18th Practical Software and Systems Measurement Users' Group Meeting and Workshops

"Measurement in a Complex Environment"

June 12-16, 2107
Arlington, Virginia

Meeting and Workshops Agenda

Time	Monday	Tuesday	Wednesday[1]	Thursday	Friday
7:30 – 8:30	Continental Breakfast	Continental Breakfast	Continental Breakfast	Continental Breakfast	Continental Breakfast
Morning Session* 8:30 – 12:20	PSM Training	Welcome & Introductions; Keynote; Presentations	Presentations	Presentations	Presentations Workshop Outbriefs Wrap-up
Lunch 12:20 – 1:30	Lunch	Lunch	Lunch	Lunch	
Afternoon Session* 1:30 – 5:00	PSM Training	Concurrent Workshops 1-2	Concurrent Workshops 3-4	Concurrent Workshops 5-7	

* Morning and afternoon breaks included

Other Agenda Items and Schedule

Monday, 12 June 2017

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

8:30am – 5:00pm **PSM Training**: 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.

Tuesday, 13 June 2017

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

Wednesday, 14 June 2017

10:40am PSM Picture
5:30pm PSM Dinner: Teds Montana Grill

Friday, 16 June 2017

10:00am - 12:00pm Workshop Outbriefs
Each workshop lead will summarize the results of their workshop and discuss future goals.

12:00am - 12:20pm Conference Wrap-Up

[1] **Group picture Wednesday AM - location will be announced.**

18th PSMUG Users' Group Meeting and Workshops: "Measurement in a Complex Environment"

Presentations: Tuesday - Friday **Presentation Abstracts are provided starting on page 11.**

Time	Tuesday	Wednesday	Thursday	Friday
8:30 - 920	***Keynote: Measurement Challenges Associated with Modularity, Openness, and Mission Engineering*** ***Robert Gold***	***Keynote: TBD*** ***Steve Miller***	***DevOps: Are we measuring the right thing?*** ***Robin Yeman***	***Cloud Solutions – Infrastructure, Platform or Software: Where should you go?*** ***Arlene Minkiewicz***
9:20 - 10:00	***The Good, the Hype and the Ugly about Using the SRDR to Estimate the Cost and Schedule of Software Intensive Systems that Use the Agile Software*** ***Glen B. Alleman and Tom Coonce***	***Deriving Software Sustainment Cost Estimating Relationships in a Diverse Army Execution Environment*** ***Cheryl Jones, James Doswell, Jenna Meyers***	***Software Metrics – UK Studies*** ***Antony Powell and John Murdoch***	***Project Managers Guide to Systems Engineering Measurement for Project Success*** ***Gregory Niemann***
10:00 - 10:40	***Enabling Repeatable SE Cost Estimation with COSYSMO and MBSE*** ***Gan Wang***	***Cybersecurity Technical Risk Indicators: A Measure of Technical Debt in Software Supply Chain Risk Management*** ***Joe Jarzombek***	***Enhancing Delivery Schedule Awareness*** ***Salvatore Bruno***	***Workshop Outbriefs***
11:00 - 11:40	***System of System Engineering – Progress and Plans*** ***Judith Dahmann***	***Estimating the Cost of Securing Software Applications*** ***Brad Clark***	***Measurement Challenges Associated with Engineering-In and Transitioning Software Assurance into the System Acquisition Lifecycle*** ***Kenneth Nidiffer***	***Workshop Outbriefs***
11:40 - 12:20	***Estimation Bias and Mitigation with Agile Estimate Guidance*** ***Joe Dean***	***Show me the money! From Software Sizing to Productivity Improvement*** ***Tony Timbol***	***Leveraging the Power of Historical Data Through the Use of Trend Lines*** ***Taylor Putnam-Majarian, John Staiger***	***Workshop Outbriefs*** ***Conference Wrap-up***

