COST ASSESSMENT DATA ENTERPRISE

Focus Group Introduction

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OSD CAPE

Cost Assessment

CLEARED
For Open Publication

Aug 08, 2019

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

(As shown at June 2018 Focus Group)

FlexFile & Quantity Report Overview *(No. 1 Initiative Priority)*

Purpose/End State

- Status quo CCDRs (DD 1921 series), provide utility to DoD cost estimating community, but in many cases more detailed data in contractor native systems is preferable
  - E.g., insight below WBS reporting level, Contractor-internal categories that align with FPRAs
- **Desired End State**: Ability to render cost data in government functional categories while receiving more detailed data already resident in industry's systems

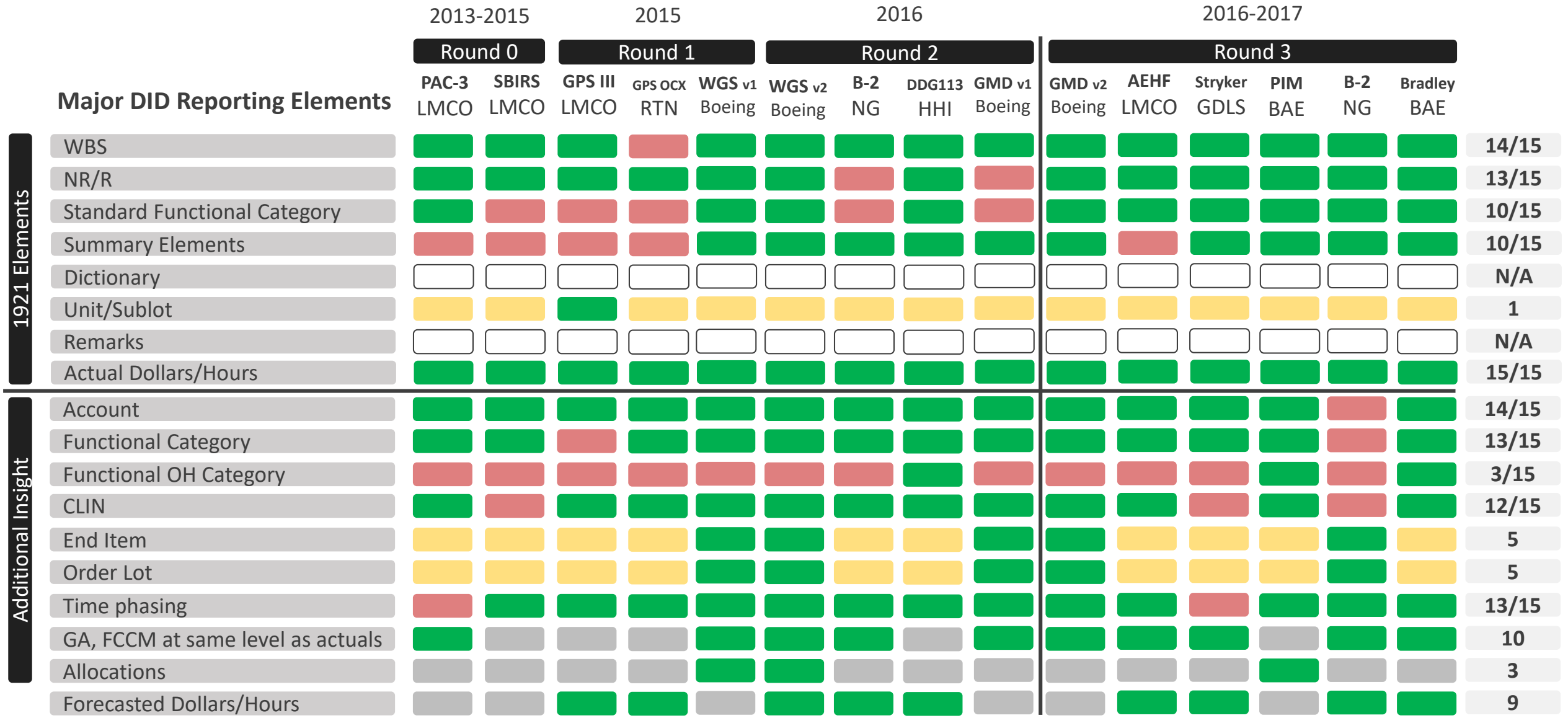
Key Questions for Full Implementation

1. Cost/Effort
   (for approved DID and excursions)
   - How does cost of reporting for industry FlexFile submissions compare to status quo?
2. Format
   - Does contractor or Government convert CSV into data model?
3. Implementation approach
   - How do we minimize ambiguity in reporting effort during RFP timeframe? (e.g., is there a better viable way to require "12 additional fields"?)
4. Content
   - Are there any fields being requested that are not cost effective?

Need industry's help over next 6 months to determine viability of any changes to the approved FlexFile/Quantity Report DIDs

Summary Chart

(As shown at June 2018 Focus Group)



Industry's Flexfile pilots provided key lessons learned

FlexFiles

Making ***FlexFiles*** a Win-Win for Government and Industry is CADE's **#1 Priority**

Updates since last year's Focus Group:

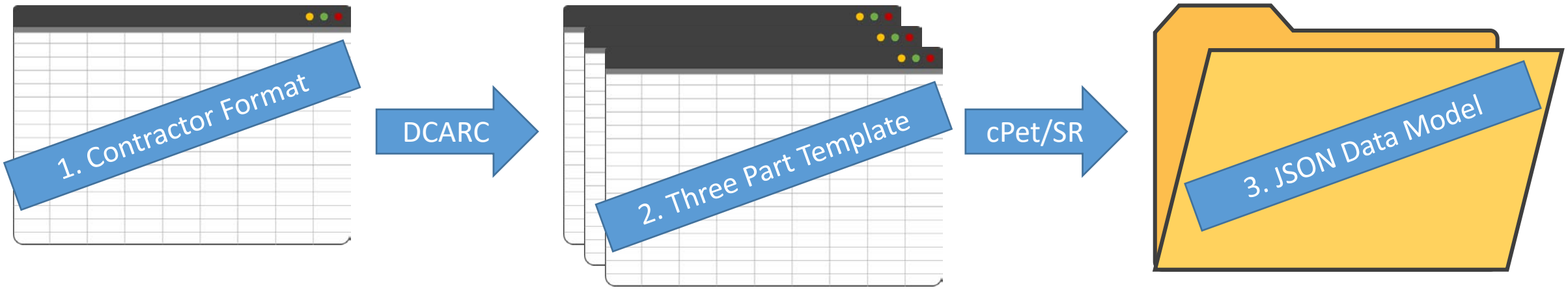
- Removed mandatory 12 additional tags
- Provided clear policy and guidance implementing FlexFiles on all new contract efforts starting May 15th 2019
- Developed detailed implementation guidance and official FlexFile & Quantity Report Policy DIDs
- Disseminated guidance on submission mechanisms (i.e. XML, JSON, Excel, CSV)
    - Published DEI FFS and submission guidance
    - Provided accommodations in the form of Excel-Compatible submission mechanism to accommodate industry accounting systems

Desired end state:

- Government will have the ability to render cost data in government functional categories while receiving more detailed data already resident in industry's systems
- Industry will have reduced burden from manually producing legacy 1921 formats

FlexFile Submission Options

Contractor has three options to submit the data in….

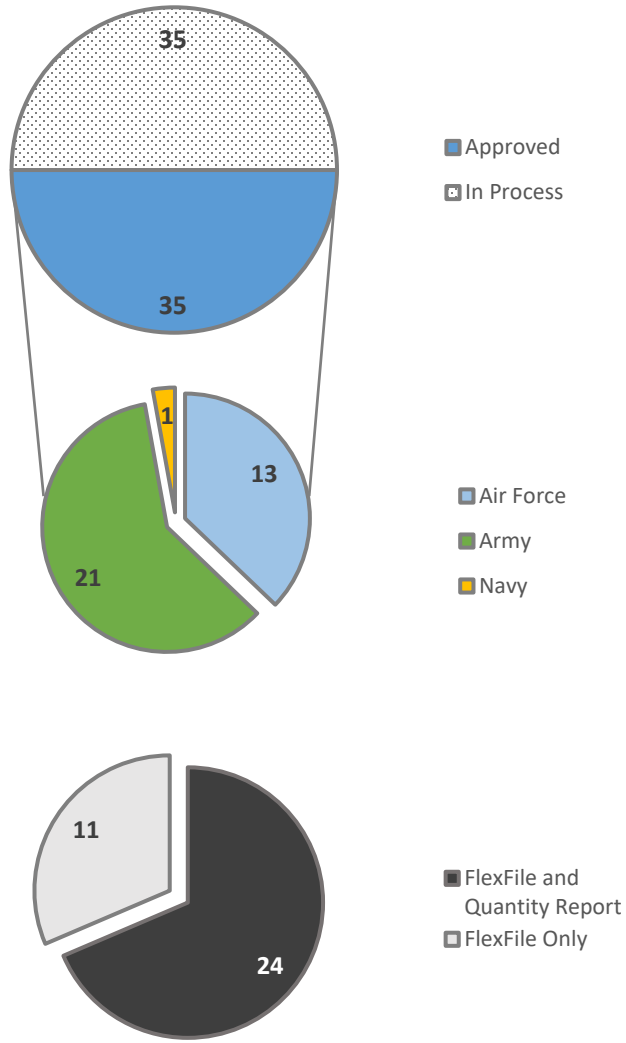


Guidance and templates outlining the options can be found at https://cade.osd.mil/policy/flexfile-quantity

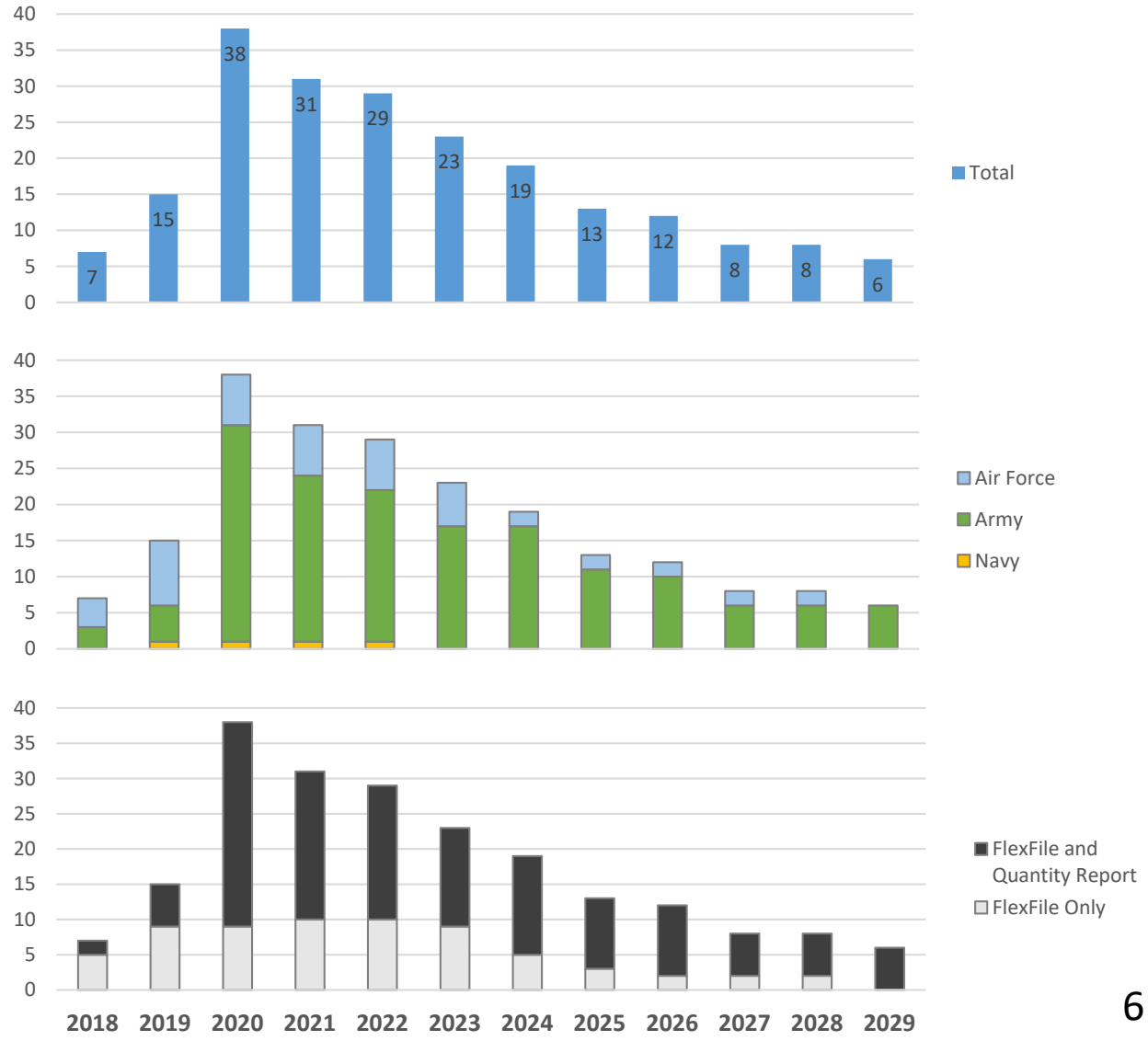
FlexFiles: So how are we doing?

FlexFile Planning Metrics

Total Approved Plans (35)



35 Approved Plans = Total Submissions (209)



Upcoming Training Events | CADE Learn

Bridge Learning Management System

https://cade.bridgeapp.com

Current CADE Learn Library (33 Courses)

CADE 101- Fundamentals of CADE
- CSDR Policy, CSDR Reporting Forms, Sustainment
- Validations , Portal Navigations: Data & Analytics

CADE For Submitters
- Submitter Guide, Creating Cost Reports using cPet, CSDR Submissions , Program Planning Module

FlexFile 101- The Future of Cost Reporting
- FlexFile Policy, Submission Process, IT Solutions, DILO Scenario

CADE for Project Managers
- Insight into Contracting Fee, Utility of SAR Data, CSDR Compliance, Affordability Analysis, DILO Scenario

CADE For Contracting Officers
- Value of Certified Cost & Pricing Data in CADE, CDRL Process, RFP Identification, DFARS, Other Than Cost & Pricing Data, DILO

FlexFile Training Underway

Regional Training/ Community Engagement

Regional Training Series Events**

REGIONAL TRAINING SOUTH
- AMCOM (PEOs), MDA| FlexFile 101| Huntsville, AL|19 February 19 ✓
- AFLCMC Eglin| FlexFile 101| Eglin AFB,FL| 20 February 19 ✓
- DAU South Acquisition Update| Huntsville, AL| 21 February 19 ✓

REGIONAL TRAINING MID-ATLANTIC
- CECOM (PEOs)| FlexFile 101| Aberdeen, MD|26 March 19 ✓
- NAVAIR (PEO U&W, T)|FlexFile 101| Pax River, MD|9-10 April 19 ✓
- DAU L@L Series| FlexFile Overview/Update| WebEx Broadcast| 17 April 19 ✓
- AFCAA| FlexFile 101|JB Andrews, MD| 18 April 19 ✓
- NAVSEA |FlexFile 101| Washington Navy Yard, D.C|9 May 19 ✓
- DASA-CE/USMC| FlexFile 101|Fort Belvoir, VA| TBD October 19

REGIONAL TRAINING MOUNTAIN WEST
- AFLCMC| FlexFile 101| Hill AFB, UT|17 June 19 ✓
- PEOs/Industry| FlexFile 101| Denver, CO|18 June 19 ✓

REGIONAL TRAINING WEST
- SMC| FlexFile 101| Los Angeles, CA|6 August 19
- SPAWAR| FlexFile 101| San Diego, CA|7 August 19
- Raytheon/Industry | FlexFile 101 | Tucson, AZ | 8 Aug 19

REGIONAL TRAINING MIDWEST
- TACOM | FlexFile 101| Detroit, MI|10 September 19
- AFLCMC WP |FlexFile 101| Dayton, OH|11 September 19

REGIONAL TRAINING SOUTHWEST
- Industry (Host: Raytheon/LMCO) | FlexFile 101|Dallas-Ft Worth, TX|24 September 19

REGIONAL TRAINING NORTHEAST
- NAVSUP |FlexFile 101| Philadelphia, PA|1 October 19
- NAVAIR/ Boeing || FlexFile 101| JB McGuire-Dix-Lakehurst, NJ|2 October 19

Community Engagement Events**

- ICEAA Conference | Flex File 101 | Tampa, FL| 14-17 May 19* ✓
- MORS Symposium | Flex File 101 | Colorado Springs, CO | 17-20 June 19 ✓
- CADE FOCUS GROUP| FlexFile Update| Arlington, VA| 16-17 July 19 ✓
- AIA Cost Principles Meeting | FlexFile 101 | Dallas-Ft. Worth, TX | 25-27 September 19
- Ground Vehicle Cost Working Group| FlexFile Update| 29-31 October 19

* Tentative Events

** Excludes Monthly Telecons/Other 1-on-1 Industry Events

CADE Data Initiatives Overview

	2018 CSDR Requirement	Envisioned Future	2018 Implementation Status	2019 Status
Cost Data (#1 priority)	DD Form 1921, 1921-1, 1921-2	**FlexFile & Quantity Report** – Enable insight into contractor native categories at lower level of detail with no increase in industry reporting effort	- DIDs approved Nov-17 & being applied on case-by-case basis - Notional policy decision in ~Jan-19 on full implementation	- Full FlexFile & Quantity implementation on all new contracts as of May 15, 2019
Software Metrics	SRDR (Dev, Mx, & ERP)	Submission in XML format to enable future database	- IT infrastructure to enable XML submission in work	- Continue to work on infrastructure improvements
Business Base Data	DD Form 1921-3	**Revised DID** – Enable insight into contractor native categories	- Draft DID distributed Feb-18 - Pilot submissions under review	- DID & Policy updates in process
Maintenance/Repair Data	N/A – Collected on ad-hoc basis	**Maintenance and Repair Parts Data Report** – Collect maintenance event and repair part data for sustainment efforts at level that supports cost estimating	- DID approved Nov-17 & being applied on case-by-case basis - More examples required prior to full implementation	- Implementation on-going
Technical Data	N/A – Collected on ad-hoc basis	**Technical Data Report** – When data not submitted via other CDRLs, tool for cost community to collect technical & programmatic data	- DID approved Nov-17 & being applied on case-by-case basis - More examples required prior to full implementation	- Implementation on-going
Bill of Materials (BoM)	N/A – Collected on ad-hoc basis	**BoM DID** – BoM format that contains at least level of standardization to provide utility to cost estimators	- Draft DID distributed for comment in Mar-18 - More review of status quo reports required for format decision	- Not a CSDR requirement - Collection implemented through CDRLs/DIDs outside of CSDR requirements

Baseline is approved DIDs - We need your help in the form of specific feedback (both data items and format) to consider revisions or alternate approaches

