Configuration Management Standards

Presentation to
NDIA Systems Engineering Conference

Mr. Daniel Christensen

31 October 2013

Agenda

- Statement of Need

- Existing Documentation

- Alternatives Analyses

- Conclusions

- Recommendations

- DSC Configuration Management Working Group

- POA&M

- DSC CMSWG Update

Statement of Need

The DoD community needs a consistent approach for applying configuration management across a system acquisition and sustainment life cycle.

- <u>Contractual</u> (e.g., Standards): Provides standard practices and processes with shall statements that can be directly cited and tailored in the Statement of Work and evaluated through Section L (Instruction for Offerors), and Section M (Evaluation Factors)

- <u>Implementation Guidance</u>: Provides guidance to DOD users for implementing the CM standard on contracts consistent with DOD acquisition and Systems Engineering (SE) policy and guidance – includes application and tailoring instructions

Focus of the Configuration Management Gap Analysis Working Group is on the contractual direction or standards

Existing Documentation

Potentially Contractual "What"

- ANSI/EIA-649-B (Configuration Management Standard)
- MIL-STD-973 (Configuration Management - canceled)
- NASA-STD-0005
- Service Standards:
  - USAF SMC-S-002
- Data Item Descriptions (DID)
- SOW Content
- ANSI/GEIA EIA-836 (Configuration Management - Data Exchange and Interoperability)
- MIL-STD-2549 (Configuration Management Data Interface - canceled)
- IEEE-828 (Standard for Software CM plans)
- IEEE-1012 (Standard for Software V&V)

Guidance (Non-Contractual) "How"

- Defense Acquisition Guidebook (DAG)
- MIL-HDBK-61A
- GEIA-HB-649
- ISO 10007 (Quality Management Systems – Guidelines for CM)
- IEEE-1042 (Guide to Software CM)
- IEEE-1059 (Guide for Software V&V Plans)
- ISO/IEC-12207 (Systems & Software Engineering – Software Life Cycle Processes)
- STANAG 4159 (NATO Materiel Configuration Management Policy and Procedures for Multinational Joint Projects)
- STANAG 4427 (Introduction of Allied Configuration Management Publications (ACMPs))
- NIST SP 800-128 (Guide for Security Configuration Management of Information Systems)
- INCOSE SE Handbook

Alternatives Analyses

Five alternatives were identified to address the gap in CM standards:

1. **Maintain Status Quo**: Use existing CM guidance (handbooks, canceled military standards, non-government standards, component-unique standards, and other government agency standards) on DoD programs, implementing contractual requirements via Data Item Descriptions (DIDs) and Statement of Work (SOW) language uniquely written for each acquisition

2. **Update and Reinstate MIL-STD-973:** MIL-STD-973 which was canceled would be updated and reinstated as a military standard

3. **Create DoD Addendum to Non-Government CM Standard**: A DoD unique addendum to a non-government standard, such as the TechAmerica-EIA-649B, would be generated, managed and controlled by the non-government standard body with DoD membership to provide requirements specific for DoD

4. **Create and Publish a Federal CM Standard:** A Federal standard similar to MIL-STD-973 would be developed and coordinated with all interested Federal Agencies to provide a CM standard for use by DoD and non-DoD agencies such as NASA, FAA, DHS, DOE, and others

5. **Create and Publish Component Unique CM Standards**: Each DoD Component would create a CM standard, based on EIA-649, such as the AF Space and Missile Center's SMC-S-002

Alternatives Analyses cont.

- Based on results of the Alternatives Analyses, Component representatives agreed that the preferred approach is a hybrid between Alternatives 2 and 3:
  - A tailorable military standard based on MIL-HDBK-61A
  - Consistent with EIA-649B, currently used by Industry
- DoD will need to commit resources to prepare and maintain this standard
  - Total timeline to develop Military Standard is estimated at 18 months
  - Level of effort for developing the Military Standard and associated guidance is estimated at 10 FTEs for 7 months, and part time during final coordination and approval
- ODASD(SE) will need to address additional considerations
  - Update configuration management related policy and guidance, including Data Item Descriptions (DIDs)
  - Modify content of selected DAU courses
  - Ensure end-users are cognizant of their role to implement an effective configuration management process

Conclusions

- The Services unanimously agree that they need a consistent approach for applying configuration management across a system's acquisition and sustainment life cycle

- Configuration management is currently identified in DoD policy and guidance; however, existing standards are not structured for use on contracts

- A configuration management standard is required to identify standard practices and processes that can be tailored and directly cited on contracts

Recommendations

- Implement approach to develop and publish configuration management military standard
    - Based on MIL-HDBK-61A
    - Consistent with EIA-649-B
    - Tailorable
    - Coordinated with Industry