PSM Users' Group 2017 Workshops

Descriptions on following pages

Workshops: Tuesday – Thursday

Workshops: 1:30 to 5:00		
Tuesday	**Wednesday**	**Thursday**
1. Systems of Systems (SoS) Engineering Measurement Through the SoS Life Cycle **Facilitators: Garry Roedler, Judith Dahmann, Brian Soeder, and Ryan Jacobs**	**4. COCOMO III Workshop: Implementing a New Driver for Software Security** **Facilitator: Brad Clark**	**6. DevOps and Chocolate** **Facilitator: Robin Yeman and Greg Niemann**
2. Measuring Progress on Agile Programs Using EVM Concepts **Facilitators: Glen Alleman, Tom Coonce**	**5. Improving Software Sustainment Cost Estimation: Addressing the Uncertainty, Risks, and Constraints in the Current Environment** **Facilitators: John McGarry, Jenna Meyers, James Doswell, Cheryl Jones, Bob Charette**	**7. Where it All Begins: Best Practices for Gathering and using Quantitative Data** **Facilitators: Taylor Putnam-Majarian, John Staiger**
3. COSYSMO 3.0: Expert Input to Parameter Values **Facilitator: James Alstad**	**None**	**8. The Future of Software Metrics** **Facilitators: Antony Powell, John Murdoch**

Workshop #1: Systems of Systems (SoS) Engineering Measurement Through the SoS Life Cycle

Facilitators: Garry Roedler, Lockheed Martin; Judith Dahmann, MITRE; Brian Soeder, MITRE; and Ryan Jacobs, MITRE

Prerequisites: The 2016 PSM SoS workshop addressed top-level measurement considerations for systems of systems (SoS). Using the SoS Wave Model as a framework, SoS systems measurement considerations and challenges were identified (see attached briefing and SoS Implementers View paper). Participants should become familiar with the briefing from the 2016 workshop, as well as the SoS Implementers View paper.

Materials to Bring:

Examples of how their organization has used measurement to gain insight and address issues/decisions for systems of systems.

Discussion:

In the workshop, each step in the SoS wave model will be discussed, previous progress will be reviewed, and workshop participants will work together to identify the following for each stage of the wave model:

- What are the **questions** that need to be addressed?
- What **measures** are candidates to help answer the questions?
  - Technical? Technical management?
  - At SoS level? At the system level?
- What are the **measurement challenges**?
  - For technical and technical management?

Goals/Products:

Identify questions, measures, and measurement challenges for the SoS at each stage in the SoS life cycle as presented in the SoS wave model.

Workshop #2: Measuring Progress on Agile Programs Using EVM Concepts

Facilitator: ***Glen Alleman, Niwot Ridge Consulting and***
Tom Coonce, Institute for Defense Analyses

Prerequisites:

- Participants should have a general understanding of the Agile software development process.
- Familiarity with the National Defense Industrial Association's (NDIA) Practice Guide for Agile on Earned Value Management Programs

Materials to Bring:

- Printed copy of NDIA's " An Industry Practice Guide for Agile on Earned Value Management Programs", Version 1, March 11, 2016
- Highlighter, pen and paper

Discussion:

DoD requires cost-plus software development efforts to use Earned Value Management (EVM) to ensure timely delivery of end items within cost and schedule targets. Implementing EVM on Agile projects has been proven to be challenging because software deliveries are planned over fixed time periods so the traditional concept of schedule variance in dollar terms is different. The traditional cost and schedule variances from plan need to be recast into the amount of actual software delivered relative to the amount planned for a given time box.

This workshop will review EVM, Agile and how progress is measured on an agile software programs. The participants will be given scenarios of planned sprints for features with stories and hours along with actual stories and hours. They will compute physical percent complete for each of the scenarios and show the computed cost and schedule variances for each scenario.

Goals/Products:

Participants will learn how to

- Use existing monthly planned and actual Agile data (Epics, Features, Stories and Story points) to record "progress"
- Communicate Agile monthly cost and status categories using Agile planned and actual agile metrics

Workshop #3: COSYSMO 3.0: Expert Input to Parameter Values

Facilitator: ***James P Alstad, USC Center for Systems and Software Engineering***

Prerequisites:

Those with experience with systems engineering projects, especially as project leads or estimators, are recommended to attend; however, other systems engineers would also be helpful. Attendance at today's COSYSMO 3.0 presentation is recommended.