COST ASSESSMENT DATA ENTERPRISE

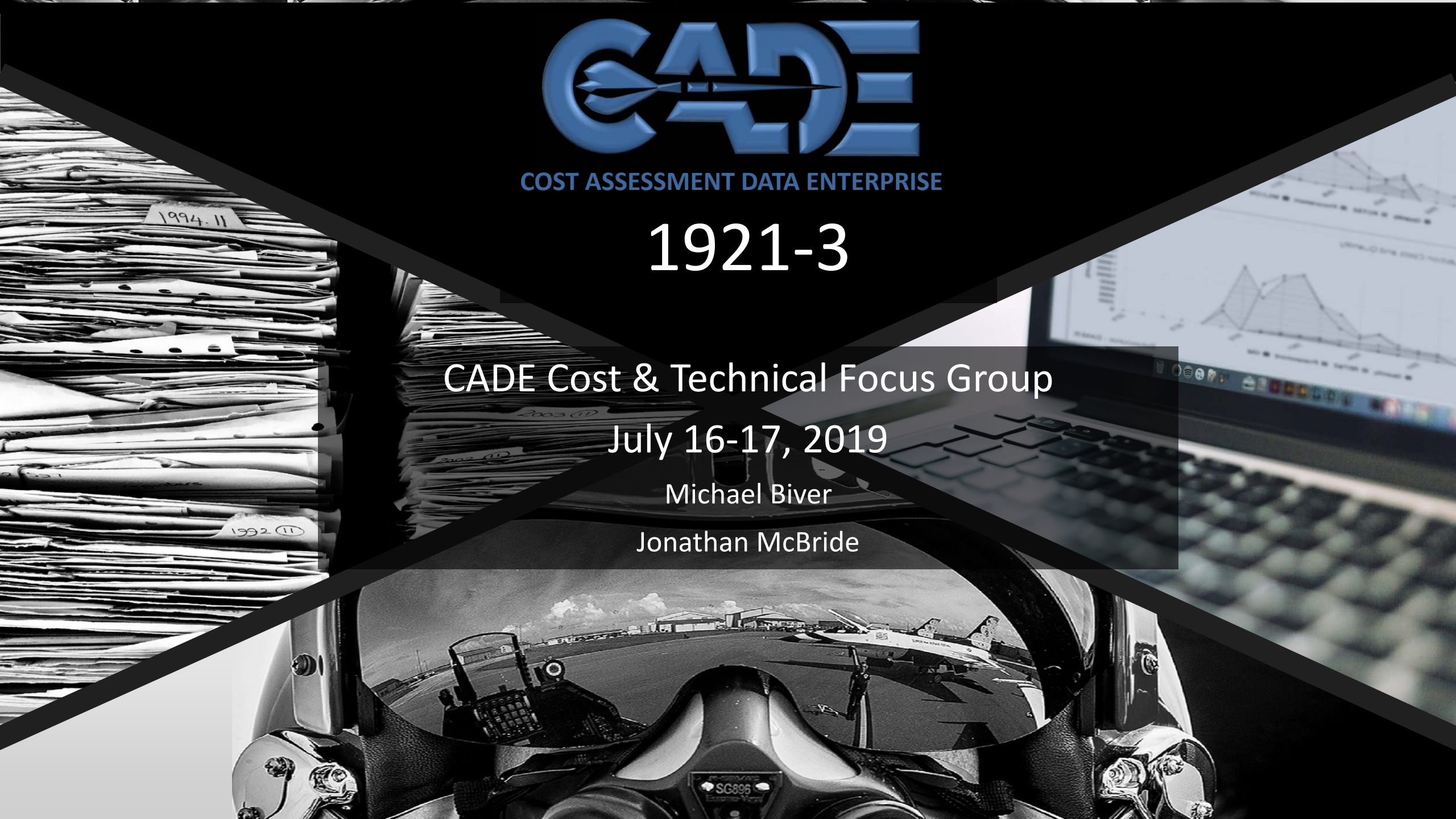
1921-3

CADE Cost & Technical Focus Group

July 16-17, 2019

Michael Biver

Jonathan McBride



Background Information

Overview

- The 1921-3 report is the “Contractor Business Data Report,” or “CBDR.” It is an annual report at the business level that provides rates data and facilitates overhead analysis.

- For the past two years, contractors have had the option to submit either the Government-defined standard format (Legacy) or the contractor unique format (Contractor).

- Starting next year the 1921-3 report is transitioning from the Legacy format to Contractor formats.

Why a new DID?

1921-3 Cost Data

- Direct Labor Rates
- Overhead Rates
  - Overhead base by program
  - Overhead pool by component
- Materials/ODCs

Benefits of Contractor format vs. Government-mandated format

- Eliminates allocation issues
- Contractor rates align with
  - FPRs
  - DCAA Audits
  - Proposals/Negotiations
  - Pricing Models/Wrap Rates
- Less burdensome for contractors to prepare than existing policy
- Provides cost analysts enhanced insight into contractor rates

Direct Labor Rates

- The Legacy format required business entities to convert their **direct labor rates** into the **standard government categories** shown in the table below.

- In the example to the right, the contractor has **six** distinct engineering **direct labor rates** depending on location, experience, and type of labor. In the Legacy format below, the contractor is forced to average these distinct direct labor rates.

- The **direct labor rates** reported in the Contractor format should align with those reported in the contractor's FPR.

Contractor format

Direct Labor, Fringe, G&A, or Overhead	Category Name	Base, Expense, or Rate	Dollars/Hour, Dollars, Hours, or	2017
Direct Labor	Electrical Engineer - Plant A	Rate	Dollars/Hour	$36.30
Direct Labor	Sr. Electrical Engineer - Plant A	Rate	Dollars/Hour	$79.07
Direct Labor	Industrial Engineer - Plant A	Rate	Dollars/Hour	$43.05
Direct Labor	Electrical Engineer - Plant B	Rate	Dollars/Hour	$29.75
Direct Labor	Sr. Electrical Engineer - Plant B	Rate	Dollars/Hour	$72.50
Direct Labor	Industrial Engineer - Plant B	Rate	Dollars/Hour	$53.66

Legacy format

DIRECT LABOR RATES (FUNCTIONAL CATEGORIES)	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		Prior Year	Year: 2016	Year: 2017
	Basic Rate$ c	Effective Rate$ d	Basic Rate$ c	Effective Rate$ d	Basic Rate$ c	Effective Rate$ d	Basic Rate$ c	Effective Rate$ d	Basic Rate$ c	Basic Rate$ c	Basic Rate$ c
1. Engineering - Direct Labor	58.21	59.33	59.90	60.12	60.10	61.21	57.56	60.12	58.67	57.21	59.92
2. Manufacturing Operations - Direct Labor											
a. Tooling - Direct Labor	53.59	64.49	57.58	57.12	58.72	63.26	61.00	62.65	55.30	57.01	58.77
b. Quality Control - Direct Labor	56.71	53.98	51.41	58.93	49.82	53.98	52.47	58.93	51.41	53.00	54.64
c. Manufacturing - Direct Labor	54.48	63.13	56.16	56.52	59.53	64.34	58.97	63.13	54.48	56.16	57.90

Overhead Base Details

- The Contractor format allows the business entities to report **costs** and **hours according to the categories in their internal accounting records** rather than according to government-defined categories.

- In the example below, the Legacy format requires a contractor to consolidate all Manufacturing Operations costs into **one functional category**, regardless of whether the contractor has multiple sites/rates.

Legacy format

	Manufacturing Operations		
Program Name a	Workers h	Dollars i	Hours j
1. Program 1	65	$17,834	451
2. Program 2	70	$1,424	40
3. Program 3	68	$1,201	67
4. Program 4	42	$3,046	143
5. Program 5	119	$2,472	594
6. Program 6	73	$10,663	360
7. Program 7	116	$8,967	192
8. Program 8	75	$11,198	261
9. Program 9	44	$5,314	160
10. Program 10	94	$2,379	102
11. Other DoD Effort	63	$1,116	39
12. Other Government Effort	66	$913	244
13. Commercial Effort	69	$52	86

Note: legacy format dollars and hours are in thousands

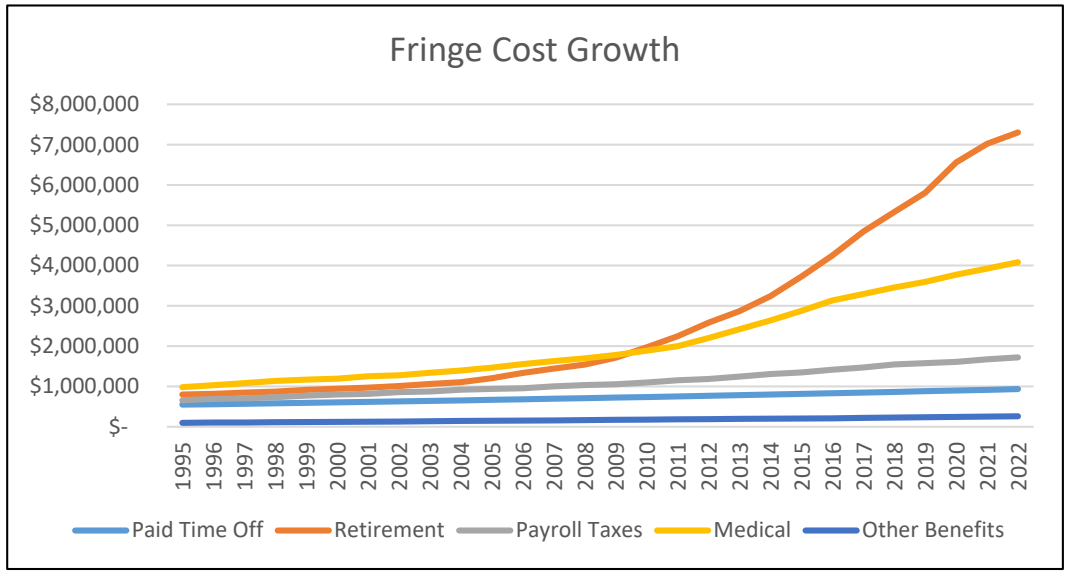
Contractor format

Direct Labor, Materials, or ODCs	Category or Component Name	Buyer	Program Name	Direct Dollars/Hours	2017
Direct Labor	Manufacturing Site 1	Navy	Program 1	Dollars	$ 8,902,972
Direct Labor	Manufacturing Site 1	…		Dollars	…
Direct Labor	Manufacturing Site 1	Commercial		Dollars	$ 338,974
Direct Labor	Manufacturing Site 1	Navy	Program 1	Hours	145,950
Direct Labor	Manufacturing Site 1	…		Hours	…
Direct Labor	Manufacturing Site 1	Commercial		Hours	6,163
Direct Labor	Manufacturing Site 2	Navy	Program 1	Dollars	$ 8,876,527
Direct Labor	Manufacturing Site 2	…		Dollars	…
Direct Labor	Manufacturing Site 2	Commercial		Dollars	$ 373,201
Direct Labor	Manufacturing Site 2	Navy	Program 1	Hours	184,928
Direct Labor	Manufacturing Site 2	…		Hours	…
Direct Labor	Manufacturing Site 2	Commercial		Hours	6,785
Direct Labor	Launch	Navy	Program 1	Dollars	$ 54,783
Direct Labor	Launch	…		Dollars	…
Direct Labor	Launch	Commercial		Dollars	$ 52,351
Direct Labor	Launch	Navy	Program 1	Hours	978
Direct Labor	Launch	…		Hours	…
Direct Labor	Launch	Commercial		Hours	1,026

Overhead Expense Details

- The Legacy format creates alignment issues. For example, contractors must include fringe into their overhead costs, distorting overhead rates for most companies.

- The Contractor format provides greater insight into specific overhead cost drivers. For example, the contractor format below enables an analysis of fringe cost growth over time.



Legacy format

	Engineering		
	Workers o	Dollars p	Hours q
15. Indirect Labor	323	$2,316.8	30.5
16. Employee Benefits		$12,269.1	
17. Payroll Taxes		$2,142.0	
18. Employment		-	
19. Communication/Travel		$269.1	
20. Production Related		$184.1	
21. Facilities-Building/Land		$466.9	
22. Facilities-Furniture/Equipment		$465.1	
23. Administration		$208.7	
24. Future Business		-	
25. Other Miscellaneous		$66.5	
26. Credits		-	
27. Total Indirect Cost and Hours		$18,388.3	30.5

Note: legacy format dollars and hours are in thousands

Contractor format

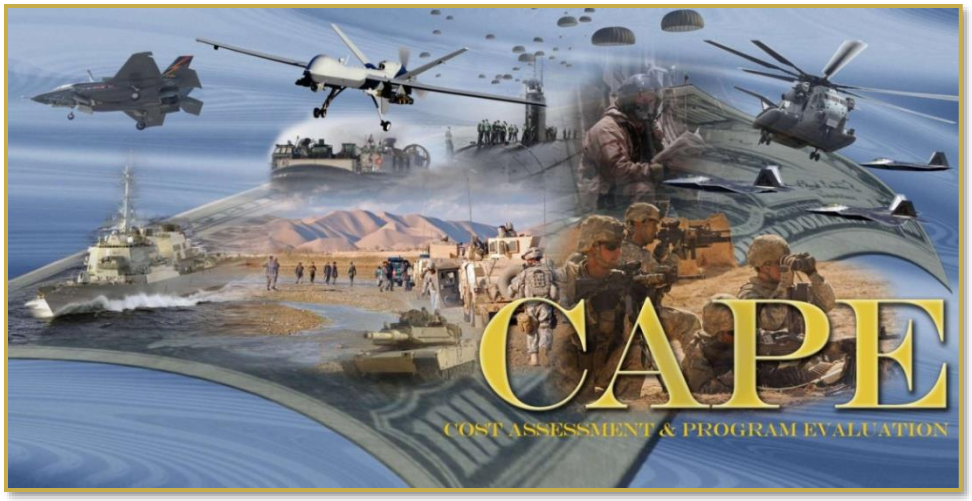
Fringe, G&A, or Overhead	Category Name	Entity Expense Component (as necessary)	2017
Fringe	Engineering 1	Paid Time Off	$ 303,828
Fringe	Engineering 1	Retirement	$ 2,787,366
Fringe	Engineering 1	Payroll Taxes	$ 1,363,140
Fringe	Engineering 1	Medical	$ 1,236,685
Fringe	Engineering 1	Other Benefits	$ 1,000,008
Fringe	Engineering 2	Paid Time Off	$ 654,147
Fringe	Engineering 2	Retirement	$ 4,494,392
Fringe	Engineering 2	Payroll Taxes	$ 778,819
Fringe	Engineering 2	Medical	$ 1,692,426
Fringe	Engineering 2	Other Benefits	$ 100,293

Path Forward

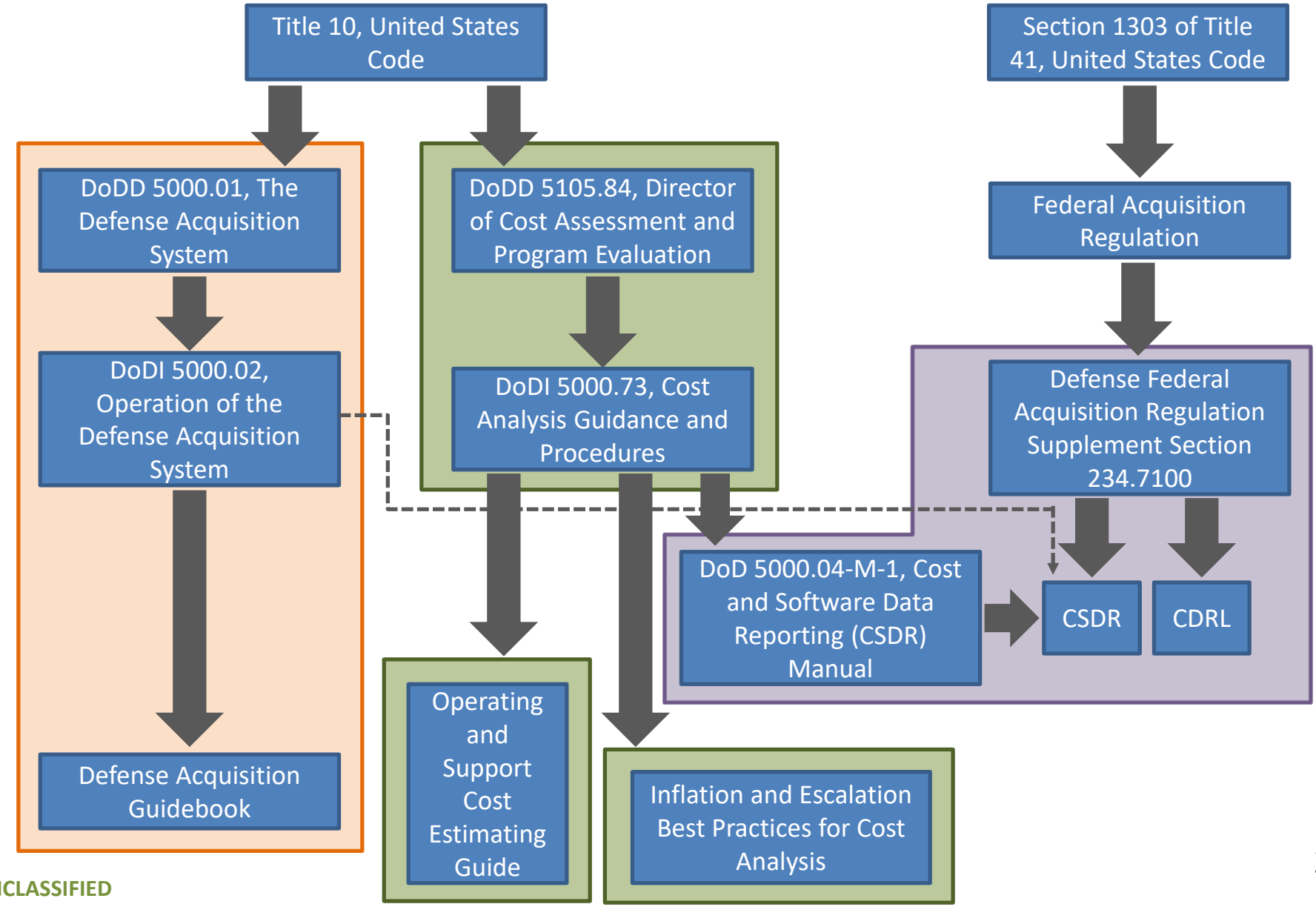
- We solicited and received Government and Industry input on the updated DID
  - No major show-stoppers
  - We will follow-up with respondents and make minor adjustments to the DID
  - Majority of contractors were supportive of the new DID

New 1921-3 DID:
- Less burdensome for contractors
- Eliminates allocation issues
- Improves government/industry communication
- Provides cost analysts with enhanced insight

