

Military Standard 881D

Work Breakdown Structures for Defense Materiel Items

(Changes as Compared to 881C)

Presented By:

Neil F. Albert

NFA Consulting, LLC

(In Support of PARCA)

18 April 2018

Agenda

- Overview
- Key Takeaways
- Major Changes from MIL-STD-881C to 881D
- Summary

Overview

- Mil-STD 881C published in October 2011
- Changes to Standard based on Government need and Industry concurrence and recommendation
- MIL STD-881D published in April 2018
- New inclusions in the MIL-Std-881D
 - Cybersecurity identification
 - Expanding Common element definitions
 - Improving Information Technology definitions
 - Improving Strategic Missile Definitions
 - Life Cycle Approach

Key Takeaways

- Showing WBS numbering for each commodity:
 - Provides clarity regarding level of indenture and parent-child content
 - Maintaining the WBS numbering not essential requirement
- Extension of the WBS to lower levels may be necessary to get needed visibility
 - Only those elements that define the system will be used
 - WBS should be the same level for cost estimating and EVM reporting before extensions of the WBS are required. (i.e., If Cost Estimating reporting goes to level 5 and EVM reporting goes to level 3, the WBS should be the same for cost estimating and EVM from levels 1 through 3.)
 - Extensions for commodities can be found at <http://cade.osd.mil/policy/csdr-plan>
- Critical to understand cybersecurity cost of each system (i.e., hardware, software, program management, systems engineering, and system test and evaluation), MIL-STD provides:
 - Structure to identify, collect and report many of these critical costs (recognizing that collecting all this information is nearly impossible)
 - Where cybersecurity related costs can be easily accounted for, they should be called out as a WBS element.
- “Release” in agile development terms has a different definition; not be misinterpreted within the MIL-STD
 - Release of one or more EPIC level CSCIs, is equivalent to a release in MIL-STD

Major Changes from MIL-STD-881C to 881D

Comparison of 881C to 881D

MIL-STD 881C

- Appendix A – Aircraft Systems includes manned fixed wing and rotary aircraft. It does not include Unmanned Systems which is included in Appendix H.
- Appendix B – Electronic Systems including software and software systems and their development. Includes discussion on types of Electronics Systems.
- Appendix C – Missile Systems including tactical missiles (endo-atmospheric) and strategic missiles – Intercontinental ballistic missiles (ICBM) (exo-atmospheric). Strategic missile definition is minimally defined in the appendix.
- Appendix D – Ordnance Systems which focuses on munitions unguided (e.g., ammunition, projectiles, mines, bombs, rockets, etc.) and guidance and controlled munitions (e.g., Excalibur, JSOW, MRM, Paveway, SDB I, SDB II, etc.)
- Appendix E – Sea Systems which focuses on waterborne vessel and components of a sea system including, for example, all classes of surface and subsurface water vessels such as combatants, auxiliaries, amphibious, and special-purpose ships

MIL-STD 881D

- Appendix A - Aircraft Systems includes what was in Appendix A (manned fixed wing/rotary aircraft) as well as Unmanned Aircraft Systems and related subsystems (Appendix H).
- Appendix B –Electronics Systems/Generic Systems to reflect that this appendix represents the structure used for developing any product-oriented WBS. Also, added discussion on Agile SW development
- Appendix C – Missile/Ordnance Systems and Appendix D – Ordnance Systems have been merged into a new Appendix C – Missile/Ordnance Systems focuses on tactical missiles and munitions due to their commonality in structure and intent. Strategic missiles are now in Appendix D.
- Appendix D - Strategic Missiles Systems which focuses on Intercontinental Ballistic Missiles (ICBM) (exo-atmospheric) used by Air Force, Navy and Missile Defense Agency. Previously strategic missiles were part of Appendix C – Missiles Systems
- Appendix E – Sea Systems has no changes in MIL-STD-881D from MIL-STD- 881C.

Comparison of 881C to 881D (Cont'd)

MIL-STD 881C

- Appendix F – Space Systems includes a complete Space Vehicle in a multiple or dissimilar configuration, intended as unmanned satellites orbiting the earth and includes all Space Vehicle-Bus, Payload; Booster Adapter; Space Vehicle Storage; Launch Systems Integration; Launch Operations and Mission Operations Support.
- Appendix G – Surface Vehicle Systems includes a vehicle system with the capability to navigate over the surface (i.e., vehicles primarily intended for general purpose applications and those intended for mating with specialized payloads. This includes manned and unmanned cargo and logistics vehicles, trucks, mobile work units, and combat vehicles (serving as armored weapons platforms, reconnaissance vehicles, and amphibians). WBS construction is based on a contracted sequential listing of the primary vehicle and its related variants.
- Appendix H – Unmanned Aircraft Systems includes those unmanned air vehicles designed for powered or unpowered movement (i.e., gliders) employing fixed, movable, rotary, compound wing or dirigibles. It also includes related payloads and ground/host systems which are fixed, transportable, or mobile that has a communications interface with the vehicle to receive only, or to receive and transmit data generated and mission data collected by the air vehicle.

MIL-STD 881D

- Appendix F – Space Systems has not changed except for additional definitions from the previous MIL-STD which better defines the electronics within the system and a better definition of the Ground/Mission Operations Systems.
- Appendix G –Ground Vehicle Systems have not changed except for the title of the Appendix (reflecting current description of the system) and how the WBS is constructed. Prior WBS definitions were constructed as a sequential listing of the lead and variant vehicles procured for the contract. The change in MIL-STD 881D now reflects the construction of the WBS as a leader-follower format. This change defines the lead vehicle as the common vehicle for the contract and the variants reflect the unique elements not included in the lead vehicle.
- Appendix H – Is now Unmanned Maritime Systems which has no changes in MIL-STD-881D from MIL-STD-881C.