Materials to Bring:

Experience estimating, leading, or working on systems engineering projects. Experience designing questionnaires.

Discussion:

Thanks in part to a previous PSMUG Workshop, a mature "Expert-Based" version of the COSYSMO 3.0 Systems Engineering Cost Estimating Model is available. This Workshop will go over the Model, a data gathering questionnaire, and a cost estimating spreadsheet; attendees will be asked for input on these items.

Goals/Products:

- Commentary on the Model and its auxiliary material
- Interest in providing actual project data for the final COSYSMO 3.0 model

Workshop #4: COCOMO III Workshop: Implementing a New Driver for Software Security

Facilitator: Brad Clark, USC Center for Systems and Software Engineering

Prerequisites:

An understanding of how a software cost estimation model is used in creating software development cost estimates. Knowledge of the COCOMO II Software Cost Estimation Model would be helpful but not absolutely necessary.

Materials to Bring:

Bring pen and paper. Handouts will be provided if needed.

Discussion:

This workshop will begin with a brief overview of the COCOMO III project and the proposed cost estimation model. The focus will then shift to an overview of how to make software applications secure and the associated cost impact. The main purpose of the workshop and the majority of time will be spent on discussing ideas for incorporating software security cost estimation in the COCOMO III model.

Participants should come to the workshop prepared to learn about and discuss how to make software secure.

Goals/Products:

A draft on how to estimate Required Software Security in COCOMO III

Workshop #5: Improving Software Sustainment Cost Estimation: Addressing the Uncertainty, Risks, and Constraints in the Current Environment

Facilitators: John McGarry, U.S. Army RDECOM-ARDEC; Jenna Meyers and James Doswell, U.S. Army DASA-CE; Cheryl Jones, U.S. Army RDECOM-ARDEC; Dr. Robert Charette, ITABHI Corporation

Prerequisites:

A general understanding of US Department of Defense software maintenance and sustainment processes, practices, and activities. Experience in defining and applying funding and personnel resources in the sustainment environment. Knowledge of the statutes, policies, and regulations that impact the planning and execution of software sustainment. Actual experience in changing an operational software baseline as part of a system software sustainment team.

Materials to Bring:

Knowledge and practical experience in software sustainment, with a specific focus of those issues and constraints that impact the objective estimation of both release and life cycle costs and schedules. Organizational and system level software sustainment CERs, SERs, benchmarks, and estimation methods. Short "list" of those factors (issues, constraints, risks, etc.) you have experienced that impacted your ability to accurately project software sustainment costs. Software sustainment estimation and overall environment "lessons learned".

Discussion:

The workshop will begin by outlining and discussing the Army's experience in developing improved software sustainment cost estimation relationships and associated application methodologies. A summary of the Army's experience in defining stakeholder information requirements, establishing consistent sustainment cost structures, collecting and normalizing relevant cost and technical data, developing initial CERs, and dealing with cost uncertainty and will be presented.

Derived from these efforts, a summary of those factors that impacted (and are impacting) the development and continuous improvement of software sustainment estimation models that generate trusted results across diverse functional domains will be presented. These factors include a wide scope of policy, technical, and management issues, risks, and constraints that impact and influence not only the effectiveness of our estimation constructs, but also the ability of decision makers at all levels to make informed decisions regarding software sustainment. A primary intent of the workshop discussion is to integrate the unique experiences of the workshop participants, and produce a prioritized list of factors that need to be addressed going forward within the estimation and sustainment communities.

Goals/Products:

The primary objective of the workshop is to begin to identify and prioritize those factors in the software sustainment environment that need to be addressed to inform accurate cost and schedule estimates across DoD. The long-term concept is that better cost estimates will drive more efficient operational software resource allocations across the defined enterprise(s), resulting eventually in more effective mission performance. Projected workshop outputs include a consensus understanding of the key sustainment issues and a prioritization of those issues in a summary document.