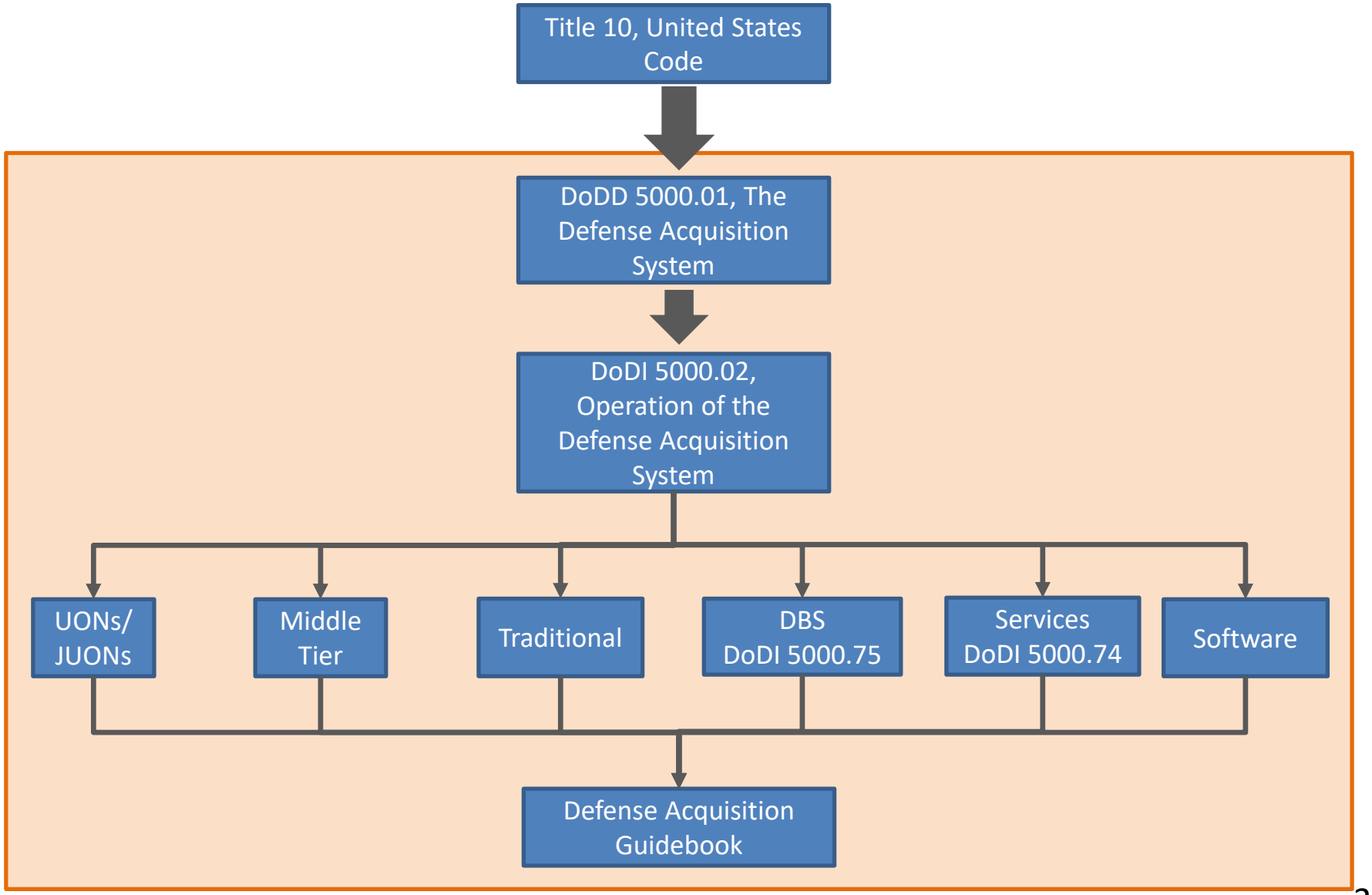
DoD Cost and Acquisition Policy Update



Acquisition Authority Pre-2017 NDAA



Acquisition Authority/Policies



Middle Tier of Acquisition

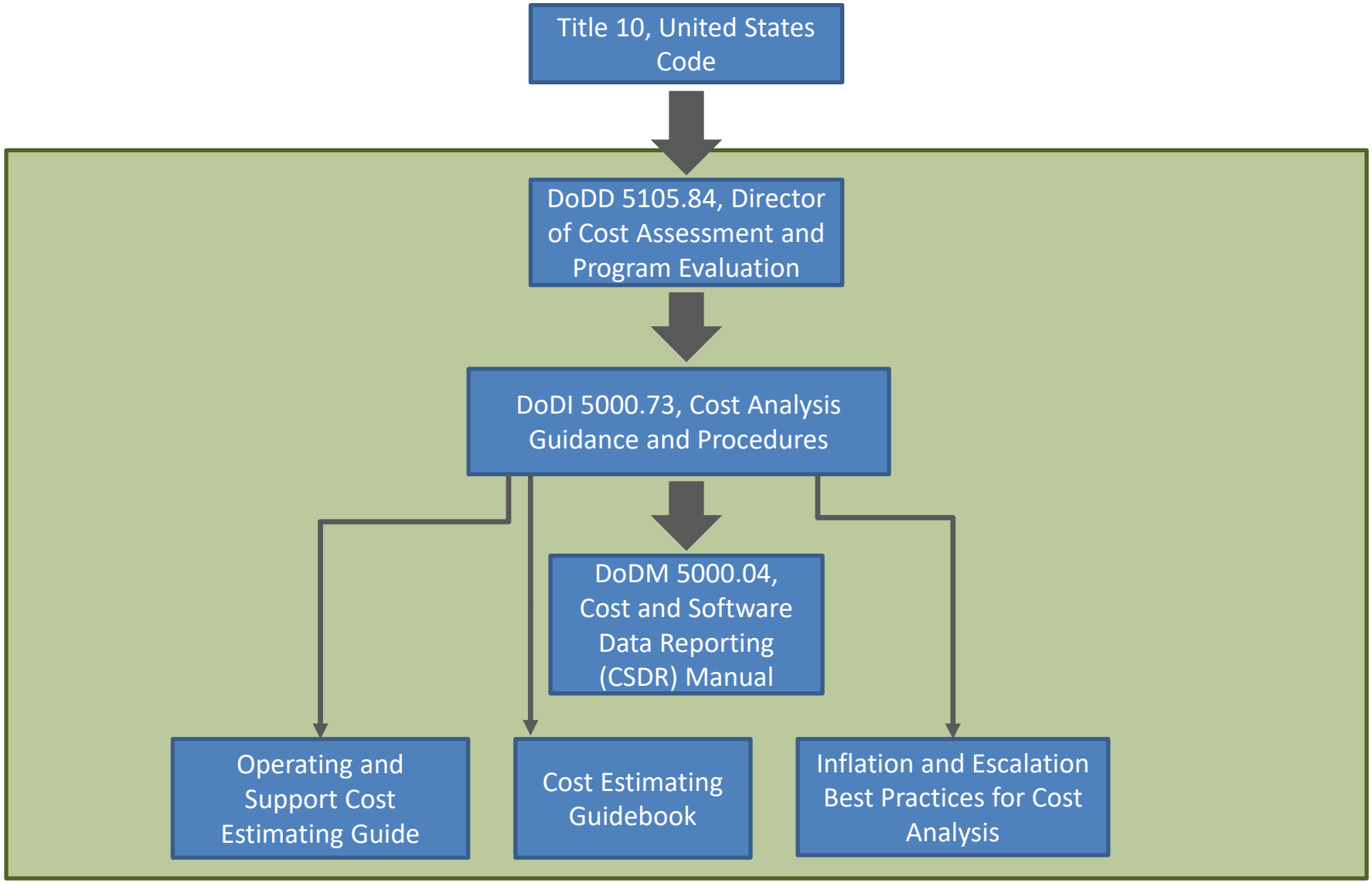
- FY 2016 NDAA Section 804 – creates a middle tier of acquisition programs that are intended to be completed in 2 to 5 years

- Programs are not subject to JCIDS or DoDD 5000.01

- **Rapid prototyping:**
  - Use of innovative technologies to rapidly develop fieldable prototypes to demonstrate new capabilities and meet emerging military needs
  - Objective: to field a prototype that can be demonstrated in an operational environment and provide for a residual operational capability within five years of the development of an approved requirement

- **Rapid fielding:**
  - Use of proven technologies to field production quantities of new or upgraded systems with minimal development required
  - Objective: to begin production within six months and complete fielding within five years of the development of an approved requirement

Cost Authority/Policies



Cost Reporting Statutory Authority

10 U.S.C. Section 2334(g) Guidelines and Collection of Data

(1) The Director of Cost Assessment and Program Evaluation shall, in consultation with the Under Secretary of Defense for Acquisition, Technology, and Logistics, develop policies, procedures, guidance, and a collection method to ensure that quality acquisition cost data are collected to facilitate cost estimation and comparison across acquisition programs.

(2) The program manager and contracting officer for each acquisition program in an amount greater than $100,000,000, in consultation with the cost estimating component of the relevant military department or Defense Agency, shall ensure that cost data are collected in accordance with the requirement of paragraph (1).

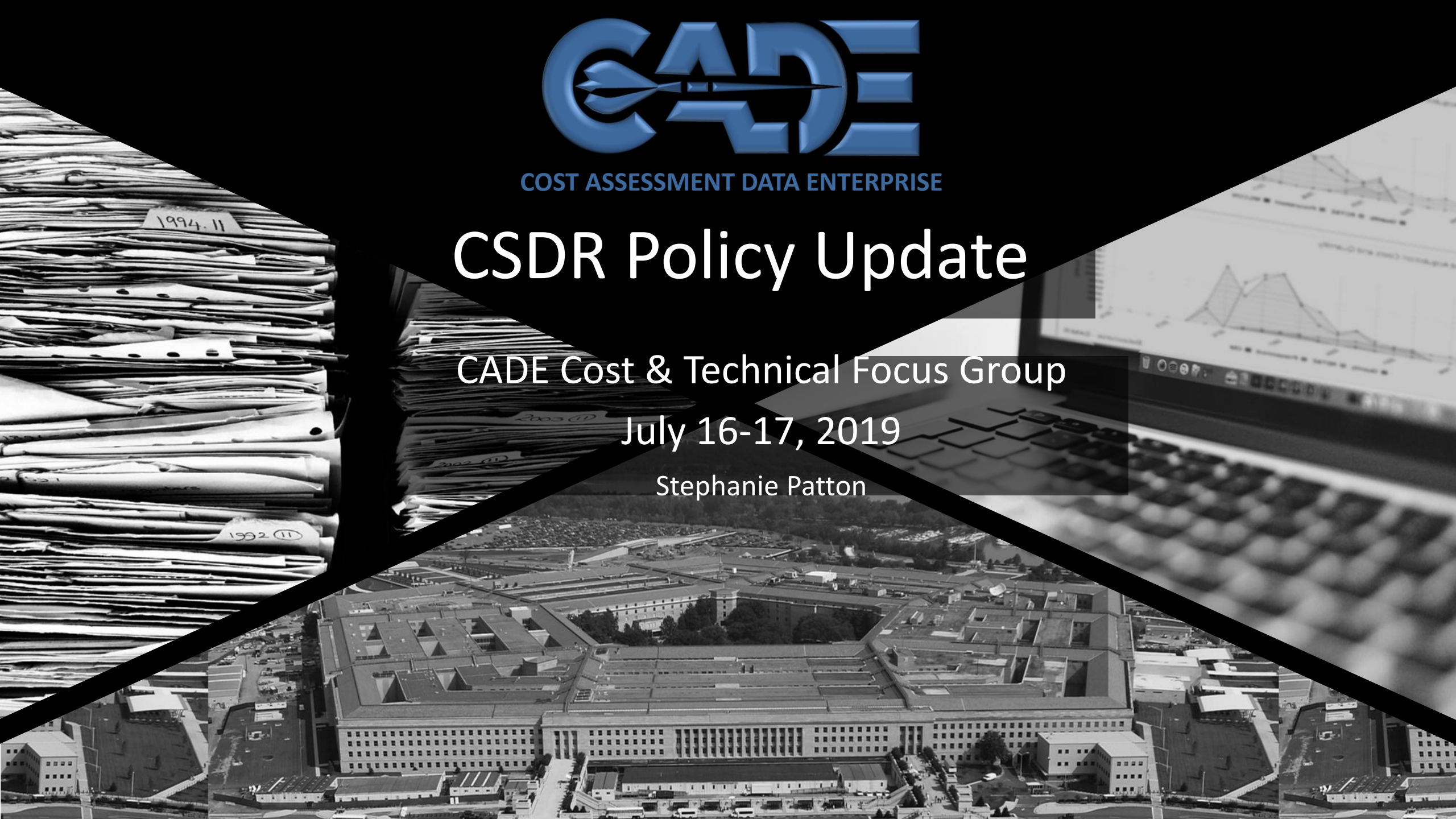
(3) The requirement under paragraph (1) may be waived only by the Director of Cost Assessment and Program Evaluation.

CAPE Cost Data Reporting Policy Memos

- "DoD Cost Analysis Data Improvement" Memorandum, January 9, 2017
- "Implementation of Data Reporting Requirements for Acquisition Programs in Accordance with the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2017" Memorandum, February 16, 2018
- "Implementation of Cost Data Reporting Requirements for Middle Tier Acquisition Programs" Memorandum, August 30, 2018
- "Updated Implementation of Cost Data Reporting Requirements in Accordance with Section 2334(g)" Memorandum, January 4, 2019
- "Implementation of Cost and Hour Report (FlexFile) and Quantity Data Reports Within the Cost and Software Data Reporting (CSDR) System" Memorandum, March 22, 2019

Current CSDR Requirements

	ACAT I	ACAT II	ACAT III-IV	Middle Tier of Acquisition	
				Above ACAT I Dollar Threshold	Below ACAT I Dollar Threshold
Programs with Cost Reporting Requirements	All	All	Only programs identified in Feb 2018 DCAPE memo	All	>$100M of projected investment
Cost Reporting Contract/Effort Threshold	>$50M required; at discretion of PM and/ or DDCA for $20-50M	>$50M required; at discretion of PM and/ or MILDEP cost center for $20-50M	At discretion of MILDEP cost center	>$20M required	>$20M required
Cost Reporting Plan Approval Authority	CAPE	MILDEP cost center	MILDEP cost center	CAPE	MILDEP cost center
Waiver Authority	CAPE	CAPE	CAPE	CAPE	CAPE
Requirements Source	10 USC 2334(g); DoDI 5000.02	10 USC 2334(g); January 2019 memo	10 USC 2334(g); January 2019 memo	10 USC 2334(g); August 2018 memo	10 USC 2334(g); August 2018 memo



COST ASSESSMENT DATA ENTERPRISE

CSDR Policy Update

CADE Cost & Technical Focus Group

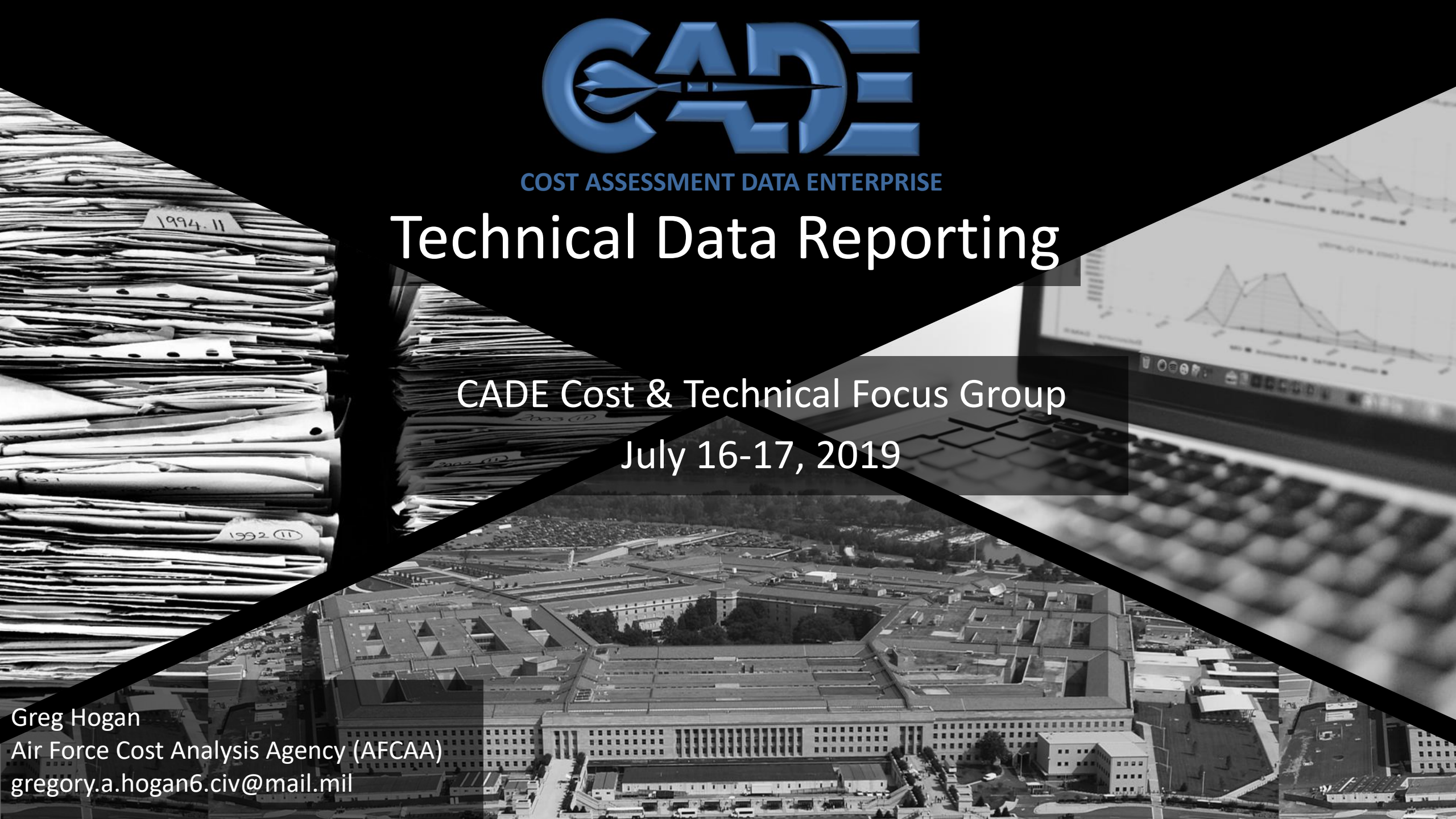
July 16-17, 2019

Stephanie Patton

CSDR Manual Update

- The CSDR Manual (DoDM 5000.04-M -1) serves as the primary requirements document for the development, implementation, and operation of the CSDR system to ensure reported data is accurate and consistent
- DoDM 5000.04-M -1 changed to DoDM 5000.04 on April 18, 2018.
- Update to be finalized after:
  - DoD Instruction 5000.02
  - DoD Instruction 5000.73

- DoD Manual (DoDM) 5000.04 Cost and Software Data Reporting (CSDR) Manual Update
- Incorporates:
  - DoD Cost Analysis Data Improvement memo signed by Dr. Morin (January 9, 2017)
  - Implementation of Cost Data Reporting Requirements for Middle Tier Acquisition Programs memo signed by Mr. Daigle (August 30, 2018)
  - Updated Implementation of Cost Data Reporting Requirements in Accordance with Section 2334(g) memo signed by Mr. Daigle (January 4, 2019)
  - https://cade.osd.mil/policy and https://cade.osd.mil/policy/nonacat1
- Includes:
  - Acquisition Category (ACAT) II cost reporting instructions
  - Middle Tier Acquisition Program cost reporting instructions
  - FlexFile, Quantity, Software Resource Data (Dev, Maintenance, and ERP), Technical, Maintenance & Repair Parts reporting instructions via new CSDR Plan template (DD 2794)
  - Updated Cost Working-Group Integrated Product Team (CWIPT) responsibilities
  - Increased oversight of Government cost reporting
  - Improved visibility of contractor cost reporting compliance