- Task the Army (ARDEC) as the Preparing Activity
    - Prepare a coordinated implementation plan for development of a military standard
    - Provide status updates at Council meetings until completed

Defense Standardization Counsel Configuration Management Working Group

- July 26 2012, Navy accepts lead of the DSC CMSWG
- September 10, 2012, during TechAmerica Workshop held Government only meeting to present plans to lead standardization effort
- September 27, 2012, held first DSC CMSWG teleconference meeting
- December 19, 2012 DSC CMSWG Charter and POA&M approved by Mr. Welby
  - Identify DOD CM requirements
  - CMSWG develop Addendum IAW Gap Analysis
- April 19, 2013 brief DSC counsel
- August 6-8, 2013 DSC CMSWG voting members met in Stafford, VA to review DRAFT Standard and adjudicate comments.
- September 3, 2013, Phase 2 "EIA-649-1" DRAFT in review by the team
- 23 October 2013,briefed TechAmerica/SAE G33 Configuration Management Standard industry committee on Phase 2 DRAFT.
- 24 November 2013 to brief DSC counsel

POA&M

As of 17 October 2013

Steps		Completion Date
1. Initiation:	• Reach agreement on the Charter and POA&M	19 Dec 2012
2. Planning:	• Develop a detailed set of requirements.	~~30 Jun 2013~~ ~~1 Sep 2013~~ 2 Jan 2014
3. Writing:	• Develop CM documentation/draft products based on approved solution approach	~~30 Sep 2013~~ ~~30 Nov 2013~~ 1 Mar 2014
4. Coordination and Publishing:	• Staff documents, adjudicate comments, publish	~~30 Dec 2013~~ ~~1 Mar 2014~~ 1 Aug 2014

DSC CMSWG Update

- Uniformed Services and DOD components provided CM policy and process briefs to WG members for better understanding of differences

- CM requirements from all members in work

- USAF team developing Draft Addendum for WG to review using SMC-STD-002 as baseline; and also informed by: ANSI/EIA-649-B-2011, CM WG CMARD, MIL-STD-3046, NASA-STD-0005, IEEE-828, and NATO ACMP 01-07. Delivered on 19 APR 2013.

- A Standard will be published by TechAmerica as EIA-649-1 Title will be "Configuration Management Requirements for Defense Contracts"

- DSC CMSWG Chair has validated with the G33 Committee Chair that ANSI/EIA-649-B does not need a revision at this time

DSC CMSWG Update

- Over 1200 comments were adjudicated. DSC CMSWG voting members met in Stafford, VA on 6-8 August to review requirements and changes. USAF provided additional adjudication with revising "Policy Statements"

- 3 September Phase 2 to review "Draft EIA-649-1, prior to submitting to DSC and TechAmerica for their review and balloting.

  - 26th of September team's completed review

  - Phase 2 review from charter members has generated over 780 comments, many grammatical errors and duplicative questions

DSC CMSWG Update

- 18 various CMAN/SESS/IPSC/MGMT/MISC DID's under review. OPR for 10 are D/DUSD(AT&L)SE, 2 NAVAIR, 1 SPAWAR, 1 NAVSEA, 1 AMSRD, 1 AFLCMC, 1 NSA, 1 ARDEC.

- 22 SPAWAR Software DID's all with current dates and current "Notice 1 Validations"

- Duplicate DID's associated with MIL-STD 3046 will be canceled

- DD Forms 1692 (ECP), 1694 (RFV), 1695 (NOR), 1696 (SCN) and 2617 (ERR) will be updated to meet DOD requirements with USD(AT&L) as the Office of Primary Responsibility

- Upon completion of CMSWG acceptance of the EIA-649-1 the document will be coordinated through the SAE G33 Configuration Management Standards committee for their review at their February meeting