Workshop #6: DevOps and Chocolate

Facilitator: ***Robin Yeman and Greg Niemann, LMCO***

Prerequisites:

Experience supporting cross-functional teams is helpful but not mandatory for participation.

Materials to Bring:

None.

Discussion:

Cross-functional teams have helped us to adapt to change, increase quality, and shorten schedules in building products, but not necessarily to get products out the door quicker. This workshop demonstrates in 3 easy sprints what happens when you bring operations to the table.

The goal is showing improved cycle time and minimize rework measures. It begins with a brief presentation. Then we hold sprint 1. After sprint 1, we get back together to discuss results and review a few more slides.

We will then hold sprint 2. After sprint 2 we get back together to discuss results and review a few more slides. We then hold sprint 3. This should have the best results. After sprint 3 we discuss results and why we saw the optimizations in cycle time and reduce defects. The focus will be on increasing awareness on items we can do to improve delivery.

After the sprints, we will discuss the information needs and potential measures for DevOps.

Goals/Products:

- A set of information needs and measures for DevOps

Workshop #7: Where it All Begins: Best Practices for Gathering and Using Quantitative Data

Facilitator: *Taylor Putnam-Majarian, John Staiger; Quantitative Software Management*

Prerequisites: None

Materials to Bring: Participants must only bring something to with which to write, optional laptop with MS Excel

Discussion:

One of the best ways to assure realistic expectations for a project is to observe the past. Before getting started with any process improvement endeavors, it is important to understand the big picture and establish an initial baseline with your projects. Historical data serves as the foundation. However, collecting that data is often easier said than done.

This ***Historical Data Collection*** workshop provides an overview of the methods used to collect and interpret historical project data which can be used to benchmark past performance and reliably estimate future projects. While the main focus of the program will include data collection methods, data validation techniques, and database management, a secondary focus will be assessing project performance and using historical data in estimation.

Participants will have the opportunity to work through various exercises meant to sharpen skills and build confidence using data collection.

This workshop will discuss (1) some of the challenges faced with data collection, (2) data collection best practices, and (3) how one can leverage that data to improve cost estimates.

Goals and Products: Participants will leave the workshop with a better understanding of how to interpret data source documents and utilize them in cost estimation.

Workshop #8: The Future of Software Metrics

Facilitators: ***Dr Antony Powell and Dr John Murdoch, YorkMetrics***

Prerequisites:

Experience of software metrics and an awareness of emerging practices in software engineering, systems engineering and acquisition.

Materials to Bring:

The session will benefit from participants giving prior thought to the topic matter and, where possible, bringing along examples to share.

Discussion:

The field of software engineering is changing rapidly with previously novel methods moving into the mainstream. Approaches such as model-based development, formal methods, agile processes, product-line reuse, and goal-based standards, are changing the nature of the development artefacts that we generate, review, acquire and manage. This raises new challenges in sizing, estimation, control, benchmarking and improvement. This workshop will explore the implications of these approaches on existing software metrics and measurement practices, as well as their influence in the wider context of systems engineering and acquisition. Participants will share experiences of current practices, and good practices, in development approaches and inform how the software measurement community should respond to these exciting new challenges.

Goals/Products:

- Identify the types and nature of change in software engineering arising from new practices
- Capture existing and emerging issues in software metrics resulting from these changes
- Perform gap analysis of 'as-is' and 'to-be' in terms of knowledge and practices
- Formulate specific proposals on how we will respond as a measurement community

Presentation Abstracts

Tuesday

Keynote Presentation

Title: Measurement Challenges Associated with Modularity, Openness, and Mission Engineering

Presenter: Robert Gold, Director, Engineering Enterprise Office of the Deputy Assistant Secretary of Defense for Systems Engineering

Abstract: Measurement challenges associated with modularity, openness, and mission engineering are issues at the forefront of two major pieces of legislation in the 2017 NDAA. Modularity and openness have successful working definitions that provide principles upon which engineers and technical managers can make successful decisions about the system being designed but those principles do not provide any mechanism to measure modularity/openness or make any quantitative judgements about modularity/openness. Mission Engineering/Integration is similar in that we can make qualitative engineering judgements about mission engineering and we can test basic functionality but measuring success in terms of ability to field truly 'mission integrated' systems doesn't currently exist.