COST ASSESSMENT DATA ENTERPRISE

Technical Data Reporting

CADE Cost & Technical Focus Group

July 16-17, 2019

Greg Hogan
Air Force Cost Analysis Agency (AFCAA)
gregory.a.hogan6.civ@mail.mil

Technical Data Overview

Cost data has been delivered on DoD contracts for 60+ years, SW data has been provided for 12+ years. Technical Data has always been a requirement; however, not implemented effectively

Tech Data initiative:

- Provides mechanism to systematically capture Tech Data on contracts
- Complements DoD CARD process
- Creates a common Tech Data Vocabulary
- Defines core set of needed parameters
- Leverages other Tech Data on contract

Results:

- **Tech Data Plan** reported via WBS
- Common **taxonomy** for both CARD and TDR - consistent with GOVT ENGR groups and Industry

- Technical data is an enduring cost analysis need
- When tied to each 881D WBS element, and coupled with cost, software, quantity and maintenance & repair data, it provides a complete contextual description of the subject program
- Estimating subsequent contracts on this program, or future programs, will use this technical data to identify appropriate cost drivers and define the technical and programmatic baseline
- Core parameters, consistent with estimating needs and industry processes, serve as the starting point for CWIPT Implementation
- Obtaining technical data now as a contract deliverable avoids subsequent data calls to the contractor or program office

CWIPT Process enables efficient implementation of the Technical Data requirements

Repeatable Tech Data Process

- ✓ **Start with Core Parameters by Commodity & Phase**
- ✓ **Refine Contract-Specific Parameters using Technical Data Vocabulary Database**
- ✓ **Review other Contractual CDRL Requirements to Minimize Duplication**
- ✓ **Finalize Technical Data Reporting, DD 2794 Supplement & Submission Events**
- ✓ **Revise generic Technical Data CDRL (DD 1423) to Program specifics**
- ✓ **Participate in pre / post award conferences to Ensure Tech Data requirements are well understood**

ITEM TYPE	SUBTYPE	PARAMETER NAME	UNIT OF MEASURE	Core by Phase: Dev	Prod	O&S
ElecBox		Clock Speed	Megahertz	X	X	
ElecBox		ASIC - Gate Count	Quantity	X	X	
ElecBox		FPGA - Gate Count	Quantity	X	X	
ElecBox		Transmitter Power Output - Peak	Watts	X	X	
ElecBox		Number of Receiver Channels	Quantity	X	X	
ElecBox		Type of Modulation	List	X	X	
ElecBox	PhysicalElec	Weight - Structural	Pounds		X	
ElecBox	PhysicalElec	Weight - Electronics	Pounds		X	
ElecBox	Heritage	New Design	Percent	X		
ElecBox	Heritage	Technology Readiness Level (TRL)	List	X		
ElecBox	Identification	NSN	Name/Number		X	X
ElecBox	Operational	Maintenance Level	List		X	X
ElecBox	Operational	Mean Time Between Failure (MTBF)	Hours		X	X
ElecBox	Operational	Mean Time To Repair (MTTR)	Hours		X	X

Standard CSDR Plans and CADE Technical Vocabulary

TECHNICAL PARAMETER REQUIREMENTS

27. WBS ELEMENT CODE	28. WBS ELEMENT NAME	29. ITEM TYPE	30. TECHNICAL PARAMETER: a. PARAMETER NAME	b. UNIT OF MEASURE	c. UNIT OF MEASURE QUALIFIER	d. REPEATABLE	e. REMARKS
1.2	Air Vehicle	Air Vehicle	Crew Size	Quantity			
1.2	Air Vehicle	Air Vehicle	Number of Engines	Quantity			
1.2	Air Vehicle	PhysicalStruc	Volume	Cubic Inches			
1.2	Air Vehicle	PhysicalStruc	Weight	Pounds			
1.2	Air Vehicle	PhysicalOther	Material Mix 1…n	Descriptor			
1.2.2	Airframe	Heritage	Predecessor System	Year			
1.2.2.2	Fuselage	PhysicalStruc	Dimension - Description	Descriptor			
1.2.2.3	Wing	PhysicalOther	Material Mix 1…n	Descriptor			
1.2.2.3	Wing	Heritage	New Materials	List			
1.2.2.3	Wing	PhysicalStruc	Volume	Cubic Inches			
1.2.2.3	Wing	PhysicalStruc	Weight	Pounds			
1.2.2.4	Empennage	PhysicalOther	Material Mix 1…n	Descriptor			
1.2.2.4	Empennage	Heritage	New Materials	List			
1.2.2.4	Empennage	PhysicalStruc	Volume	Cubic Inches			
1.2.2.4	Empennage	PhysicalStruc	Weight	Pounds			
1.2.2.5	Nacelle	PhysicalOther	Material Mix 1…n	Descriptor			
1.2.2.5	Nacelle	Heritage	New Materials	List			
1.2.2.5	Nacelle	PhysicalStruc	Volume	Cubic Inches			
1.2.2.5	Nacelle	PhysicalStruc	Weight	Pounds			

DD FORM 2794 (Page 4),TECHNCIAL PARAMETER REQUIREMENTS, JUNE 2017 — PREVIOUS EDITION IS OBSOLETE

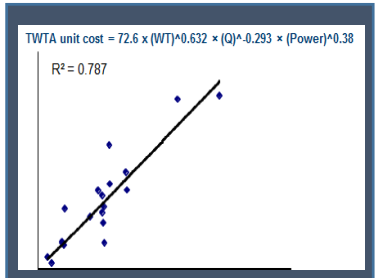
Contract CSDR Plan Technical Data Supplement

TECH: Parameters by Mapping ID

Mapping ID	Item Type	Technical Parameter Name	Group Key	Value	Unit of Measure	Unit of Measure Qualifier	Estimate/Actual	Margin	Remarks
1.1	Air Vehicle	Combat R							
1.1	Air Vehicle	Absolute							
1.1	Air Vehicle	Weight							
1.1.1.2	ElecBox	Clock Spe							
1.1.1.2	ElecBox	ASIC - Gat							
1.1.1.2	ElecBox	FPGA - Gate Count		245811	Quantity	Gates	Actual		
1.1.1.2	ElecBox	Volume		1	Cubic Feet		Actual		
1.1.1.2	ElecBox	Weight		20	Pounds		Actual		
1.1.1.2	ElecBox	Power - Maximum Consumption Rate		18	Watts		Actual		Bench Test Results May 2021
1.1.1.2	ElecBox	New Design		100	Percent		Actual		Abandoned reuse of prior design, TIM Jun 2021

Contractor TDR Submission

Contractor submits technical data by WBS element per plan



Future Quality Estimates

Data-rich CADE Repository

With the CADE goal of providing the best quality data to the cost estimating community, Technical Data enhances the cost, software, quantity, and sustainment data placed into CADE.

Approved Technical Data Report Requirements

Data Group A

Report Metadata

Approved Plan Number
Submission Event
Period of Performance
Reporting Organization
As of Date
Date Prepared
more in the DID…

Same as FlexFile

Data Group B

DD Form 2794 Data Elements

WBS Element
Order/Lot
End Item

Same as FlexFile

Data Group C

Technical Data Parameters

Mapping ID
Item Type
Technical Parameter Name
Value
Unit of Measure
Estimate/Actual
more in the DID…

Data Group D

Technical Data WBS Mapping ID

Mapping ID
WBS Element Code
End Item
Order/Lot
Remarks

Mapping ID is the key to pairing technical data with the cost data

The Technical Data Report ties cost drivers and other relevant metrics to FlexFile dollars and hours.

- Technical data (when organized by WBS Element, Oder/Lot, and End Item) provide for a contextual undemanding of the reported costs.
- Identification and quantification of cost drivers
- Supports analogy estimating
- Fine tunes parametric estimates

Technical Data Report Submission/Validation Considerations

Submission Considerations

- Submit in Excel-compatible format.
- The data model is located here: https://cade.osd.mil/policy/techdata
- A JavaScript Object Notation (JSON) Data Model is not presently necessary.
- Upon submitting in an Excel-Compatible format, the DCARC, supplemented by a TURF team, will verify and validate it. This may require some coordination between the DCARC and the contractor. *The submitted and approved report then resides in CADE alongside the FlexFile as a supplemental file.*
- Parameters that have alternative CDRLs identified can be fulfilled by including copies of the CDRL at the time of upload into CADE

Validation Considerations

- **DCARC** will ensure compliance with
  - ❑ DID
  - ❑ Approved CSDR plan
- **The TDR Unified Review Function (TURF)** The TURF team and DCARC analyst will assess the TDR submission jointly; the TURF team will supplement the identified DCARC analyst's review at the time of the TDR submission.
  - ❑ Approved CSDR plan
  - ❑ Reporting events and units of measure
  - ❑ Demographic and common heading information
  - ❑ Pedigree and variability of values
  - ❑ Completeness

Frequently Asked Questions & Responses (1 of 2)

- **What is the policy status on Tech Data reporting?**
  - The Technical Data DID is approved and is available for any CWIPT to use as they deem useful on a contract-by-contract basis.
  - A DoD-wide or Service-wide "roll-out" of Technical Data Report policy is not foreseen.
- **How will subcontractor Tech Data be obtained?**
  - There is no default expectation on how TDR responsibility may be split between primes and subs. The Tech Data responsibility will likely be on the prime and not on the subs (at least not to the extent cost data requirements are directly laid onto the subs). If the CWIPT wishes to seek tech data directly from the subs they can certainly do so. If the prime wishes to buy tech data from the subs they can certainly do so.
- **What can I do to ease into the Tech Data requirement?**
  - The technical vocabulary and core parameter lists are available to you for your future planning purposes. We are happy to engage on a working-level to collaborate further if and when you make tech data SMEs available to do so.
  - Given that a sound WBS is product oriented, collecting measurable, observable tech data by product should offer few obstacles to completion.
- **How will sensitive Tech Data be handled?**
  - Technical Data submissions will be treated as company proprietary and access to them will be limited in the same manner as cost reports are protected.
  - All CADE submissions are to be unclassified. In the event classified technical data is requested specific instructions will be provided at the appropriate time.

Frequently Asked Questions & Responses (2 of 2)

- **On what programs have we implemented the Tech Data requirement?**
  - **WSFO** placed about 130 parameters on contract of which 50 were unique
    - ✓ Negotiated scope with PM / SPO team prior to RFP release
    - ✓ Cemented the requirement with Industry during post award conference
  - **GBSD** placed about 900 parameters on contract, 50 of them unique (e.g., weight, power, heritage)
    - ✓ Data requirement worked together by SPO / AFCAA
    - ✓ Data requirement to be streamlined commensurate with GBSD tradespace solutions
  - **GPS IIIF** program identified about 200 parameters (<50 unique) and through CWIPT process concluded requirement could be satisfied with revised CARD and other contract CDRLS
    - ✓ Cost teams identified core parameters required
    - ✓ Program team / AFCAA reviewed other program CDRLs to assess availability and accuracy of data
    - ✓ Program Manager / AFCAA made agreement to include core parameters in the annual CARD and deliver technical CDRLs where needed to define core parameters
  - **OPIR Contracts –** CWIPT determining the right solution for rapid prototype efforts
  - **PAC-3** placed 72 parameters on contract for the SWEEP IX effort performed by Raytheon
  - **C2IMERA** placed 29 parameters on contract to capture Agile SW Reporting metrics
  - **HF Modernization** placed 126 parameters on contract

COST ASSESSMENT DATA ENTERPRISE

Maintenance & Repair Data Reports

CADE Cost & Technical Focus Group

July 16-17, 2019

Lisa Mably
AFCAA/FMCY

Headquarters U.S. Air Force

Integrity - Service - Excellence

Maintenance and Repair Data Reports

U.S. AIR FORCE

Lisa Mably
AFCAA/FMCY
July 2019

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Agenda

- What is a Maintenance and Repair (-M/R) Report?
- When should I consider a -M/R?
- What is the value of the –M/R data?
  - Cost Drivers
  - Demand Drivers
  - Examples
  - Trend Analysis

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What is a -M/R Report?

Sustainment Reporting

-M/R Description

Maintenance Event Report

Collects information related to each maintenance event such as the specific system being repaired, location where the repair activity occurred, reason for failure, day failure was identified and day repair activity was completed

Maintenance Event

System/End Item Data:
- End Item Number
- End Item/Variant

Failure Data:
- Non-Mission Capable
- Scheduled Event
- Failure Code
- Failure Code Description

Repair Data:
- Start/Completion Date
- Org/Location
- Maintenance Type
- WBS ID
- Labor Hours

FORMAT 3 (1921-M, PART B)

Repair Part Report

Repair Parts

Repair Code/Description

Repair Part Data:
- LRU or Part Name
- 881 Reference
- Reparable or Consumable
- Quantity
- LRU or Part Number
- NSN
- WUC
- FWG
- Replacement Cost
- Repair Cost

Identifies the LRUs and/or repair parts associated with each maintenance event

FORMAT 3 (1921-R, PART C)

Collects maintenance event and LRU and/or repair part cost and failure data from contractors, equivalent to what we collect for organically repaired systems

- **Similar data has been collected in the past**
- **Allows better understanding of cost, availability, and development of improved estimating techniques**

Sustainment Reporting

-M/R Reporting, Example Cost Reports

Maintenance Event Data Report - Example

MAINTENANCE EVENT DATA																	
	SYSTEM/END ITEM DATA				FAILURE DATA				REPAIR DATA								
MAINTENANCE EVENT NUMBER	SYSTEM/END ITEM or DLR NIIN	SYSTEM/END ITEM SERIAL NUMBER	END ITEM (VARIANT)	ORDER NAME	NON-MISSION CAPABLE	SCHEDULED EVENT	FAILURE CODE	FAILURE CODE DESCRIPTION	START DATE	COMPLETION DATE	REPAIR ORG/LOCATION	MAINTENANCE EVENT TYPE	WBS ID	LABOR HOURS	COMMENTS
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	100000004	170004	A	-	N	Y	804	Removed for scheduled maintenance	9/1/18	9/3/18	I-Level Activity	Inspection	1.3.3.3	34	
2	100000014	170014	A	-	Y	N	805	Removed for Safety of Flight Msg/use/analysis	9/3/18	9/6/18	I-Level Activity	Inspection	1.3.3.3	46	
3	100000027	170027	B	-	N	Y	804	Removed for scheduled maintenance	9/6/18	9/8/18	I-Level Activity	Inspection	1.3.3.3	29	
4	012639440	-	-	-	-	-	-	DLR Repair	9/9/18	9/12/18	DLR Facility	DLR	1.3.2	31	
5	100000006	170006	A	-	N	Y	804	Removed for scheduled maintenance	9/10/18	12/29/18	Depot Facility	Depot Repair	1.3.4.1	2,110	
6	100000016	170016	B	-	N	Y	804	Removed for scheduled maintenance	10/31/18	1/20/19	Depot Facility	Depot Repair	1.3.4.1	1,275	
7	100000024	170024	B	-	N	Y	804	Removed for s							
8	010540042	-	-	-	-	-	-	D							
9	100000019	170019	B	-	N	Y	804	Removed for s							
10	100000012	170012	A	-	N	Y	804	Removed for s							
11	012352249	-	-	-	-	-	-	D							
12	100000030	170030	B	-	Y	N	374	Ins							
13	010394983	-	-	-	-	-	-	D							
14	100000022	170022	B	-	Y	N	281	Fa							
15	100000011	170011	A	-	Y	N	008	Nos							
16	100000051	170051	A	-	Y	N	374	Ins							
17	100000002	170002	A	-	N	Y	804	Removed for s							
18	100000028	170028	B	-	N	Y	804	Removed for s							
19	100000029	170029	B	-	N	Y	804	Removed for s							

Repair Part Data Report - Example

| | | | | | | | | | | | | | | | | |

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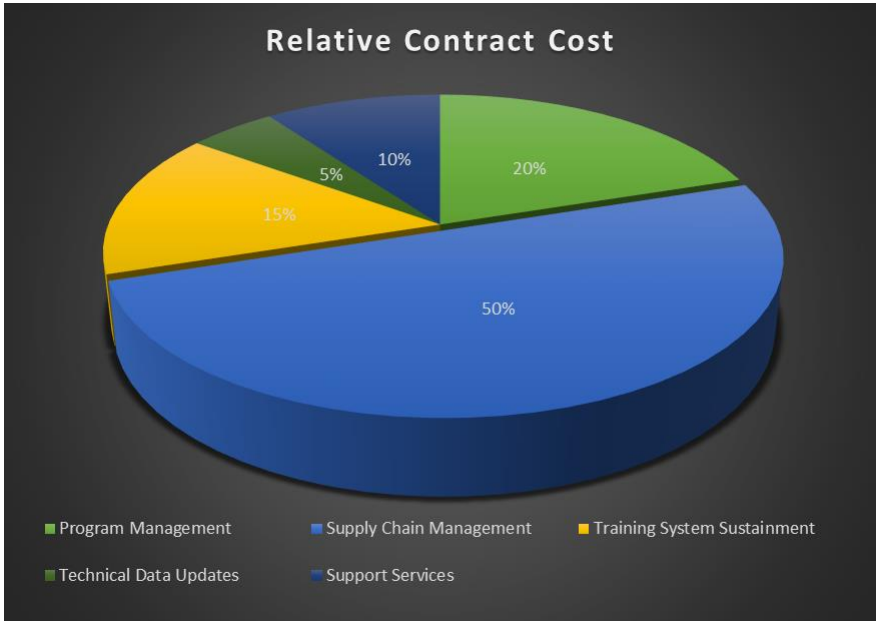
When should I consider a –M/R?



- When a significant portion of contract cost is tied up in parts related maintenance activities
  - Supply Chain
  - Heavy Maintenance
  - Recurring Spares
  - Repair
- When Flex File reporting eliminates insight into what is driving maintenance activities
- This figure shows that maintenance or supply chain management can represent a significant portion of a sustainment contract. Prior to the development of a –M/R report, there was no efficient reporting approach in place for collecting detailed maintenance and part data.

