measures and Measurement***
Facilitator: ***Donald Reifer (Reifer Consultants, Inc.)***

Prerequisites:
Experience performing or managing maintenance, sustainment, or services activities is useful for this workshop.

Read-Ahead Package: A read-ahead package will be posted to the PSM web site appropriately two to four weeks ahead of the PSM meeting.

Materials to Bring:
Please bring comments to the "Software Operations, Maintenance and Support Work Breakdown Structure (WBS)". Attendees will be asked to review the WBS, our ICM Table and our white paper on maintenance measures with their maintenance people to identify which tasks they currently perform and what current indicators and measures they gather, analyze, and use to assess their technical and programmatic performance and progress. Examples of actual measurement definitions results would be valued as would feedback on what works and what does not in practice.

Discussion:
This workshop will continue discussions begun last year at the PSM meeting on maintenance. At that meeting, it was agreed that better indicators and measures were needed to gain insight into work performed by software maintenance groups.

During the past year, the Army and Air Force maintenance study team has collaborated to dig deeper into the topics of software estimation and measurement for maintenance projects. As part of this effort, the team has developed an Operations, Maintenance and Support Work Breakdown Structure (WBS), an assessment of cost estimation models relative to maintenance and a white paper on maintenance measures (will be presented at this year's PSM meeting). The purpose of this workshop is to review, build on and extend this work so that its products can be used on pilot projects.

As noted, the primary goal of the workshop is to review, revise and update the ICM (Information Category-Measurable Concept-Prospective Measures) Table that the study team has developed for our maintenance WBS to include indicators and measures that we can use on a pilot project. Those already collecting, analyzing and using such data to gain needed insights into their maintenance projects will be asked to share their definitions, recommendations and experience with other attendees.

Goals/Products:
- Define the information needs and potential set of measures that might be useful in gaining insight into maintenance project technical and programmatic performance and progress.
  - Relate these needs to the work done by such projects as defined by our Work Breakdown Structure
- Gather feedback on what works in practice and what does not based on participant experience.
- Engage the community and get it excited about software maintenance.

Workshop: ***COSYSMO Requirements Volatility Workshop***
Facilitators: ***Ricardo Valerdi (MIT) and Mauricio Peña (USC)***

Prerequisites
Attendees should have interest and/or experience with systems engineering measures, requirements management, and cost estimation. Some familiarity with the COSYSMO model is helpful.

Materials to Bring
- Summaries of experiences/lessons learned from projects that experienced requirements volatility.
- A list of requirements trends measures currently in use across your project or organization.

Discussion:
This workshop will discuss the use of requirements volatility measures and the impact of requirement changes on project performance. Requirements volatility is defined as the change in requirements over a given time interval and it is one of the requirements trends leading indicators included in the Systems Engineering Leading Indicators Guide[1]. Although changes in requirements are expected as part of a system's development, excessive volatility after the requirements baseline has been established has been linked to a project's failure to meet its cost and schedule targets.

The workshop will provide a forum to:
- Learn about COSYSMO and latest research results in systems engineering reuse
- Present an overview of the causes and effects of requirements volatility on systems engineering effort
- Request feedback on a requirements volatility causal model developed based on a review of prior research and survey responses from subject matter experts
- Discuss the implications of the research to COSYSMO and the potential extension of the model to incorporate a requirements volatility cost factor.

The participants will be asked to provide their perspective regarding requirements volatility and will be given the opportunity to influence the direction of future research.

More info on COSYSMO can be found on the website: http://cosysmo.mit.edu

Goals/Products
- Evaluation of the causal model as a method for systems engineering practitioners to anticipate and account for requirements changes in their projects
- Agreement on the appropriate timing for the application of requirement volatility measures
- Obtain feedback on the COSYSMO requirements volatility extension
- Opportunity for participants to exchange lessons learned on requirements volatility

[1] http://www.psmsc.com/Downloads/Other/SELI-Guide-Rev2-01292010-Industry.pdf

Workshop: ***Services Measurement***
Facilitator: ***Andrew Boyd (SEI)***

Prerequisites

Workshop attendees should have knowledge of measurement and PSM principles, constructs, and products. Attendees should have some understanding of the concepts of Services, Service Requests, Service Providers, and Service Level Agreements (SLAs). Additionally, some understanding/knowledge in the various Services libraries, models, and standards would be beneficial.

Materials to Bring

Anything related to Service Level Agreements, incident/problem management, and Service Requests. Participants should bring lessons learned from measurement implementations in service organizations, and samples of measures and indicators used. 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

The Capability Maturity Model Integration for Services (CMMI-SVC) defines a Service as, "…a product that is intangible and nonstorable." It goes on to say, "Services make up 80 percent of the world economy and comprise more than half of U.S. Department of Defense acquisitions." There are many efforts in the government looking at bringing Services under a common framework (e.g., the DoD ITIL effort). There may even be ties to efforts like the DoD Architecture Framework (DoDAF). At this workshop, we will discuss how PSM concepts could possibly be applied to the Services domain. While a few service measures were added in the last revision of the ICM table, this workshop will explore whether that is sufficient, and what additional guidance should be offered.