Title: The Good, the Hype and the Ugly about Using the SRDR to Estimate the Cost and Schedule of Software Intensive Systems that Use the Agile Software

Presenters: Glen B. Alleman, Niwot Ridge, L.L.C and Tom Coonce, Institute for Defense Analyses

Abstract: This paper provides a brief explanation on how agile software efforts work, offers suggested changes to the Software Resource Data Report (SRDR) to support estimating future agile efforts, and explains how to compute progress performance on an agile program.

The Software Resource Data Report (SRDR) is the Department of Defense's primary data collection instrument for the planned and expended resources for software within a Major Defense Acquisition Program (MDAP) and Major Automated Information Systems (MAIS). They are required at the start of contracts, periodically as specified in an approved data plan, and at final completion.

The recommended changes to the SRDR are based of the authors' field experience of integrating agile development efforts with DoD's required Earned Value Management (EVM) Reports. The authors show how earned value management performance is computed on an agile software development efforts and how the EVM data can be used to compute estimates at completion and projection of completed capabilities at the end of the contract completion date.

Title: Enabling Repeatable SE Cost Estimation with COSYSMO and MBSE

Presenter: Gan Wang; BAE Systems

Abstract: During the concept development phase or during the bid and proposal phase of any project, Systems Engineers generate system concepts, evaluate alternatives and estimate project cost and schedule. COSYSMO is a parametric model that generate cost estimates based on four sizing parameters that are attributes or properties of the system of interest. In previous work by one of the coauthors, a generalized reuse framework was developed that extended the COSYSMO model equation to include the systems engineering effort for "development with reuse" and for "development for reuse." Implementation of this approach for cost estimation clearly depends on two critical items: (1) the ability to accurately and consistently count the size drivers, and (2) the ability to calibrate the model equation. This paper presents a practical implementation of the COSOSYMO cost estimating relationship through extension of a Model Based Systems Engineering (MBSE) modeling environment with SysML for estimating end-to-end systems engineering effort in developing a system. The approach provides a new way of rapidly creating cost estimates, conducting cost-based analysis and trade studies, and full traceability from the cost estimation parameters back to the referenced system of interest.

Title: System of System Engineering – Progress and Plans

Presenter: Judith Dahmann, MITRE

Abstract: The International Council of Systems Engineering (INCOSE) System of Systems Working Group (SoS WG) wants to learn about the approaches SoS engineers are implementing with respect to the System of Systems Pain Points and the Systems Engineering Technical Management (SE TM) Processes. The INCOSE SoS WG project intent is to understand how the ISO 15288 processes are applied to the SoS and to understand what technical processes are needed for SoS. The perspective is that this project is looking at what needs to be done for an SoS, so that would be primarily from the SoS down to its constituent systems and will need to focus on learning from effective practice that is viewed from a broader perspective. The key point of the project is that the set of questions to be used to develop guidance will be developed through an iterative process of engagement with the respondents.

The theme of the PSM User's Group is "Measurement in a Complex Environment," and for this presentation, the System of System is the complex environment we will be considering. The presentation will provide an overview on the project and introduce questions on how measurement can be used to address the SoS Pain Points and can be used to affect the consideration of the SoS context to implement the Technical Management Process. The presentation will review the results of last year's SoS workshop and present a plan for this year's workshop scheduled later in the day.

