Practical Software and Systems Measurement

Objective Information for Decision Makers

**Measurement on Sustainment Programs Workshop
13 September 2018**

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Workshop Participants

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- **Chris Miller**
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Purpose of the Workshop

- **The intent of this workshop is to focus discussions and allow us to develop a <u>reasonable set of practical sustainment measures</u> that provide useful data to decision makers.**

- **The intent is to <u>finalize a sustainment ICM table</u>, and provide sample measurement guidance**

Workshop Agenda

- **Discussed issues**
  - **Development vs Maintenance**
  - **Influence of different domains**
  - **Army Work Breakdown Structure**
- **Review of PSM's Planning Measurement module**
- **Review measurement constructs:**
  - **Army Sustainment Data Questionnaire**
  - **OSD CAPE's SRDR-Maintenance**
  - **PSM ICM table (for development)**

Differences between Development and Sustainment

- *Existing program*
- *Level of interdependence, i.e., other systems depend on this system*
- *No "end" date, i.e., it depends on operational need*
- *Annual funding*
- *System's environment assumptions keep changing*
  - *Continuous stream of enhancements & fixes*
- *Fixed cost infrastructure to support sustainment*
- *Multiple funding sources*
- *Warranty work*
- *Impact of policy updates/mandates, e.g. cyber-security*
- *Umbrella contact for development and sustainment - %$$ into each*
- *Development = new capability or enhancement*
- *Sustainment = Repairs, updates*

Clarifications

- **Development**
  - New Capabilities
  - Enhancements
- **Sustainment**
  - No new capabilities
- **May depend on the phase of acquisition**
  - Development: Pre-IOC
  - Sustainment: Post-IOC

Sustainment Information Needs -1

- *Can I afford this enhancement?*

- *What are the schedule dependencies in Sustainment?*

- *Which technology/architecture would provide the best total of ownership?*

- *What skills/resources do we need for our sustainment capabilities?*

- *Does the sustainment plan provide sustainment needs and expectations?*

- *Are process goals being met? Are processes being skipped? Are the development processes applicable to sustainment?*

- *Are objectives being met on the Service Level Agreement?*

Sustainment Information Needs -2

- *Is the contract appropriate for sustainment?*
- *Is the end-product secure and controlled?*
- *Is the tempo of sustainment activities able to meet sustainment needs?*
- *Who is driving software change?*
- *Can the hardware accommodate the needed software change?*

Information Categories - Measurable Concepts

Schedule and Progress

- **Milestone Completion**
- **Work Unit Progress**
- **Work Backlog**
- **Incremental Capability**

Resources and Cost

- **Financial Performance**
- **Personnel Effort**
- **Environment and Support Resources**

Size and Stability

- **Physical Size and Stability**
- **Functional Size and Stability**

Product Quality

- **Functional Correctness**
- **Supportability - Maintainability**
- **Efficiency**
- **Portability**
- **Usability**
- **Dependability - Reliability**
- **Security - Safety**

Process Performance

- **Process Compliance**
- **Process Efficiency**
- **Process Effectiveness**

Technology Effectiveness

- **Technology Suitability**
- **Technology Maturity**
- **Technology Volatility**
- **Technology Adoption**

Customer Satisfaction

- **Customer Feedback**
- **Customer Support**

Schedule and Progress

- ## *Work-Unit Progress*
  - *Discussed adding Technical Debt – no*
  - *Are system elements a work-unit in sustainment?*
- ## *Incremental Capability*
  - *Removed this Measurable Concept*

Resources and Cost

- **Financial Performance**
  - Removed EVM measures
- **Facilities and Support Resources**
  - Is this for "software only" for software sustainment?

Size and Stability

- **Physical Size and Stability**

  - No problems

- **Functional Size and Stability**

  - Are "software changes" consider physical and/or functional changes?

Conclusions, Recommendations, and Results

- *More Information Categories and Measurable Concepts to review for sustainment*

- *Lessons learned*

  - *Token-based communication*

  - *Start with a blank ICM table with Information Categories and Measureable Concepts but NO straw-man measures*

  - *Put Information Needs identified earlier into Information Categories*

  - *Then go Measurable Concept by Concept and fill-in sustainment measures*

  - *Then compare sustainment measures to development measure baseline*

Next Steps/Action Items

- **Finish the remaining measures**

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