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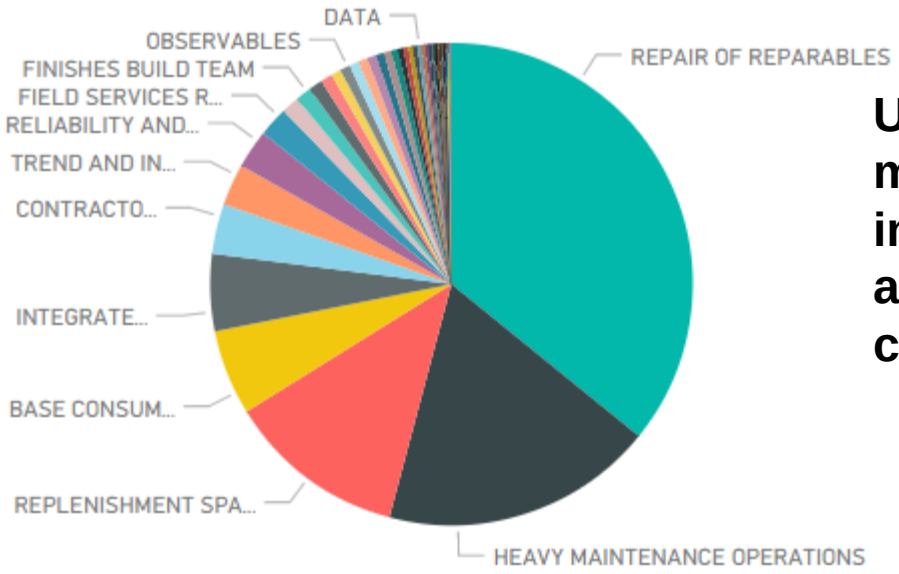
Example Scenario

- **Example from existing Flex File with a Maintenance and Repair Report**



Pie chart identifies over 70% of cost is related to parts, repairs, supply

Use of Flex File combined with maintenance and repair report allows insight into 70% of the cost, while allowing contractor to keep existing cost account structure

Value of the –M/R to an Analyst

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- Top Drivers by cost or demand
  - Drivers identified by Repair Part, WUC/FWG, Maintenance Event Types, Repair Action Codes and Failure Codes
- Top reasons for failure (i.e., failure codes) by key Repair Parts
- Trends in actions, hours and cost per system supported overtime
  - Comparison of changes in cost and demand by version
- Capture of other metrics such as:
  - Scheduled versus Unscheduled Activity
  - Hours per different maintenance event types
  - Days associated with events and/or repair parts
  - Current Replacement Cost of Repair Parts
  - Repair versus Replace Cost Ratios and Activity
- Comparison of components to predicted reliabilities
  - failing faster, or not as quickly as expected?

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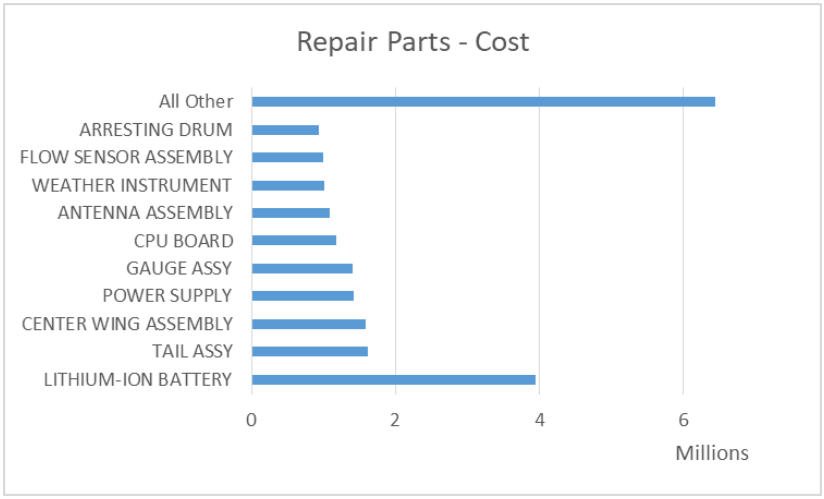
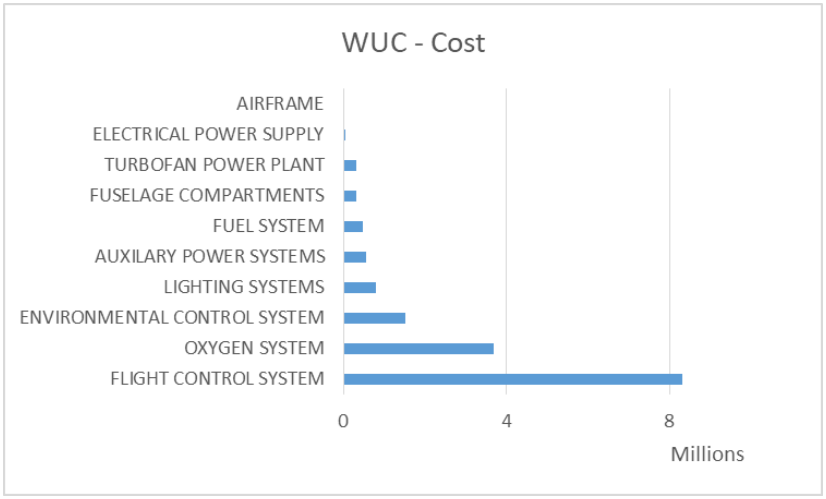
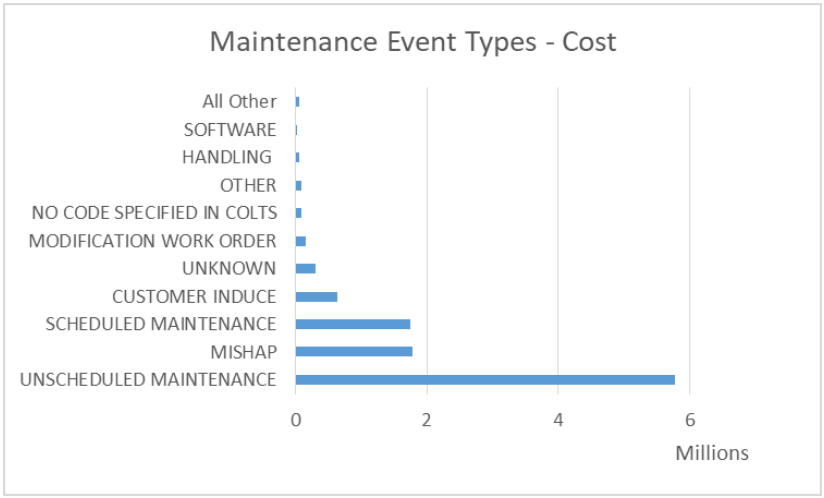
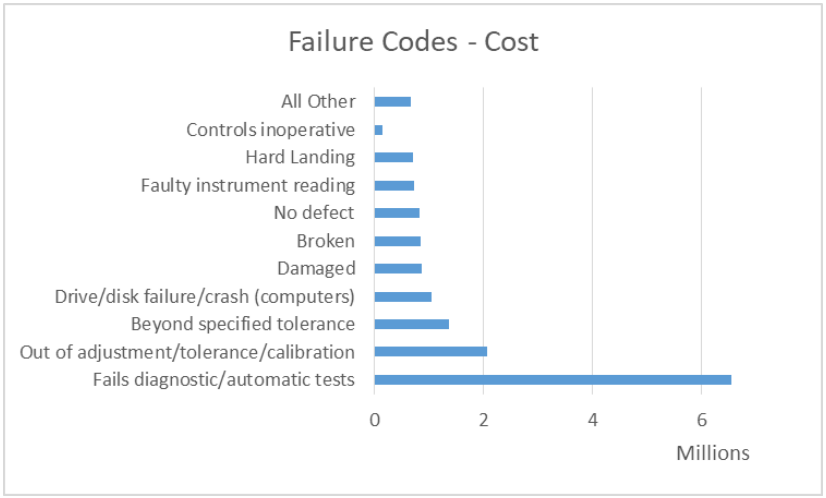
Cost Drivers









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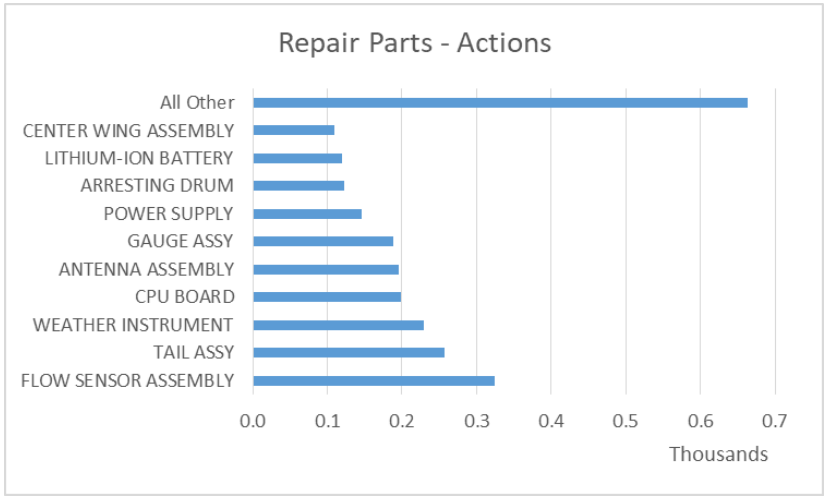
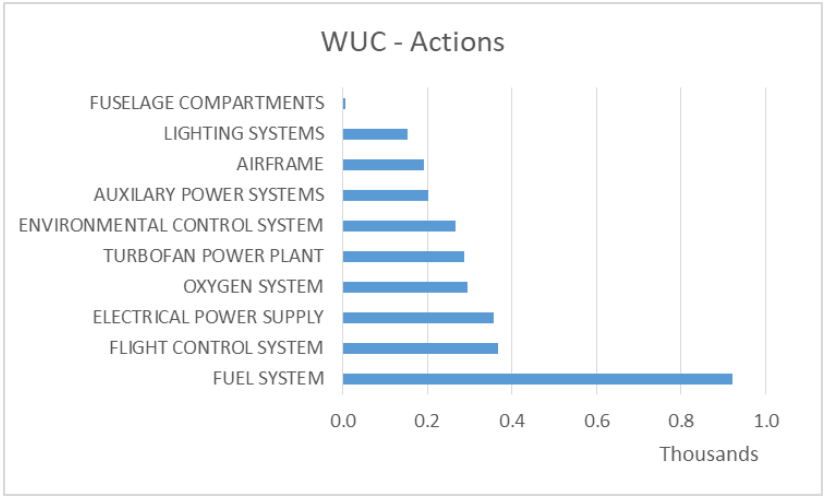
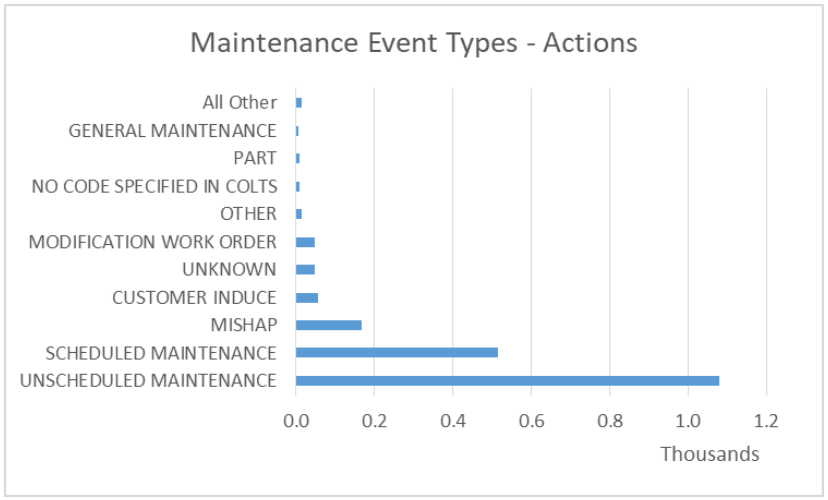
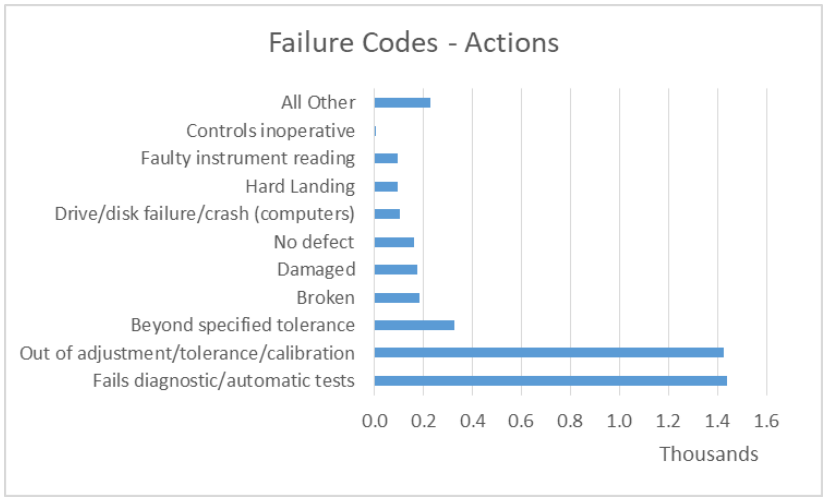
Demand Drivers









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Top 10 Repaired Parts & Reasons for Failure

Failure Code	FLOW SENSOR ASSEMBLY	TAIL ASSY	CPU BOARD	WEATHER INSTRUMENT	CENTER WING ASSEMBLY	ARRESTING DRUM	LITHIUM-ION BATTERY	POWER SUPPLY	ANTENNA ASSEMBLY	GAUGE ASSY	Total
Fails diagnostic/automatic tests	95	28	30	17	151	24	25	25	18	22	435
Beyond specified tolerance		2			6	3	9		9	5	34
Out of adjustment/tolerance/calibration	4	1	3	3	11		1	4	1		28
Drive/disk failure/crash (computers)			2		7		5	1	5	7	27
Broken	2		6		3		2	3	2	5	23
Faulty instrument reading	8	2	1		9			1			21
Damaged	4			1	1	2	1			1	10
Hard Landing	2			5	3						10
No defect			1		3		1				5
Controls inoperative	2						1				3
Mechanical Binding	1							1			2
Internal failure	1					1					2
Fuse blown	1										1
Pressure incorrect					1						1
Bent					1						1
Fluctuates/unstable								1			1

Top 10 drivers can be compared with availability degraders for “targets of opportunity” for improvement

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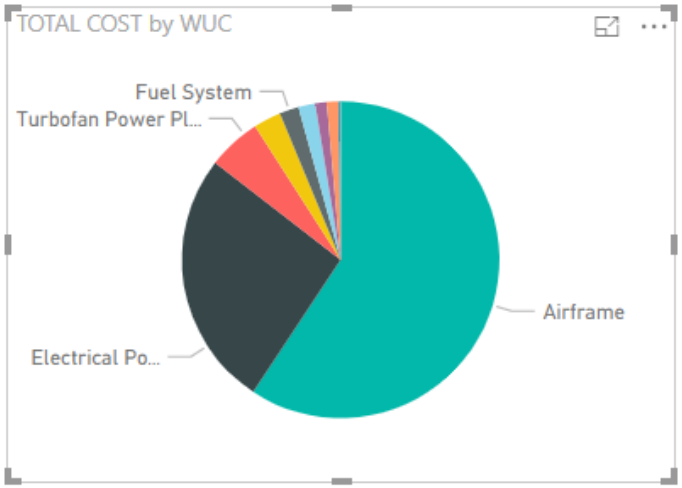
Example Data Use

WUC	Count of REPAIR PART WUC/LCN
Airframe	3075
Electrical Power Supply	368
Lighting Systems	358
Fuel System	296
Auxiliary Power Systems	287
Fuselage Compartments	266
Environmental Control System	202
Flight Control System	192
Turbofan Power Plant	154
Oxygen System	6
Total	**5204**



Business Case Analysis

- **Improvement to fuel system will decrease repair actions by 20%**
- **If cost per repair action is:$1,851 then this equates to roughly 110K in savings**

Analogy Estimate for New System

- **Similar fuel system on new AC will result in 20% fewer repair actions**
- **Estimate repair action rate for modification based on current fuel system (current MTBMA 26, new system is ~21)**

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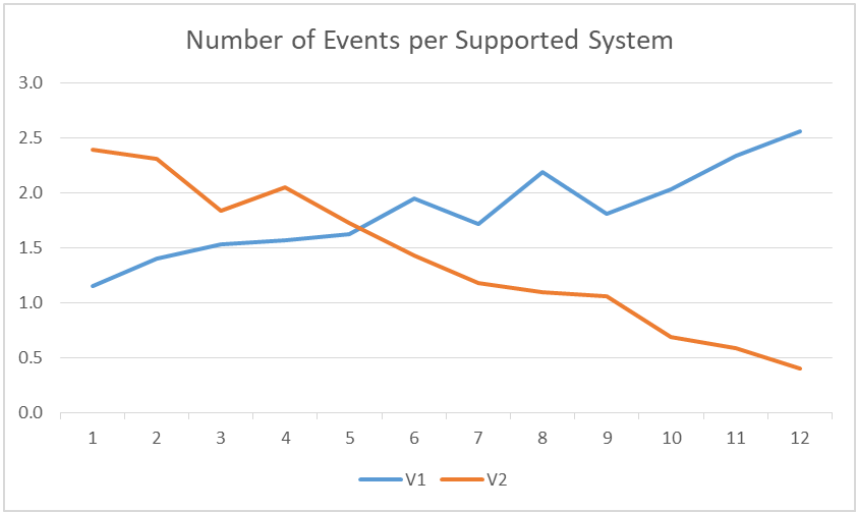
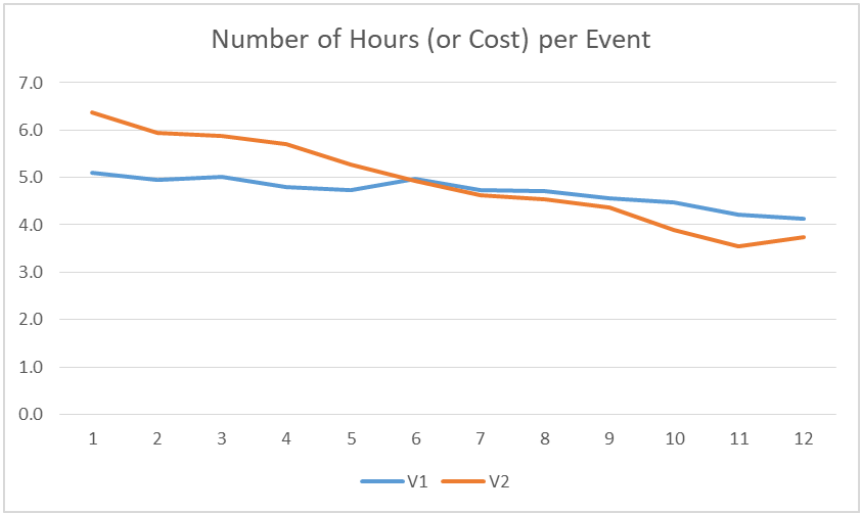
Data Trends





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Other Applications..