Title: Estimation Bias and Mitigation with Agile Estimate Guidance

Presenter: Joe Dean, Golorath

Abstract: Agile software development is taking the world by storm. There is much good in Agile, but also a number of dangers. One issue within the Agile community is the insistence that estimates are not needed. Combine this with the bias that comes from less than rigorous estimation practices, and you have an opportunity and a risk. On the opportunity side, many Agile programs are more productive, playing down documentation and using working software as the major criterion for success. These work well with smaller systems and IT systems where the potential user is engaged on a daily basis, but can create significant risks for larger or embedded systems. Hybrid Agile can help mitigate the risks. And viable estimation processes can give management the insight they need up front and provide the basis for earned value management on larger systems.

This paper will raise awareness of estimation bias and discuss Nobel Prize winning work on estimation bias to substantiate the need for proper estimation in both Agile and traditional development environments. There is much evidence that viable estimates can make projects successful, make outsourcing more cost effective, and help businesses make the most informed decisions irrespective of the development methodology used. Stakeholders care about cost and schedule irrespective of whether the project is Agile, traditional, or hybrid.

Wednesday

Title:

Presenter: Steve Miller, Director, Lockheed Martin Corp., Space Systems Company

Abstract:

Title: Deriving Software Sustainment Cost Estimating Relationships in a Diverse Army Execution Environment

Presenters: Cheryl Jones, U.S. Army ARDEC; James Doswell, U.S. Army DASA-CE; Jenna Meyers, U.S. Army DASA-CE

Abstract: For the past four years, the Army, under the leadership of DASA-CE, has been collecting and analyzing Army system software maintenance cost and technical execution data to support the development of more accurate cost estimation methods. This effort has included the definition of the primary software maintenance cost elements; development of a service-wide set of data and information requirements; structured collection and evaluation of system data from diverse functional domains across the Army system base; and the analysis, development, and validation of new cost estimation relationships and models that more accurately reflect how the Army integrates changes into its software systems.

The presentation will present the cost methods and cost estimation relationships developed from the analysis of the initial execution data sets. It will address how the collected software maintenance data was evaluated, characterized and normalized; show cost distributions across the primary functional domains; and present a set of derived software maintenance CERs and benchmarks.

Title: Cybersecurity Technical Risk Indicators: A Measure of Technical Debt in Software Supply Chain Risk Management

Presenter: Joe Jarzombek, Synopsys Software Integrity Group

Abstract: As the cyber threat landscape evolves and as software dependencies grow more complex, understanding and managing risk in the software supply chain is more critical than ever, and it must focus on the entire lifecycle that includes development, testing, acquisition, and sustainment or DevOps. The Internet of Things (IoT) is contributing to a massive proliferation of a variety of types of software-reliant, connected devices throughout critical infrastructure sectors. With IoT increasingly dependent upon third-party software of unknown provenance and pedigree, software composition analysis and other forms of testing are needed to determine 'fitness for use' and trustworthiness in terms of quality, security, safety, and licensing. Application weakness and vulnerability correlation and management should leverage automated means for detecting threat indicators, weaknesses, vulnerabilities, and exploits. Using standards-based automation also enables the exchange of information internally and externally with vendors in the global supply chain for IoT/ICT products.

Addressing supply chain dependencies throughout the lifecycle enables enterprises to harden their attack surface by: comprehensively identifying exploit targets; understanding how assets are attacked, and providing more responsive course of action mitigations. Leveraging cybersecurity Technical Risk Indicators as a measure of technical debt can assist in software supply chain risk management efforts. Independent testing and certification can also be used by organizations as a means to reduce risk exposures attributable to exploitable software.

Title: Estimating the Cost of Securing Software Applications

Presenter: Brad Clark; Software Metrics, Inc.

Abstract: Making software applications secure from intrusion, corruption, attack, denial of service and other things is challenging. Does it really cost more to make software secure. This talk will discuss what it means to make software secure and where it might cost more to implement security measures.

Title: Show me the money! From Software Sizing to Productivity Improvement

Presenter: Tony Timbol, CAST

Abstract: Best practices in software sizing and measurement are great but how can they make an impact on the business? How can you get the business to ask for more? Presenter Mike Harris from DCG Software Value will examine how effective quality benchmarking and productivity measurement translates into successful transformation initiatives that cost less and de-risk your IT organization.