Backup slides

Data Item Descriptions

Data Item Descriptions (DIDs).			
CM Element	**DID Number/OPR**	**DID Title**	**Current date**
Planning/Management	**DI-CMAN-80858 (B)** D/DUSD(AT&L)SE	**Configuration Management Plan**	**30 SEP 2000**
Identification	**DI-CMAN-81121 (A)** SPAWAR	**Baseline Description Document**	**28 JUN 2013**
	DI-CMAN-81218 NAVSEA	**Product Baseline Index (PBLI)**	**21 JUN 1991**
	DI-CMAN-81254 (B) AMSRD	**Request for Nomenclature**	**27 AUG 2012**
	DI-CMAN-81248 (A) D/DUSD(AT&L)SE	**Interface Control Document (ICD)**	**30 SEP 2000**
Control	**DI-MGMT-81453(A)** AFLCMC	**Data Accession List (DAL)**	**18 JUL 2012 Notice 1 Validation**
	DI-CMAN-80639 (C) D/DUSD(AT&L)SE	**Engineering Change Proposal (ECP)**	**30 SEP 2000**
	DI-CMAN-80642 (C) D/DUSD(AT&L)SE	**Notice Of Revision (NOR)**	**30 SEP 2000**
	DI-CMAN-80643 (C) D/DUSD(AT&L)SE	**Specification Change Notice**	**30 SEP 2000**
	DI-CMAN-80463 (C) D/DUSD(AT&L)SE	**Engineering Release Record (ERR)**	**30 SEP 2000**
	DI-CMAN-80640 (C) D/DUSD(AT&L)SE	**Request For Variance (RFV)**	**30 SEP 2000**
	DI-MISC-80508 (B) NS/DA02	**CCB Minutes**	**14 NOV 2006**
Status Accounting	**DI-CMAN-81253 (A)** D/DUSD(AT&L)SE	**Configuration Status Accounting Information**	**30 SEP 2000**
	DI-CMAN-81245 (A) D/DUSD(AT&L)SE	**Engineering Change Installation Completion Notification (ICN)**	**30 SEP 2000**
	DI-CMAN-81516 AS	**As-Built Configuration List**	**15 JUL 1996**
	DI-SESS-81856 AR	**Contractual Baseline Report**	**20 DEC 2011**
Verification/Audit	**DI-SESS-81646** AS	**Configuration Audit Plan**	**2 APR 2009 Notice 1 Validation**
	DI-CMAN-81022 (C) D/DUSD(AT&L)SE	**Configuration Audit Summary Report and Certification**	**30 SEP 2000**

Duplicate DID's Associated with MIL-STD-3046

DID Id	FSC Code	Ident Number	Status	AMSC	Prep Acty	Prep Service	Title	Date
DI-SESS-81875	SESS	279261	Active		AR	AR	Configuration Management Plan (MIL-STD-3046)	28-Feb-13
DI-SESS-81876	SESS	279326	Active		AR	AR	Interface Control Document (ICD) (MIL-STD-3046)	28-Feb-13
DI-SESS-81877	SESS	279274	Active		AR	AR	Baseline Description Document (MIL-STD-3046)	28-Feb-13
DI-SESS-81878	SESS	279297	Active		AR	AR	Product Baseline Index (PBLI) (MIL-STD-3046)	28-Feb-13
DI-SESS-81879	SESS	279276	Active		AR	AR	Configuration Item (CI) Documentation Recommendation (MIL-STD-3046)	28-Feb-13
DI-SESS-81880	SESS	279277	Active	A9301	AR	AR	Engineering Change Proposal (ECP) (MIL-STD-3046)	28-Feb-13
DI-SESS-81881	SESS	279278	Active	A9302	AR	AR	Notice of Revision (NOR) (MIL-STD-3046)	28-Feb-13
DI-SESS-81882	SESS	279279	Active	A9303	AR	AR	Engineering Release Record (ERR) (MIL-STD-3046)	28-Feb-13
DI-SESS-81883	SESS	279280	Active	A9304	AR	AR	Request for Variance (RFV) (MIL-STD-3046)	28-Feb-13
DI-SESS-81884	SESS	279296	Active	A9305	AR	AR	Configuration Status Accounting Information (MIL-STD-3046)	28-Feb-13
DI-SESS-81885	SESS	279295	Active	A9306	AR	AR	As Built Configuration List (ABCL) (MIL-STD-3046)	28-Feb-13
DI-SESS-81886	SESS	279301	Active	A9307	AR	AR	Configuration Audit Plan (MIL-STD-3046)	28-Feb-13
DI-SESS-81887	SESS	279294	Active	A9308	AR	AR	Configuration Audit Summary Report and Certification (MIL-STD-3046)	28-Feb-13

Data Item Descriptions, cont

DID Number	Software DID Title	Current Date
DI-IPSC-81427	Software development plan (SDP)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81428	Software Installation Plan (SIP)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81429	Software Transition Plan (STrP)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81430	Operational Concept Description (OCD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81431	System/Subsystem Specification (SSS)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81432	System/Subsystem Design Description (SSDD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81433	Software Requirements Specification (SRS)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81434	Interface Requirements Specification (IRS)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81435	Software Design Description (SDD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81436	Interface Design Description (IDD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81437	Database Design Description (DBDD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81438	Software Test Plan (STP)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81439	Software Test Description (STD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81440	Software Test Report (STR)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81441	Software Product Specification (SPS)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81442	Software Version Description (SVD)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81443	Software User Manual (SUM)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81444	Software Center Operator Manual (SCOM)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81445	Software Input/Output Manual (SIOM)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81446	Computer Operation Manual (COM)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81447	Computer Programming Manual (CPM)	8 JUL 2013 Notice 1 Validation
DI-IPSC-81448	Firmware Support Manual (FSM)	20 MAR 2013