- Use of actuals to update a cost estimate
- Use as a data point in developing various cross-platform CERs
  - For example group cost by WUC to compare cost (or cost per failure) across different platforms
- Comparing past estimates to actuals

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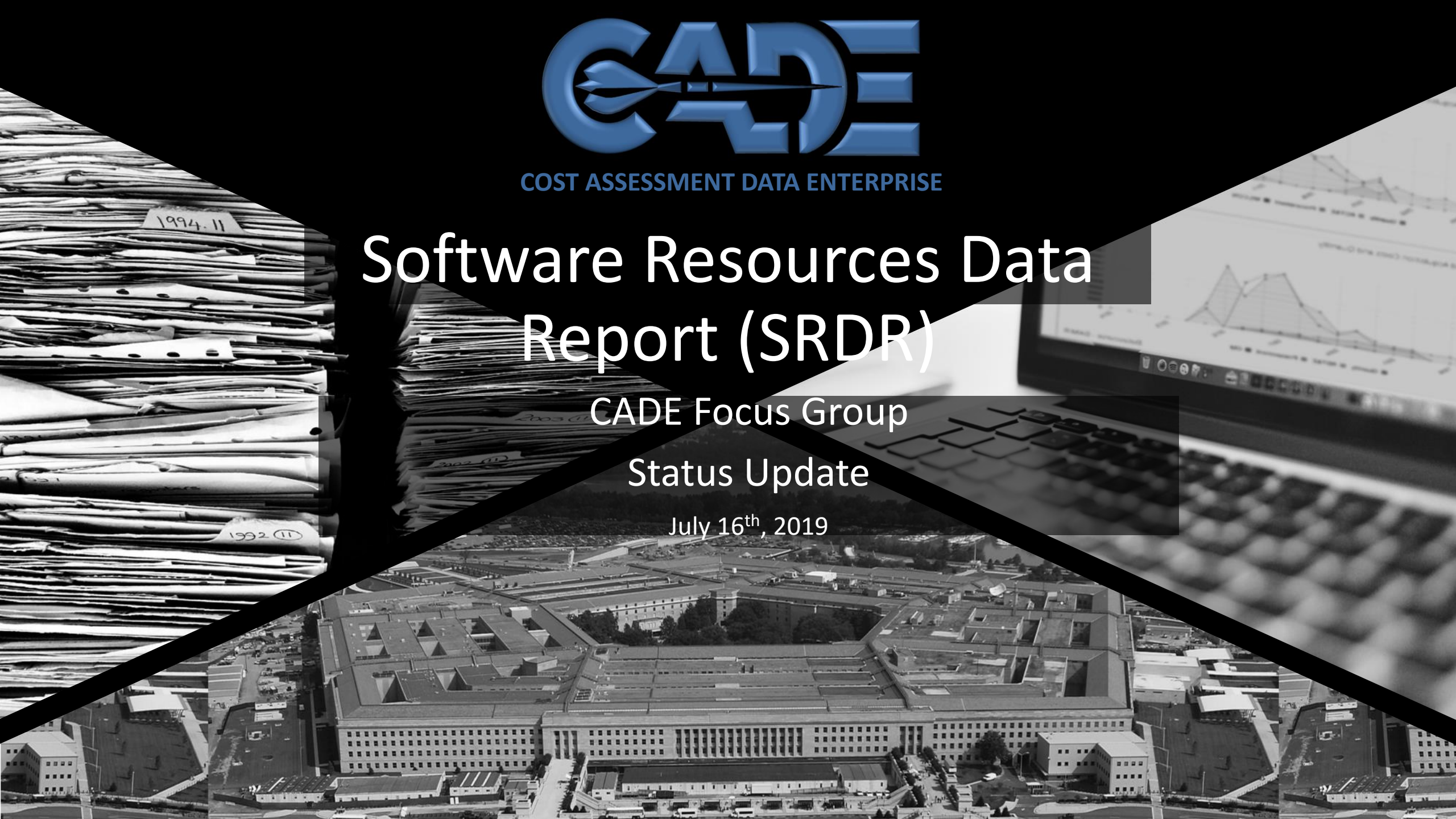
Conclusion

- **Existence of the –M/R provides industry with a more relaxed cost accounting requirement while still providing the detail to the government**
- **-M/R provides equivalent CLS data to existing organic data for similar analysis and system performance measurement**



COST ASSESSMENT DATA ENTERPRISE

Software Resources Data Report (SRDR)

CADE Focus Group

Status Update

July 16th, 2019

Agenda

- SRDR Challenges and Accomplishments
- Data Requirements for Agile Software Programs
  - Ms. Cari Pullen, AFCAA

Headquarters U.S. Air Force

Integrity - Service - Excellence

Data Requirements for Agile Software Programs

Cari Pullen
Air Force Cost Analysis Agency
Prepared for 16 July 2019 CADE Focus Group

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Purpose

- Discuss role of data: users, decision support, and evolution
- Review claims that agile programs are different and traditional metrics do not apply
- Clarify the difference between management metrics and estimating metrics
- Explain the utility of a Software Resources Data Report (SRDR)

Overview

- High quality, defendable estimates require high quality data
- Estimate users require data to support results
- Agile claims - data needed to support or question claims
- Why cost matters
- Leveraging the SRDR

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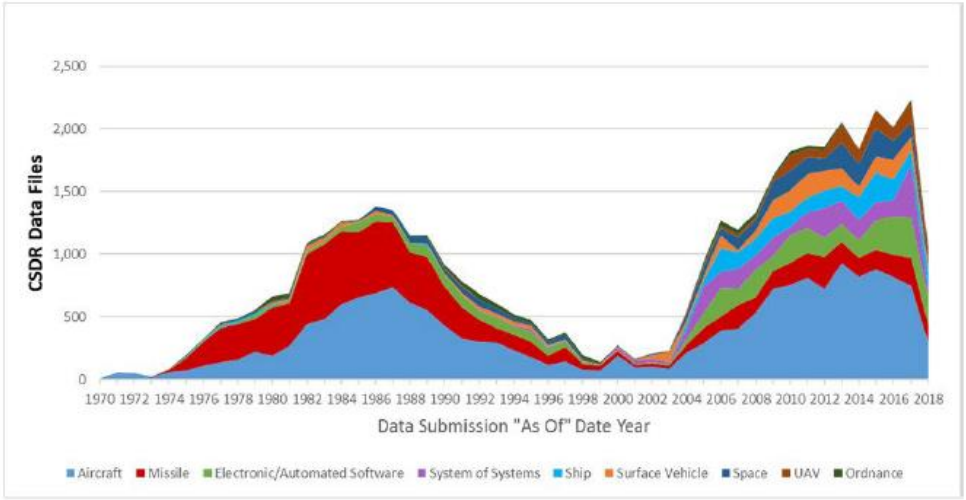
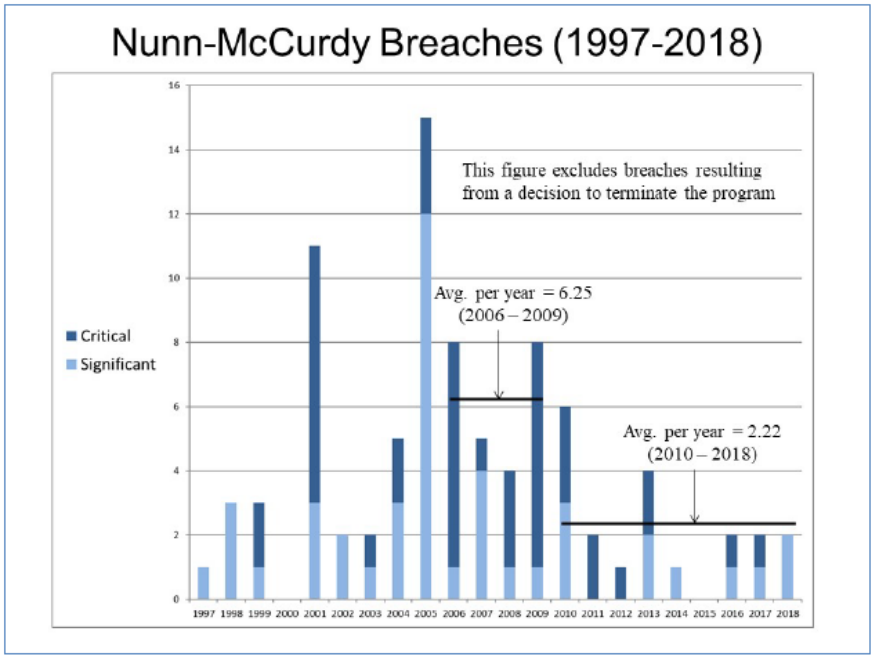
Quality Data Underpins Quality Estimates

- High quality data underpins a quality, defendable cost estimate
- Data availability allows for more efficient estimating which supports
  - Acquisition/Milestone Decisions
  - Budget/POM
  - Negotiation/Source Selection Support





Increase in data over last decade contributes to reduction in Nunn-McCurdy Breaches

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Estimate Users and Purposes

- **Multiple customers and stakeholders of the cost estimate {program organization (program management, contracting, finance, etc.), acquisition authorities, higher headquarters, users, and developers} across the life cycle**
- **Three basic estimate purposes:**
  - **Strategic—long term broad look; early planning/affordability estimates across multiple programs or specified program**
  - **Operational—mid term planning look; varied degree of estimate detail targeted at service/portfolio/program levels**
  - **Tactical—near term management look; detailed program estimates and monitoring for specific programs**

Variety of Quality Data Required to Support Quality Estimates for All Users and Purposes

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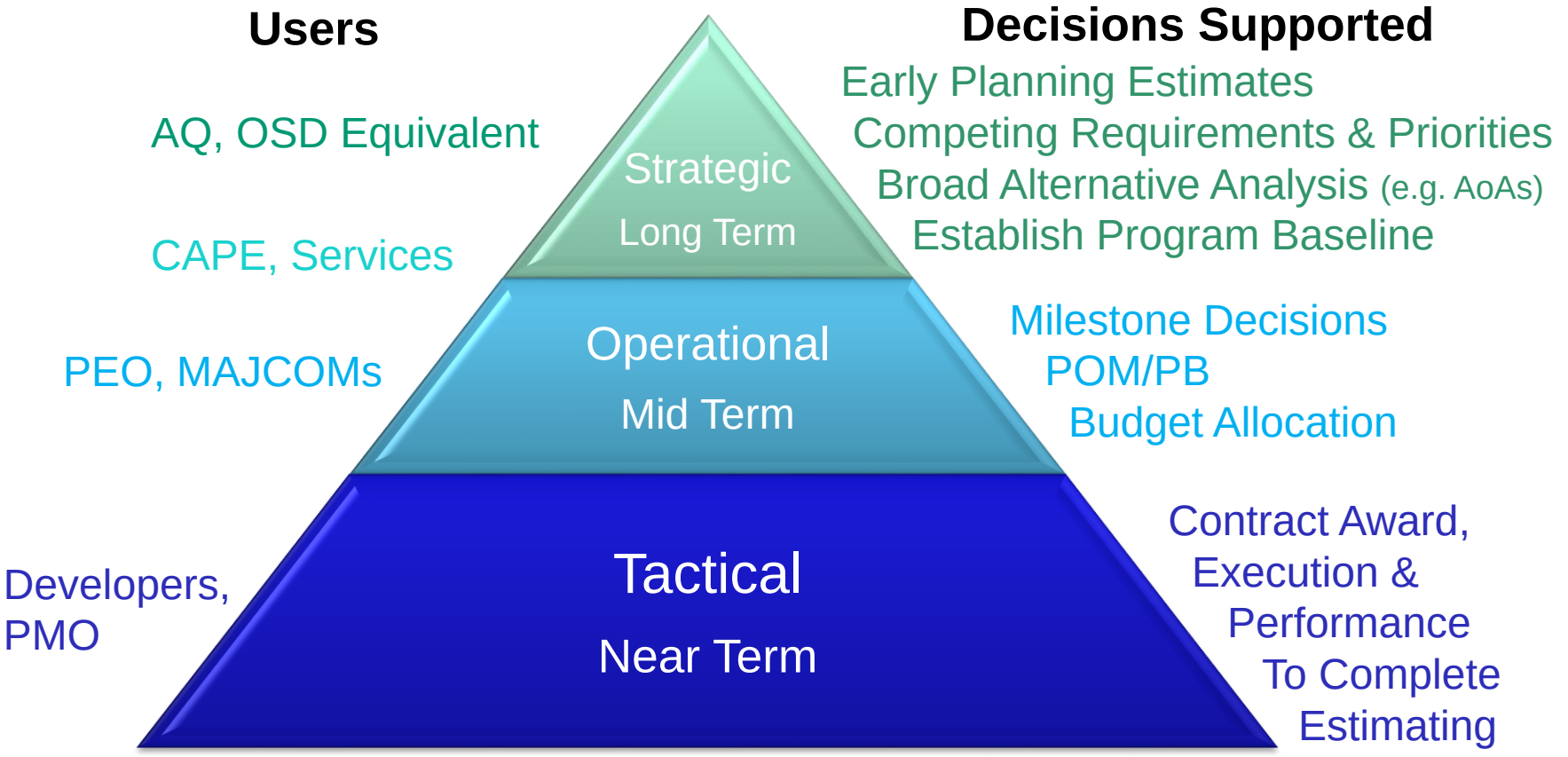
Estimate Hierarchy



Many levels of communication
Information and data needs vary across the levels

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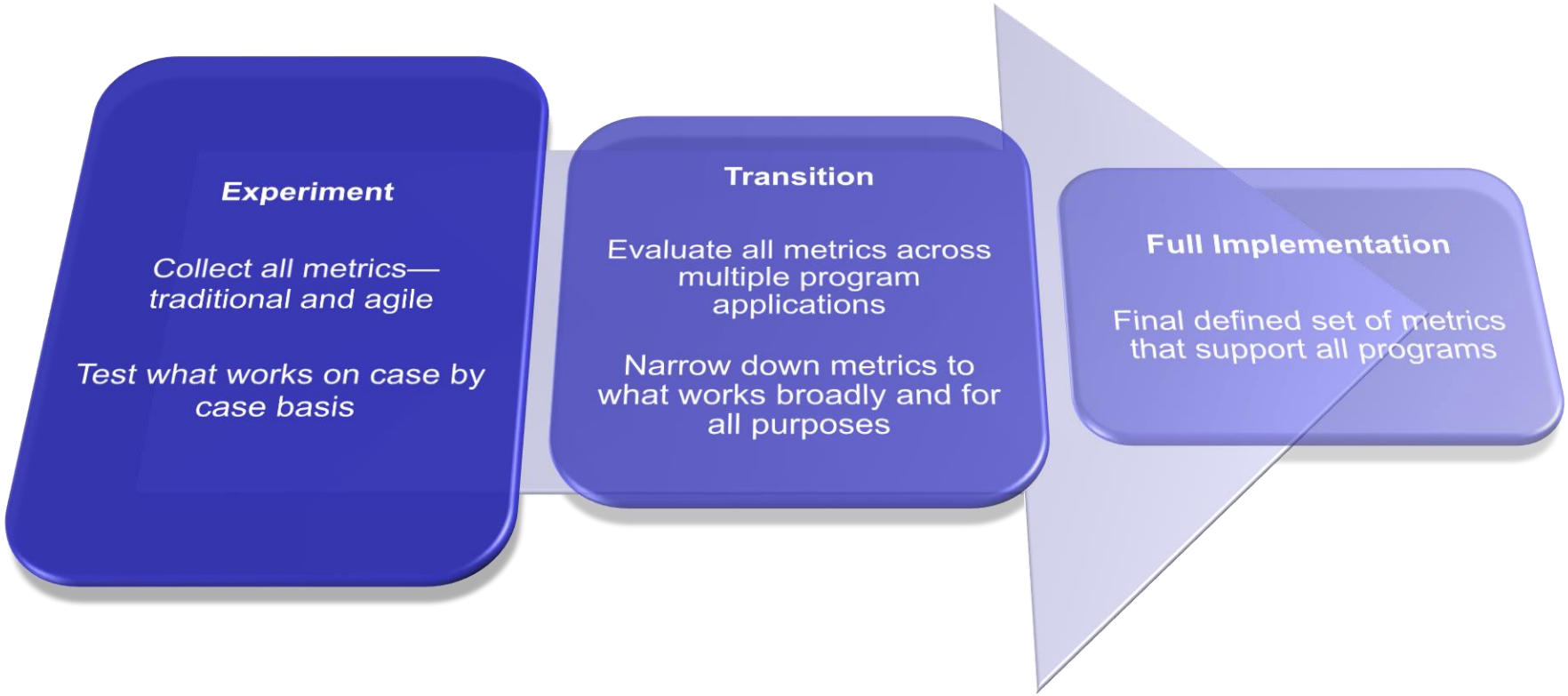
Data Evolution



Both Government and Industry are currently in the Experiment Phase

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Software Development Shift Drives Focus Shift

Estimating Under Traditional Software Development Method

Estimating Under Agile Software Development Method

Cost estimating data and methods very similar to support either approach

Agile Claims

ESLOC isn't a good indicator of effort, it only encourages inefficient code!

Agile is cheaper!

Agile is faster!

My agile metrics shouldn't matter because they only apply to my team!

Agile development methods result in higher quality software

Only metric that matters: VALUE!

Broad data collection enables validation or denial of agile claims for both performance measurement and budget transparency

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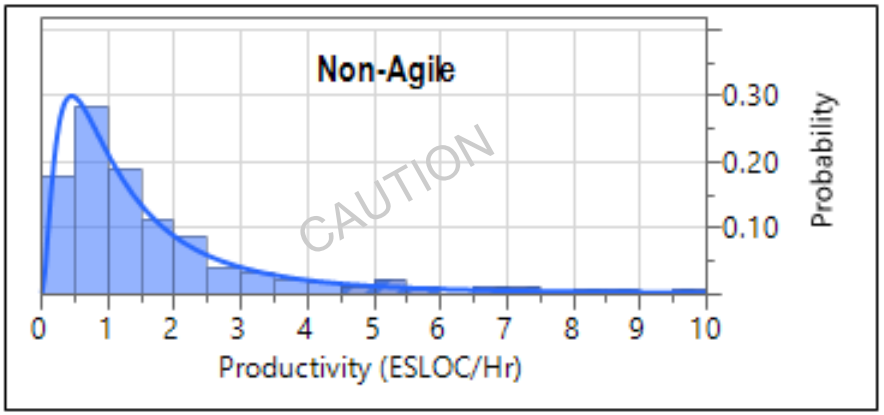
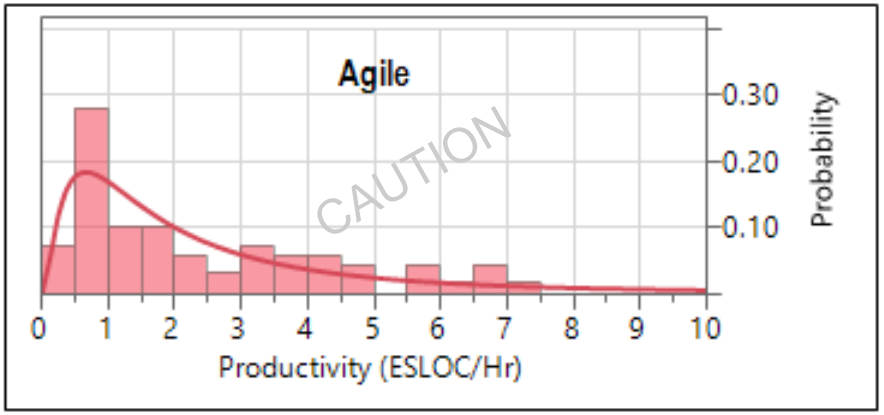
Is Agile Cheaper (Record Level)?

- There are 596 Final, Good* SRDR records in the APR 2019 SRDR database
- Of those records, 72 use some form of "Agile" or "Iterative" in describing Process or Development Method
- Alt. Hypothesis: "If Agile/Iterative development is used in a program, Productivity will increase"





- Hypothesis testing indicates that Agile / Iterative records are more productive than normal
- Small sample size and questions about reported Agile methodologies emphasizes the need for more data collection and analysis via SRDR

CAUTION: Further analysis and data points needed before application. Driving factors and attributes beyond agile have not been evaluated.