Attendees will walk away from this session with broadened knowledge around successful deployment processes, including how portfolio visibility can help manage risk, complexity and architectural quality. Introduce proactive measurements to detect structural quality and risk and vendor / ADM team output before transformation, monitor key performance indicators during and continue to optimize applications by establishing performance improvement and cost reduction goals.

Presentation addresses how to:

- Monitor, track and compare ADM teams' utilization, delivery efficiency, throughput and quality of outputs
- Detect portfolio outliers, compare against competitors, identify improvement opportunities and track the evolution of size, risk, complexity and quality
- Increase management's visibility of risk, quality and throughput through enhanced Service Level Agreements

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Thursday

Title: DevOps: Are we measuring the right thing?

Presenter: Robin Yeman

Abstract: As technology races forward and the boundaries blur between functions such as Systems, Software, and Test. We must consider the metrics we tracked to ensure successful product delivery still apply.

This presentation will detail how traditional metrics no longer give us an accurate picture of our programs and provide a set of new metrics that may increase transparency.

Title: Software Metrics – UK Studies

Presenters: Antony Powell and John Murdoch; YorkMetrics

Abstract: This presentation provides an overview of three recent software metrics studies performed in the UK. These have included (i) a major cost study on software acquisition in defense programs, (ii) structured trials of model-based software engineering and formal methods in automotive supply-chains, and (iii) benchmarking of performance and good-practices across seven international aerospace companies. Collectively the presentation will cover the methods applied, results achieved, and insights gained from having the rare and very fortunate privilege of working across multiple organizations and sectors.

Title: Enhancing Delivery Schedule Awareness

Presenter: Sal Bruno, Lockheed Martin

Abstract: The ability to track and understand the progress and delivery of critical requirements packages, design documents, components, and work products as far in advance as possible is every Program Manager, Engineering Manager, Team Lead and Master Scheduler's dream. The secret to achieving this highly sought of capability is to provide team members a simple, ease of use, independent measurement tool that program and project schedulers and the leadership team can compare the planned schedule to the actual work accomplished.

The creation of the Delivery Schedule Stoplight Chart tool will be presented that demonstrates how team leads and team members work together to set-up and maintain this simple tool that can status a lower level of detail at a higher level of reporting as a forward looking key performance indicator to help leadership be more proactive than reactive in meeting and fulfilling customer deliverable deadlines.

Title: Measurement Challenges Associated with Engineering-In and Transitioning Software Assurance into the System Acquisition Lifecycle

Presenter: Kenneth Nidiffer; Software Engineering Institute Carnegie Mellon University

Abstract: This presentation focuses on efforts to provide a practical framework for measuring and controlling software assurance activities within the context of an individual project. The objective of this presentation is to highlight efforts to mitigate risks throughout the systems development lifecycle and ultimately reduce the numbers of vulnerabilities via providing a program manager with a Program Manager's Guidebook for Integrating Software Assurance into the System Acquisition Lifecycle.

Program Managers face intense challenges from complex and changing requirements, technology, and agency and stakeholder dynamics. Furthermore, there is a basic threat associated with development and sustainment of software intensive systems in that a nation-state, terrorist, criminal, or rogue developer may be able to: (1) gain control of systems through supply chain opportunities and/or (2) exploit vulnerabilities remotely. Software vulnerability and exploitation are the root cause of a majority of computer security problems. Unfortunately due to the dynamics of their job, program managers often do not fully comprehend the magnitude of the treat/risks associated with software assurance issues for either legacy or modern systems. A key to proactive information security involves developing a Manager's Guidebook for Integrating Software Assurance into the System Acquisition Lifecycle that focuses on measuring and controlling software assurance activities.