References

- CMMI-SVC – CMMI® for Services
- ITIL® - IT Infrastructure Library
- CobiT® – Control Objectives for Information and related Technology
- ISO 20000 – IT Service Management Standard

Goals/Products

The goal of this workshop is to:

1. Answer the questions: Does PSM need to address Services in more detail?
2. If so, what additional information needs, categories, concepts, and questions need to be added to the ICM?
3. Do we need measures that cover Service Providers, Service Consumers, and Service Acquirers perspectives?
4. Define a plan of action.

Workshop: ***Executability Measures***
Facilitator: ***Frances Anderson (The Aerospace Company)***

Prerequisites
Attendees should have interest and/or experience with the PSM ICM Table (see PSM web site, under products), and with measures of executability.

Materials to Bring
- Implementation lessons learned on measures of executability
- Sample measures

Discussion
Over the last year, the PSM Information Category – Measurable Concept – Measures (ICM) Technical Working Group (TWG) has updated the PSM ICM table, based on lessons learned to date and new technologies that are being used. One of the areas of interest is measures of executability – those that provide confidence that the project will be completed on time, within budget, and meet performance requirements.

This workshop will build on the ICM work, and review/update the measures of Executability. This includes measures that address when a project will be completed, and the associated confidence levels. The measures included in the ICM table will be reviewed, along with existing measurement specifications in this area. Implementation guidance will be discussed and documented. Attendees will discuss potential new measurement specifications.

Goals/Products
- Documented implementation guidance on measures of executability
- Edited measurement specifications
- Plans for completing additional measurement specifications

Workshop: ***Systems Engineering Size and Stability***
Facilitator: ***Peter Baxter (Distributive Management)***

Prerequisites
Attendees should have interest and/or experience with systems engineering measurement, particularly working with work products such as models, architectures, specifications and test plans. Familiarity with these documents is useful (The last two can be downloaded from the PSM web site):

- INCOSE Systems Engineering Handbook, v3.1
- Technical Measurement (PSM, INCOSE, Industry), v1.0
- Systems Engineering Leading Indicators Guide, v2.0

Materials to Bring

- Past performance, in the form of estimates, plans or experience reports related to the engineering or delivery of system engineering work products.
- A candidate list of measures which address sizing or stability of work products in use across your project or organization.

Discussion:
During this workshop, the team will identify the primary management needs in assessing the size and stability of systems engineering work products. Management information needs (for size and stability) will be proposed and documented such that SE work products can be planned and monitored in a typical control loop fashion. A set of candidate SE work products will be elaborated from CMMI, ISO-15288, INCOSE SE Handbook, as well as team contribution. It is expected that work products will include SE architectures, models, concept/DOP documents, systems specifications, requirements documents, test plans and other SE items. A key focus of this workshop will be to provide guidance for measuring work products produced using MDD, DODAF or SysUML efforts. The SELI Guide will be reviewed to extract existing size and stability measures. The PSM measurement specifications for software size and stability will be reviewed. The COSYSMO estimation model will be examined to understand how the model requires as input, or generates as output, size and stability measures. The workshop will also discuss issues associated with how size and stability of systems engineering work products affect or drive quality, of both the work product under development and downstream SE activities. The team will construct a set of measurement specifications covering these topics.

The participants will be asked to provide their perspective of systems engineering size and stability and will be given the opportunity to influence the resulting measurement specifications.

Goals/Products

- Draft set of SE work products to which measures could be applied
- Draft measurement specifications for SE size and stability
- Obtain feedback for SE measurement specifications
- Opportunity for participants to exchange lessons learned on measuring systems engineering work products and processes

Workshop: ***Process Performance Measurement***
Facilitator: ***Mauricio Aguiar (ti Metricas), Antonio Moya (Ericsson Espana), Bill Golaz (Lockheed Martin)***

Prerequisites
Attendees should have interest and/or experience with the PSM ICM Table (see PSM web site, under products), and with process performance measures.

Materials to Bring
- Implementation lessons learned on process performance measures
- Sample measures of process efficiency (productivity, cycle time) and process effectiveness (defect containment, test effectiveness and coverage, rework).

Discussion
Over the last year, the PSM Information Category – Measurable Concept – Measures (ICM) Technical Working Group (TWG) has updated the PSM ICM table, based on lessons learned to date and new technologies that are being used.

This workshop will build on that work, and review/update the measures of Process performance. This includes measures of process efficiency (productivity, cycle time) and process effectiveness (defect containment, test effectiveness and coverage, rework). The measures included in the ICM table will be reviewed, along with existing measurement specifications in this area. Implementation guidance will be discussed and documented. Attendees will discuss potential new indicators and measurement specifications.

Goals/Products
- Documented implementation guidance on process performance measures
- Edited measurement specifications
- Plans for completing additional measurement specification

Workshop: ***Agile Measurement***
Facilitator: ***Dan Beisel (Northrop Grumman IS)***

Prerequisites
Attendees should have interest and/or experience with the PSM ICM Table (see PSM web site, under products), and with agile developments.