Comparison of 881C to 881D (Cont'd)

MIL-STD 881C

- Appendix I – Unmanned Maritime Systems includes all classes of surface and subsurface (undersea) water vessels (i.e., Unmanned Surface Vehicles (USVs), Unmanned Undersea Vehicles (UUVs)).
- Appendix J – Launch Vehicle Systems includes the payload lift launch vehicle system required to insert the space vehicle or probe into a space orbit/trajectory. It can be expendable or reusable as it relates to the delivery of payloads to specific trajectories or orbits in space.
- Appendix K – Automated Information Systems (AIS) includes the complex of enterprise elements, equipment (hardware), software, legacy systems, users, business rules, data and facilities required to develop, test and deploy an automated information system. The systems can be Custom Application, Enterprise Service Elements, Enterprise Information Systems, and/or External Interface Development. This appendix defines the Investment structure only.

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- Appendix I – Launch Vehicle Systems has no changes in MIL-STD-881D from MIL-STD-881C.
- Appendix J – Information Systems/Defense Business Systems (IS/DBS). The title of the Appendix J has changed from Appendix K (AIS) in 881C to reflect the current definition and purpose of the systems developed and delivered. Appendix J also has both an Investment WBS and a Sustainment WBS with related definitions. The Investment WBS definitions have not changed in MIL-STD-881D from MIL-STD-881C.

Comparison of 881C to 881D (Cont'd)

MIL-STD-881C

- Appendix L – Common Elements (MIL-STD-881C)
 - Each commodity (Appendices A-K) have Common Elements (i.e., Integration, Assembly, Test, and Checkout, Systems Engineering, Program Management, System Test and Evaluation, Training, Data, etc.)
 - Definitions consistent from commodity to commodity (Reference L.3).
 - Some commodities have common elements which uniquely define their commodity or are totally unique to that commodity.
 - Specific commodities which have unique common element are Space Systems (reference L.4), Launch Vehicle Systems (reference L.5) and Automated Information Systems (reference L.6)

MIL-STD-881D

- Appendix K – Common Elements (MIL-STD-881D)
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 - Definitions are consistent from commodity to commodity (Reference K.3).
 - Some commodities have common elements which uniquely define their commodity or are totally unique to that commodity
 - Specific commodities which have unique common elements are Space Systems (reference K.4), Launch Vehicle Systems (reference K.5), Information Systems/Defense Business Systems (reference K.6) and Strategic Missile Systems (reference K.7)

Comparison of 881C to 881D (Cont'd)

MIL-STD-881C

- Appendix L – Common Elements (MIL-STD-881C)

MIL-STD-881D

- Appendix K – Common Elements (MIL-STD-881D) (Cont'd)
 - Systems Engineering and Program Management have child elements required to be reported:
 - Software
 - Integrated Logistics Support
 - Cybersecurity
 - Core
 - Other
 - System Test and Evaluation has an additional breakout
 - Cybersecurity Test and Evaluation
 - Training has additional breakouts under Equipment and Services, depending on it is it equipment or services:
 - Operator Instructional (Equipment or Services)
 - Maintainer Instructional (Equipment or Services)
 - Training has added a new element
 - Training Software
 - Data has a new set of breakouts
 - Data Deliverables
 - Data Repository
 - Data Rights

Comparison of 881C to 881D (Cont'd)

MIL-STD-881C

- Appendix L – Common Elements (MIL-STD-881C)

MIL-STD-881D

- Appendix K – Common Elements (MIL-STD-881D) (Cont'd)
 - Peculiar Support Equipment and Common Support Equipment have further breakdowns below the Test and Support Equipment and Support Handling Equipment WBS's.
 - Lower level breakdown identifies the subassembly (i.e., Airframe/Hull/Vehicle, Propulsion, Electronics/Avionics, or Other Major Subsystems) the support equipment (either Test and Support or Support Handling) is associated.
 - Operational Site Activation is now "Operational Site Activation by Site" to reflect that these efforts may be accomplished at multiple sites for each commodity.
 - Added Contractor Logistics Support (CLS) WBS at level 2 to reflect that sustainment may be ongoing throughout the acquisition phase.

Comparison to 881C to 881D (Cont'd)

MIL-STD-881C

- Appendix L – Common Elements (MIL-STD-881C)

MIL-STD-881D

- Appendix L – Relationship of the Sustainment Cost Reporting Structure to the Work Breakdown Structure
 - Includes discussion on how to integrate the Cost Assessment Program Evaluation (CAPE) Sustainment Cost Reporting Structure (CRS) with the WBS for Interim Contractor Support (ICS) and CLS reporting
 - The Sustainment Work Breakdown Structure identified in Appendix J should be used for IS/DBS sustainment reporting, since a sustainment structure for these type systems is not included in the CAPE CRS.

Summary

- Maintaining numbering not required
- Extension to lower level WBS elements linked to CADE website
- Identify cybersecurity elements when and where appropriate
- Specific changes to each appendix including:
 - Use of term 'Generic' for Appendix B
 - Added "Strategic Missiles" (Appendix D)
 - Clarity of Space Systems definitions
 - Redefined AIS to Information Systems/Defense Business Systems
 - Added information concerning Sustainment reporting