This presentation centers on a two-year effort to develop a framework for a Program Manager's Guidebook for Integrating Software Assurance into the System Acquisition Lifecycle. The guidebook will inform program managers and associated stakeholders: (1) regarding establishing an effective software assurance management approach; (2) establishing a software assurance management process which incorporates monitoring and controlling measurement practices; and (3) integrating software assurance management process, methods and tools with other program management tools. The effort began as a request by Deputy Assistant Secretary of Defense for Systems Engineering (DASD/SE) to obtain an industry perspective regarding opportunities for them to improve the practice of software engineering. The response to the request centers on four phases of effort: Phase1 - engaging the National Defense Industrial Association (NDIA) System Engineering Division's Software Committee to research and cull out candidate technical areas of interest based on an objective process and then selecting eligible candidates; Phase 2 - ranking selected candidate technical areas in terms of Payoff and Ease of Implementation and presenting results to NDIA and DASD/SE; Phase 3- DASD/SE deciding on the software assurance technical area as the area of further focus; and Phase 4 – DASD/SE, NDIA, Software Engineering Institute (SEI), MITRE etc. addressing software assurance activities across the Department of Defense (DoD) including Joint Federated Assurance Center (JFAC) activities, products and services; reviewing current software assurance practices method, and tools; and deciding on a framework for the development of the Program Manager's Guidebook for Integrating Software Assurance into the System Acquisition Lifecycle. This presentation presents a work in progress and the author willing accepts contributions from participants in the PSM Users' Group Workshop.

Title: Leveraging the Power of Historical Data Through the Use of Trend Lines

Presenter: Taylor Putnam-Majarian, John Staiger; Quantitative Software Management

Abstract: Developing software within the Department of Defense (DoD) presents a unique set of challenges, including but not limited to budget cuts, Congressionally-mandated changes, adding or changing software requirements, etc. It should come as no surprise, therefore, that cost estimators have faced significant challenges when estimating systems in the Defense arena. A recent initiative put forth by the DoD was to improve its estimation process by leveraging historical data collected from forensic analyses of recently completed software development efforts. This presentation discusses (1) some of the challenges faced throughout this initiative, (2) the data collection process, and (3) how one can leverage that data to improve cost estimates.

Friday

Title: Cloud Solutions – Infrastructure, Platform or Software: Where should you go?

Presenter: Arlene Minkiewicz, PRICE Systems, LLC

Abstract: Cloud computing allows organizations to adopt a different economic model for meeting IT needs by reducing capital investments and increasing operational investments. Cloud computing embraces cyber-infrastructure and builds upon decades of research in virtualization, distributed computing, grid computing and more recently networking, web and software services. In other words, although the term cloud computing is relatively new, the concepts and technologies behind cloud computing have been emerging and evolving for some time. Consumers of cloud computing access hardware, software and networking capabilities from third party providers in much the same way they get electricity or water from their utility companies.

Cloud solution come in three basic flavors:

- Infrastructure as a Service (IaaS) – the end user takes advantage of infrastructure through the cloud but populates with their own applications and development environments
- Platform as a Service (PaaS) – the end user takes advantage of infrastructure and applications (such as databases and development environments) in the cloud to develop their own applications
- Software as a Service (SaaS) – the end user uses applications available on the cloud utilizing CPU time and storage made available through the cloud provider.

The question many enterprises have is which cloud solution(s) make the most sense for their business. This decision needs to take into account the types of capability being considered for the cloud, the skill and experience of the staff and the amount of flexibility in requirements for IT solutions. This presentation uses a case study of the implementation of a comparable solution with a SaaS solution, a PaaS solution and an IaaS solution – describing the activities, costs and limitations of each of the implementations.

Title: Project Managers Guide to Systems Engineering Measurement for Project Success

Presenter: Gregory Niemann, Lockheed Martin

Abstract: This presentation will discuss the INCOSE Project Managers Guide to Systems Engineering Measurement, released by the INCOSE Measurement Working Group. Under the leadership of Dr. Ron Carson, Fellow, ESEP and Paul Frenz, MWG Chair, CSEP, INCOSE, this guide gives the program manager the understanding needed to use information provided from measurement activities on their projects. A case study that was used for the guide will be discussed in the presentation.

Some examples of indicators and their usage will be discussed in this talk.