Materials to Bring
- Implementation lessons learned on agile measures
- Sample agile measures.

Discussion
Over the last year, the PSM Information Category – Measurable Concept – Measures (ICM) Technical Working Group (TWG) has updated the PSM ICM table, based on lessons learned to date and new technologies that are being used.

During the workshop, attendees will compare Agile and traditional measurements approaches and then discuss the use of standard Agile techniques such as velocity measures and burn-down charts to understand progress. Attendees will also discuss traditional measures such as code quality, test coverage and build times. The final topic is an examination of the use of measurements at retrospectives and issues with reporting Agile measurements to management.

This workshop will build on the ICM work, and review/update Agile measures. The measures included in the ICM table will be reviewed, along with existing measurement specifications in this area. Implementation guidance will be discussed and documented. Attendees will discuss potential new indicators and measurement specifications.

Goals/Products
- Documented implementation guidance on agile measures
- Plans for completing additional measurement specification

Workshop: ***Affordability***
Facilitators: ***Peter McLoone and Jim Hoxsie (Lockheed Martin)***

Prerequisites

- Knowledge of PSM Information Category – Measurable Concept – Measure (ICM) table (available from the PSM web site, under products).
- Interest and/or Knowledge of affordability

Materials to Bring

Ideas on affordability and how measurement can play a role in engineering for affordability.

Discussion

Affordability is the degree to which the whole life cycle cost of an individual project/program is in consonance with long-range investment capability and evolving customer requirements. Affordability Engineering is a process that enables companies to reduce costs and improve value throughout the whole life cycle of a product by the use of cost estimating and risk information, especially at the conceptual design stage. Affordability Measurement is the use of quantitative methods to provide insight into the effectiveness of affordability engineering.

This workshop will explore methods and techniques for performing affordability measurement at both the enterprise and project levels. We are planning to do this work as a collaborative project with the INCOSE Measurement Working Group and the NDIA. The objective is to develop a white paper addressing this topic by early 2012.

References

Defense Acquisition Guidebook, Chapter 3, Affordability and Life Cycle Resources Estimates

Goals/Products

- Plan of action and milestones for development of a white paper addressing this topic.
- Outline of white paper

Workshop: ***Enterprise Resource Planning (ERP) Measures***
Facilitator: ***Celia Modell (Boeing)***

Prerequisites
Attendees should have interest and/or experience with the PSM ICM Table (see PSM web site, under products), and with process performance measures.

Materials to Bring
- Implementation lessons learned on ERP measures
- Sample ERP measures

Discussion
Over the last year, the PSM Information Category – Measurable Concept – Measures (ICM) Technical Working Group (TWG) has updated the PSM ICM table, based on lessons learned to date and new technologies that are being used.

Enterprise resource planning (ERP) is an integrated computer-based system used to manage internal and external resources including tangible assets, financial resources, materials, and human resources. It's purpose is to facilitate the flow of information between all business functions inside the boundaries of the organization and manage the connections to outside stakeholders. Built on a centralized database and normally utilizing a common computing platform, ERP systems consolidate all business operations into a uniform and enterprise wide system environment.

This workshop will build on the ICM work, and review/update ERP measures. The measures included in the ICM table will be reviewed, along with existing measurement specifications in this area. Implementation guidance will be discussed and documented. Attendees will discuss potential new indicators and measurement specifications.

Goals/Products
- Documented implementation guidance on process performance measures
- Edited measurement specifications
- Plans for completing additional measurement specification

Workshop: ***Revised PSM Training Materials***
Facilitator(s): ***Cheryl Jones, Garry Roedler, Greg Niemann, Mike Denny***

Workshop Length: ***1 Day, Monday***

Prerequisites
This session is intended for PSM qualified instructors, who have completed the PSM train-the-trainer session and been observed teaching. Before the course, please take the PSM on-line course (scheduled to be available June 2010), and input any comments, problems, or suggestions for improvement into the system (the course will be updated when sufficient on-line comments have been received).

Materials to Bring
Please bring examples of measures you have used in your organization, as well as any supplementary training slides that you use when you have taught PSM. Bring materials that you are willing to share with the PSM project, to form a baseline for the revised training slides.

Discussion
Based on discussions at the 2008 and 2009 PSM Users' Group Conferences, we have developed an on-line PSM course for the Defense Acquisition University. This course is to be released very shortly. The course is a 3-hour on-line course.

We now need to make decisions as to how to update to the existing training materials and train-the-trainer package, for PSM trainers. We will start the workshop, with a review of the DAU course.

In the morning of this workshop, we will review the DAU course, and discuss any comments, areas for further improvement, and areas for supplemental development. Afterwards, we will have a working session to make decisions on how to update the trainer materials that you all use. Potential topics include:

- New material – what?
- Extra examples
- Interactions with the measurement process (decision-making, management, risk management)
- Measurement specifications (e.g. Requirements)

Goals/Products
The goals of this workshop are to:

- Identify comments and areas for further improvement for the DAU materials
- Identify areas for supplemental development in the training materials
- Draft new materials, as appropriate
- Develop a plan and milestones for completing the remaining areas, and identify volunteers who will work on the actions