** - Either "Good" or "Good – Allocation" Quality Tag*

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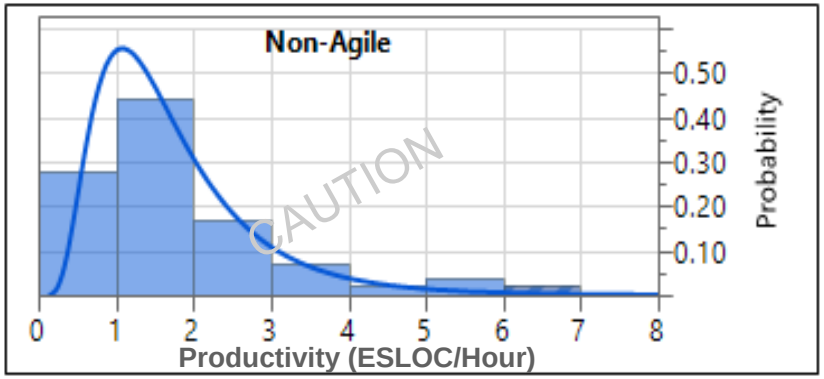
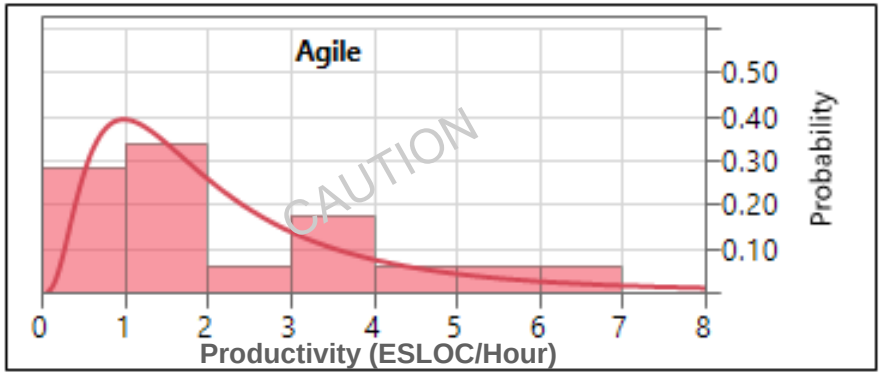
Is Agile Cheaper (Program Level)?

- There are 66 Programs with Final, Good* SRDR records in the APR 2019 SRDR database
- Of those Programs, 18 use some form of "Agile" or "Iterative" in describing Process or Development Method
- Alt. Hypothesis: "If Agile/Iterative development is used in a program, Productivity will increase"





- Hypothesis testing fails to prove that Agile / Iterative at the Program Level is more productive than average
- Small sample size and questions about reported Agile methodologies emphasizes the need for more data collection and analysis via SRDR

CAUTION: Further analysis and data points needed before application. Driving factors and attributes beyond agile have not been evaluated.

** - Either "Good" or "Good – Allocation" Quality Tag*

Is Agile Faster (Record Level)?

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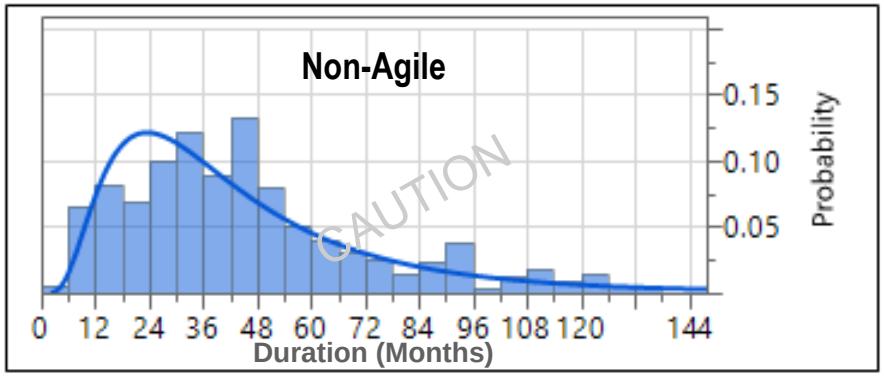
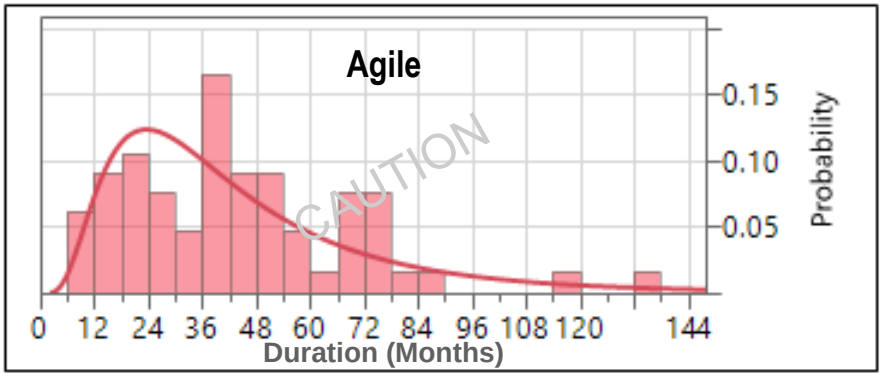
- There are 581 Final, Good* SRDR records in the APR 2019 SRDR database that have Duration populated
- Of those records, 67 use some form of "Agile" or "Iterative" in describing Process or Development Method
- Alt. Hypothesis: "If Agile development is used in a program, it will deliver faster"





- Hypothesis testing fails to prove that Agile programs are faster than non-Agile programs
- Small sample size and questions about reported Agile methodologies emphasizes the need for more data collection and analysis via SRDR

CAUTION: Further analysis and data points needed before application. Driving factors and attributes beyond agile have not been evaluated.

** - Either "Good" or "Good – Allocation" Quality Tag*

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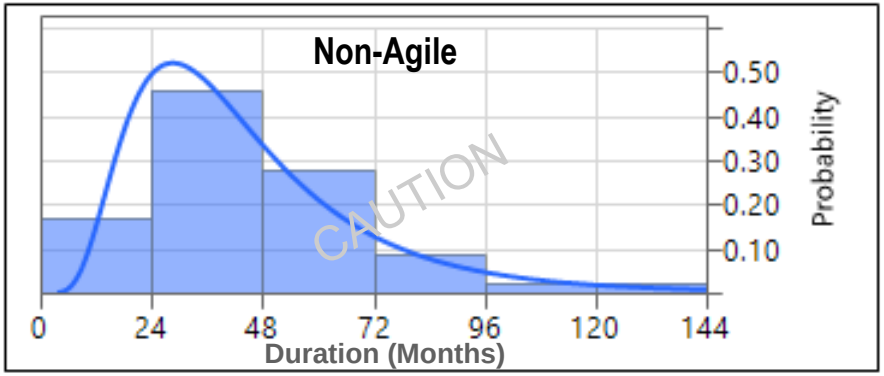
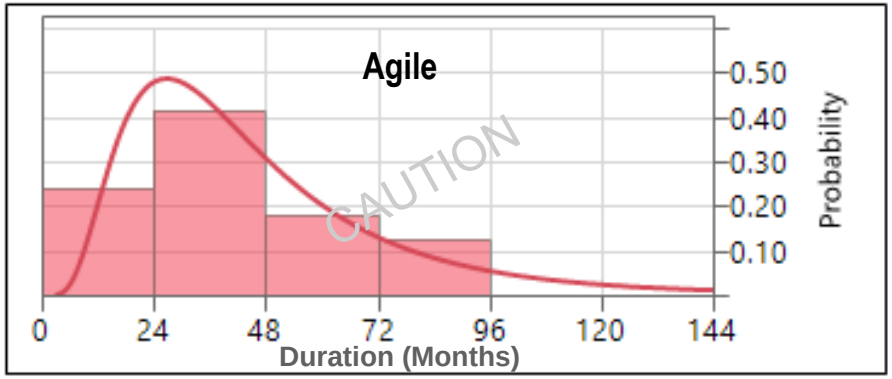
Is Agile Faster (Program Level)?

- There are 62 Programs with Final, Good* SRDR records in the APR 2019 SRDR database with Duration Populated
- Of those Programs, 17 use some form of “Agile” or “Iterative” in describing Process or Development Method
- Alt. Hypothesis: “If Agile development is used in a program, it will deliver faster”





- Hypothesis testing fails to prove that Agile programs are faster than non-Agile programs
- Small sample size and questions about reported Agile methodologies emphasizes the need for more data collection and analysis via SRDR

CAUTION: Further analysis and data points needed before application. Driving factors and attributes beyond agile have not been evaluated.

** - Either “Good” or “Good – Allocation” Quality Tag*

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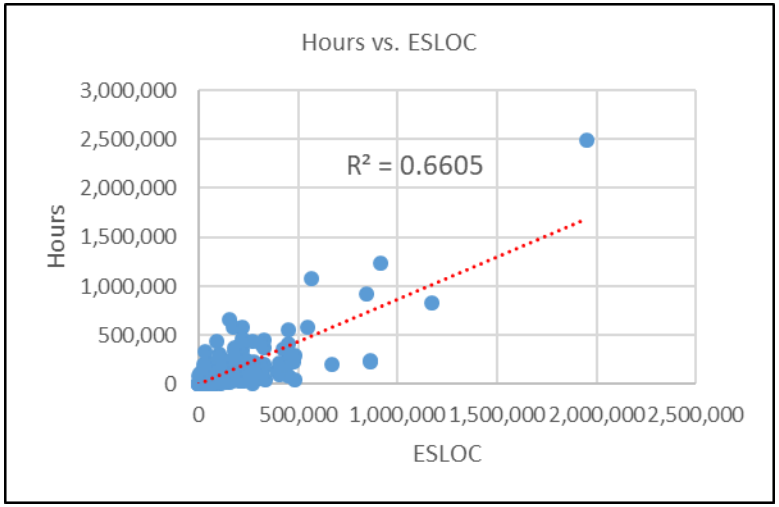
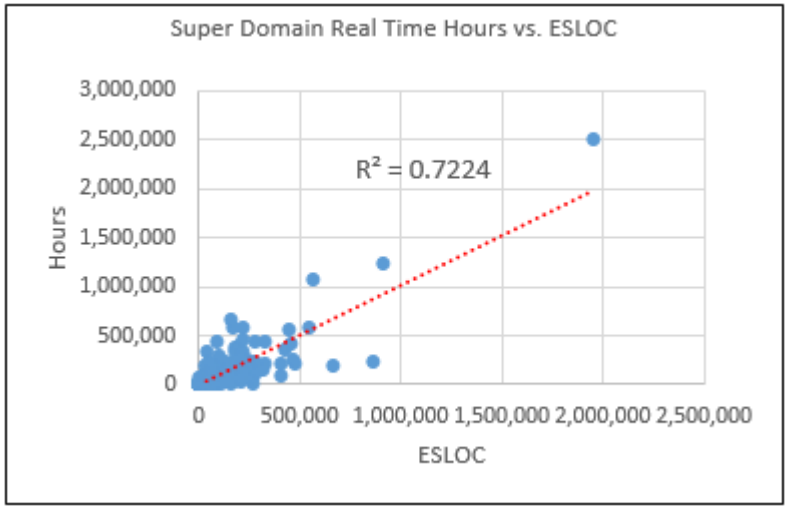
Is ESLOC an Indicator of Effort?

- **A common claim is that ESLOC isn't a valid predictor of effort and encourages contractors to just write voluminous, inefficient code**
  - **Note that ESLOC is not used in every estimate. Function points, RICE, and requirements are also valid size proxies**
- **There are 596 Final, Good* SRDR records in the APR 2019 SRDR database, 429 Real Time records**





ESLOC = New + [50%, 15%] Modified + [7%, 5%] Reused + 32% Auto

** - Either "Good" or "Good – Allocation" Quality Tag*

Using validated SRDR data, ESLOC, while not perfect, is correlated with effort

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SLOC Uses Beyond Effort

- Gauge program scope and complexity by evaluating analogous programs in SRDR database
- Schedule analysis by calculating duration as a function of ESLOC
- Scope growth by assessing SLOC over time
- Estimating error by comparing initial SLOC to final SLOC

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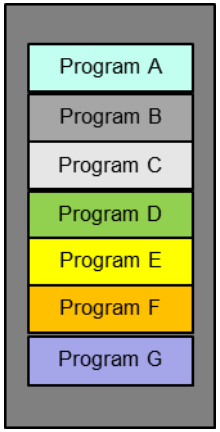
Can Agile Metrics From One Program Be Used On Another?

- **A common claim today is that agile metrics differ by team and can't be used for cross program comparison**
- **Stories/Story points are relative measures on a scale specific to that team**
- **Task hierarchy terminology is not consistently defined or applied**



Epic – User Story – Tasks
Epic Link – User Story
Work Package – Epic – User
Epic – User Story – Subtasks
Work Package – Tasks
ECR – SCR – Tasks
Feature – User Story – Tasks

Can an Epic to an Epic across programs or contractors be compared?
Can a User Story to a User Story across programs or contractors be compared?

Additional data and analysis needed to determine usefulness of agile metrics between programs. At this time, traditional metrics must be used.

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Data Needs

Common Question	Data Needed
Are there cost savings with an agile approach?	Cost/effort actuals from a traditional program and cost/effort actuals from an agile program normalized to same scope.
Can the capability get to the warfighter sooner?	Schedule/effort actuals from a traditional program and Schedule/effort actuals from an agile program normalized to same scope.
What size team is needed (total software factory or by product)?	Quantitative requirements definition and effort actuals from analogous program normalized to same requirements scope.
What happens if funding is cut?	Productivity metrics to determine output capacity within given team size.

Traditional and historical programs not measured in agile terms; must have traditional data from agile program for comparisons. Agile programs must tie some measure of output to effort.

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Why Cost Matters

- While capability provided to the warfighter matters, a value assessment must consider the utility provided for the cost expended
  - Attributes considered: cost, schedule, quality, product, and performance
- Value assessments drive:
  - Budget Decisions to ensure resources are in the right place
    - Defense of funding levels
    - Changes to funding levels and POM/PB Inputs
    - Adjustments to SW factory sizing
  - Management of ongoing efforts
    - Evaluation of contractor performance and completion dates
    - Strengthens impact statements and response to inquiries

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Leveraging the SRDR

- **SRDR IS**
  - **A technical report that supports estimating**
  - **A form that captures program initial estimates and actuals to include agile metrics**
- **SRDR is NOT**
  - **A management tool with metrics that dictate how a program should be managed**
  - **A surrogate for EVM**
- **Both agile metrics and traditional SW metrics need to be collected, as conveyed per latest SRDR requirements**
  - **Industry can provide traditional output metrics (e.g., SLOC, RICE-FW) without being required to manage using those metrics**
  - **Traditional metrics currently found to be most useful to estimate programs in the early acquisition phase**
  - **Agile and new emerging metrics need to be collected and explored**
  - **Enables future comparative analysis to determine which agile and/or traditional metrics are better predictors of cost**

Through data collection and application, the SRDR will continue to evolve as the cost community better understands which metrics provide the most value to cost estimating.

BACK UP

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What is a CSDR?

CCDR **Contractor Cost Data Reports**

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SRDR **Software Resource Data Reports**

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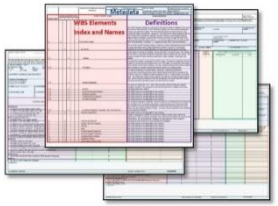
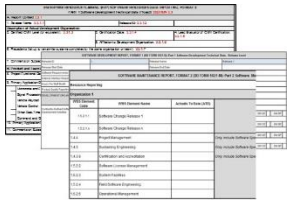
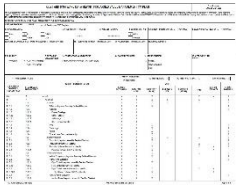
CSDR **Cost and Software Data Reports**







Available to all DoD Government analysts via CADE

CSDRs contain:
- Dollars
- Hours
- Quantity
- Price and Fee

SRDRs contain:
- Software
- Technical
- Programmatic data

Broken out by:
- Work Breakdown Structure (WBS)
- Recurring and Nonrecurring
- To Date and At Completion
- Functional Categories

Helps us project future program & contract costs

Basis for life-cycle cost estimates used in programming & acquisition decisions, trade-off analysis, AoAs, program reviews, source selection govt estimates, negotiations, etc.

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CSDR and IPMR (CPR) Comparison

Attributes	CSDR	IPMR (EVM CPR)
Applicability /Purpose	Analysis & estimating of future efforts (future programs, or same program)	Analysis and management of current contract
Data Attributes	Actual Cost focused, EAC/FACs provided. Recurring and nonrecurring cost by WBS and by function. Includes Software Resource Data and WBS dictionary	Actual & planned cost by WBS by month w/ cumulative and estimates at complete (EACs); staffing forecasts, & explanation of variance
Contract Type	**All contract types**	All but Firm Fixed Price
Reporting Frequency	Final contract (95% complete) & optionally initial, annually or specified events	Monthly
Contractor Type	Prime and Sub Contractors	Prime contractor only
Approving Organization	OSD CAPE (delegated to SCAs for non-ACAT Is)	Program Office (PO)
Data Validation	Contractor, CAPE, SCAs, POs No EVMS audit requirement	DCMA validates system. Individual PO's check data

* Although the reporting entity may elect to report the Forecast at Completion (FAC) for a CSDR from its Electronic Industries Alliance (EIA) 748 Compliant Earned Value Management System (EVMS), there is no requirement that the FAC originate from the entity's Estimate At Completion (EAC) or any other derivative within EVMS.

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SRDR Development Data Fields

- Release Level Technical Data
  - To include descriptive data, requirements and interface counts
- CSCI Level Technical Data
  - To include descriptive data and product sizing (requirements, interfaces, SLOC, non-SLOC such as function points, RICE-FW or other), and agile specific measures (release and sprint cadence, release map, planned and achieved development)
- Effort Data
  - Monthly Hours and Dollars by release/CSCI/common elements

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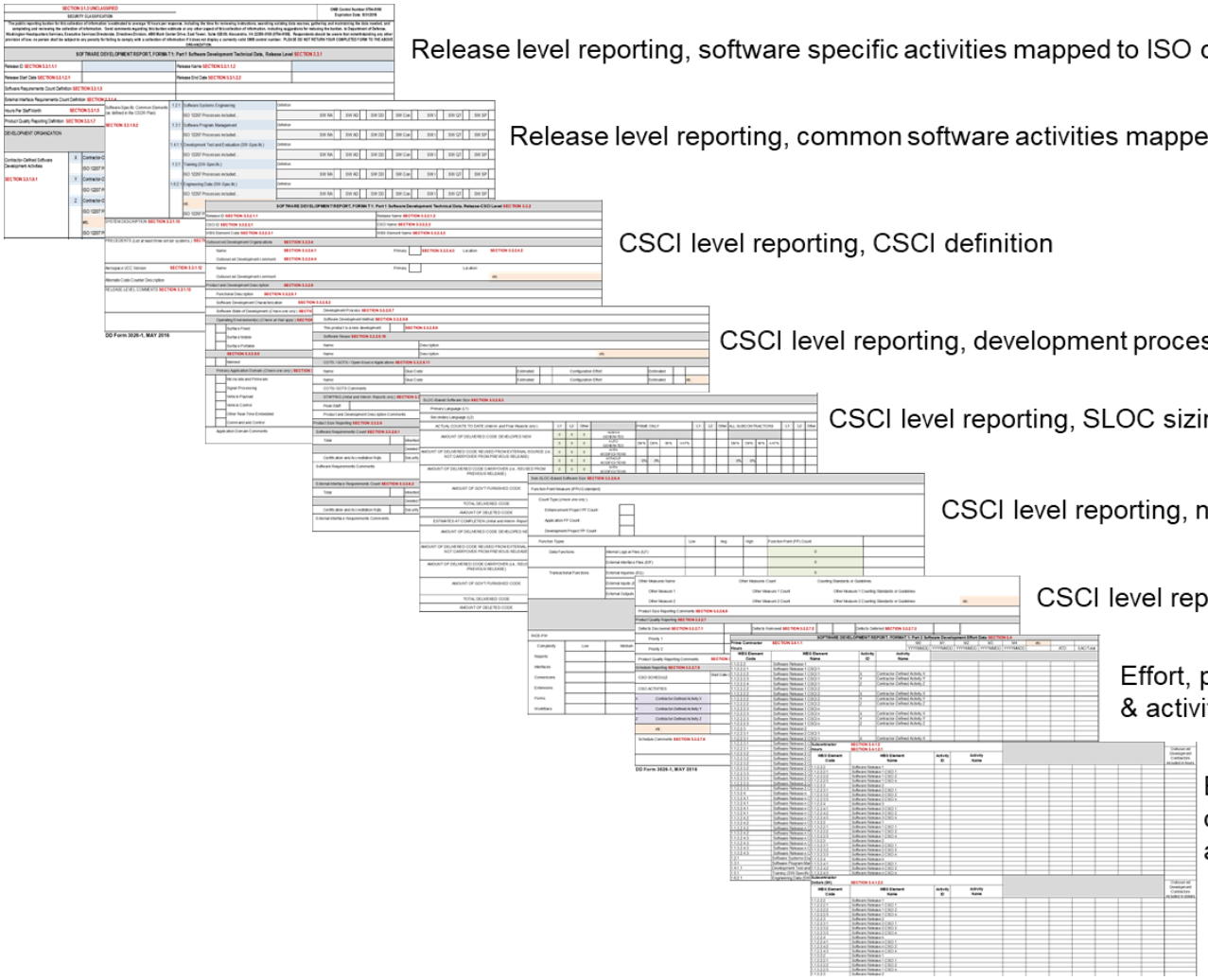
Data collected in the SRDR



Release level reporting, software specific activities mapped to ISO defined activities

Release level reporting, common software activities mapped to ISO defined activities

CSCI level reporting, CSCI definition

CSCI level reporting, development process and requirements

CSCI level reporting, SLOC sizing

CSCI level reporting, non-SLOC sizing

CSCI level reporting, quality and schedule

Effort, prime hours by month, CSCI, & activity

Effort, subcontractor hours or dollars by month, CSCI, & activity

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Latest Version of SRDR Collects Agile Specific Measures

Agile Measures **SECTION 3.3.2.6.4**

Days per Release

Days per Sprint

Release Map **SECTION 3.3.2.6.4.1**

Epic/ Capability ID	Feature ID	Feature Description

Planned and Achieved Development **SECTION 3.3.2.6.4.2**

Feature ID	Planned Stories	Actual Stories	Planned Story Points	Actual Story Points	Planned Hours	Actual Hours

Summary Totals **SECTION 3.3.2.6.4.3**

Item	Planned	Actual
Total Features		
Total Epics/ Capabilities		
Total Stories		
Total Story Points		
Total Feature Hours		
Total Sprints		

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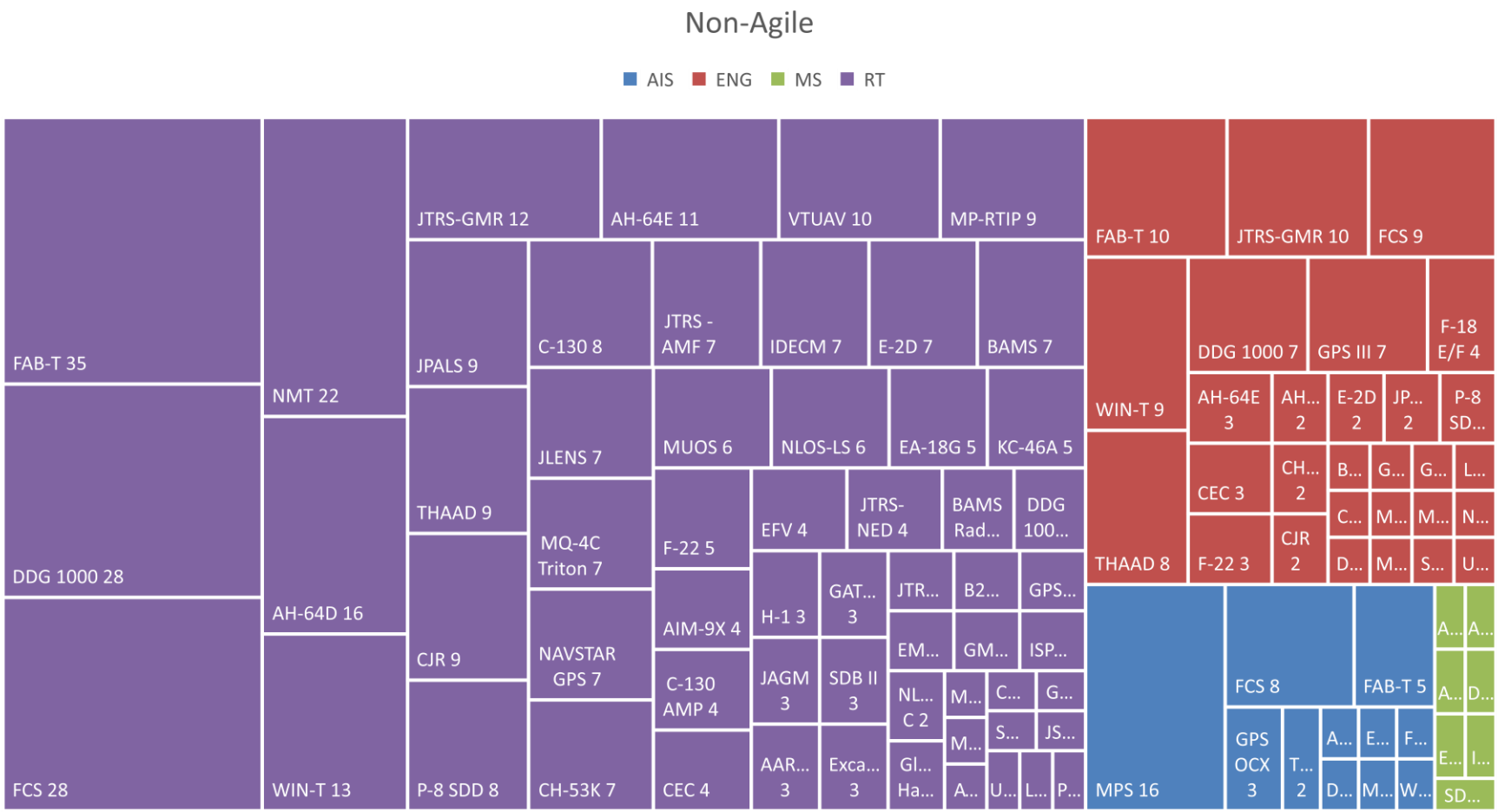
Non Agile SRDR Records (By Program)



Program Name, CSCIs

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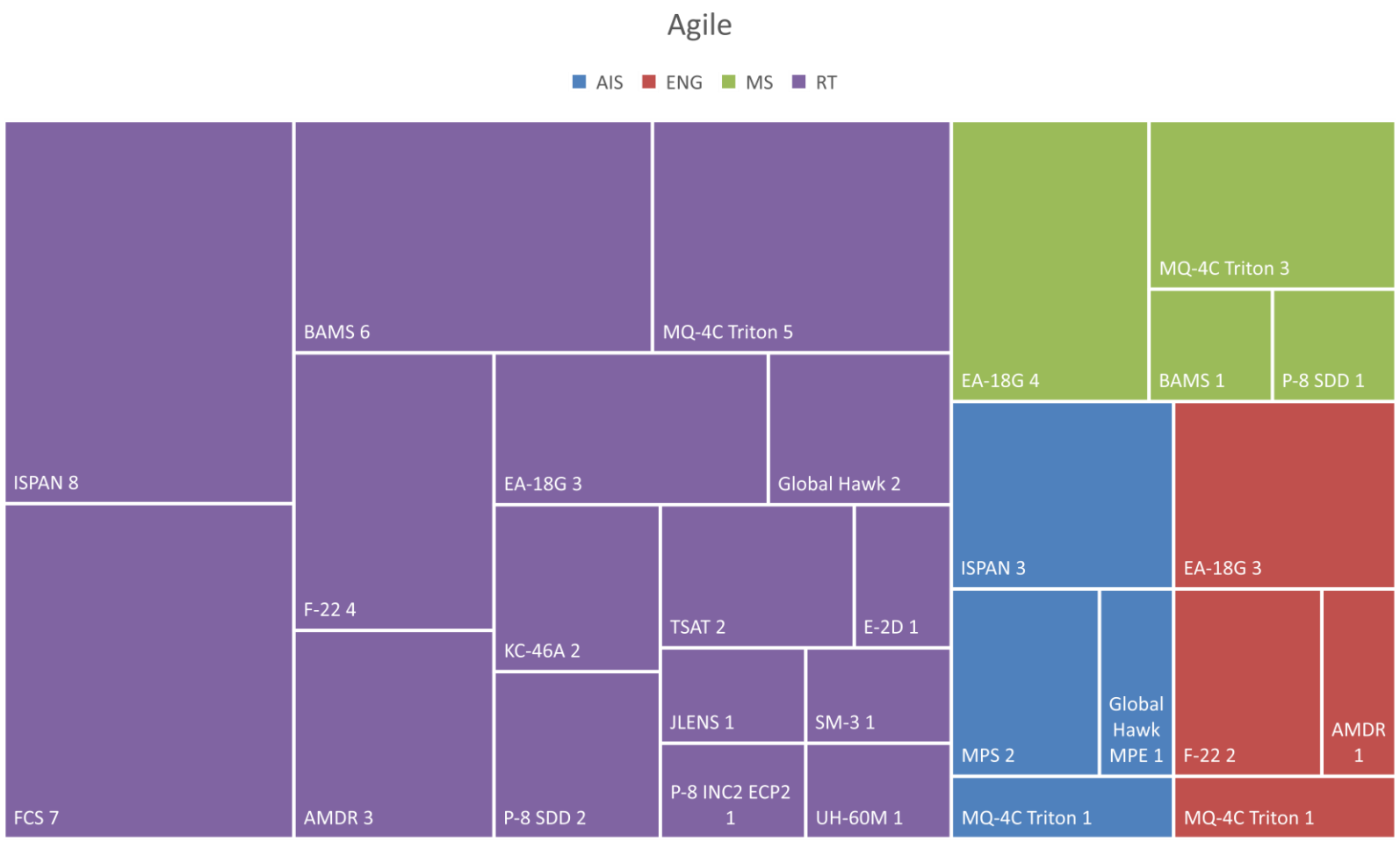
Agile SRDR Records (By Program)



Program Name, CSCIs

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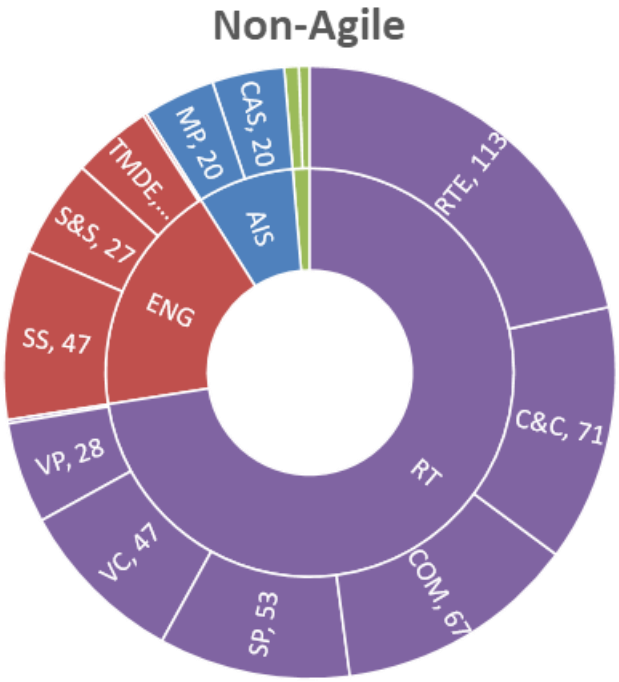
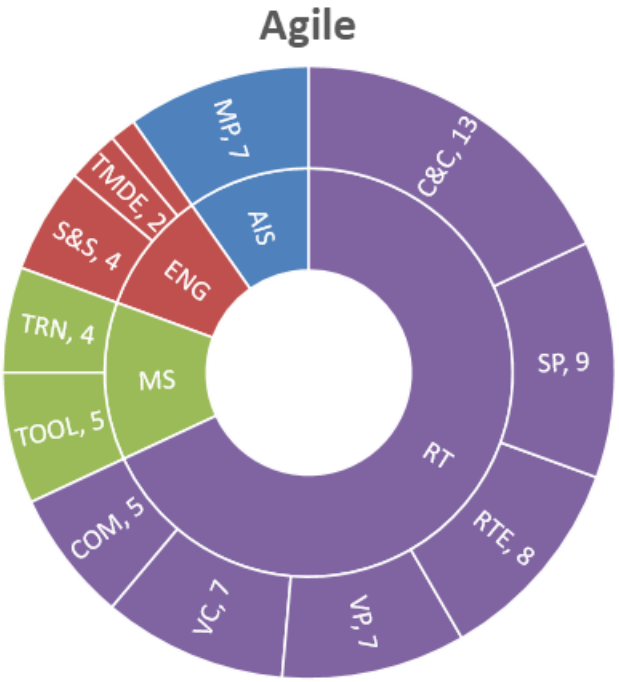
Non-Agile vs. Agile Application Domains





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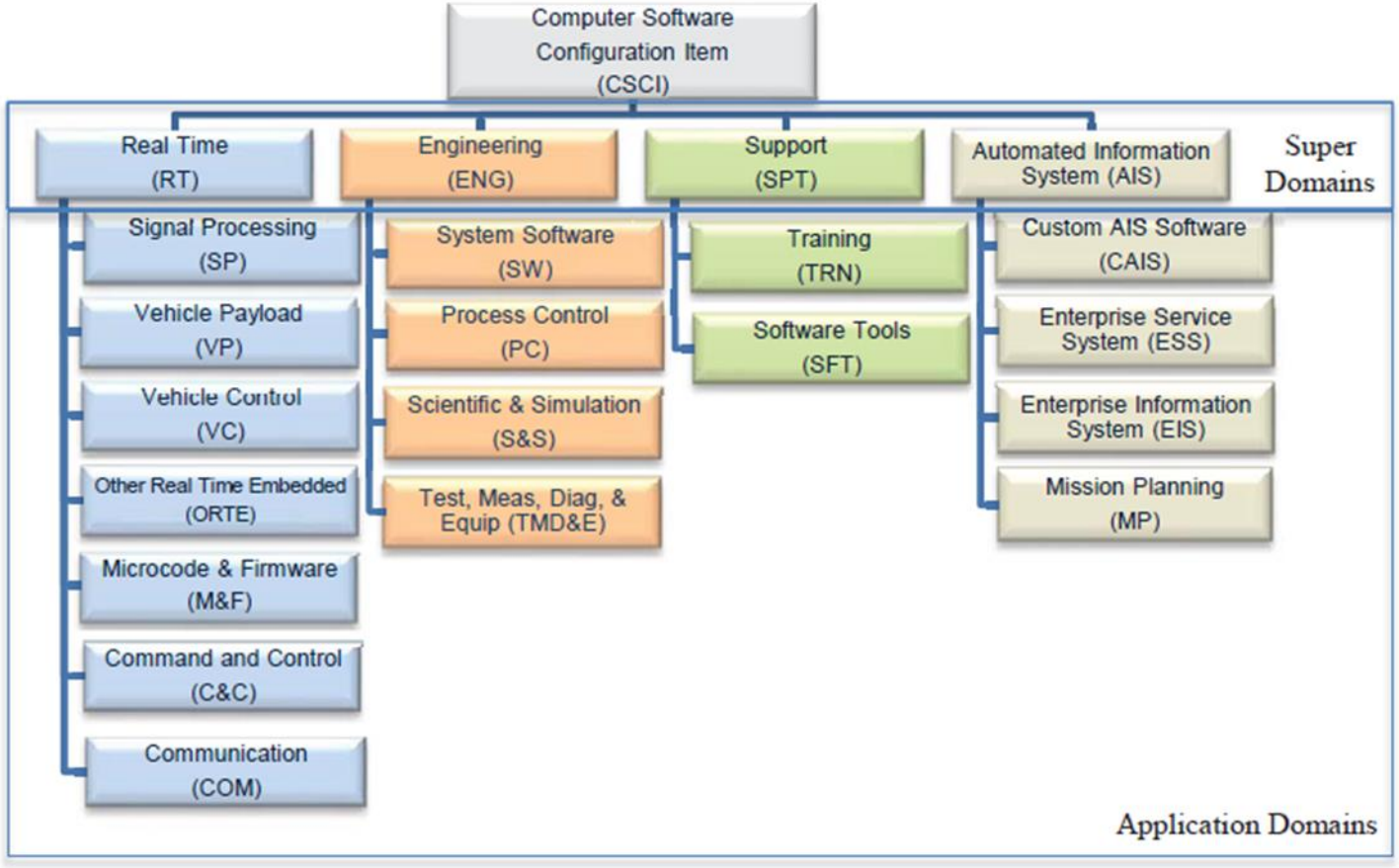
Super Domains and Application Domains



SURF Process Summary & Initial Findings: A Deeper Focus on Software Data Quality

Presented by:

Marc Russo, NCCA

This document was generated as a result of the AFCAA-led, Software Resource Data Report Working Group (SRDRWG). This working group represented a joint effort amongst all DoD service cost agencies. The following guidance describes SRDR data verification and validation best practices as documented by NCCA, NAVAIR 4.2, AFCAA, ODASA-CE, MDA, and many more.

Table of Contents

- Purpose
- SRDR Need Statement
- SURF Purpose
- SURF Team Structure
- SURF Verification & Validation (V&V) Guide
- SRDR V&V Outline
- Key Updates
- SURF Status and Metrics
- SRDR Database
- SRDR Data Quality Review
- Summary

Presentation Purpose

- To familiarize the audience with recent Software Resource Data Report (SRDR) Working Group (WG) efforts to update existing SRDR DID language and implement data quality improvement

- To clarify how these SRDRWG efforts led to the development of a SRDR Unified Review Function (SURF) team

- To highlight:
  - SURF mission
  - Highlight SURF team and Verification and Validation (V&V) guide positive impact on SRDR data quality

SURF Need Statement

Why do these reports need to be reviewed?

- **Reduces inaccurate use of historical software data**
  - Aligns with OSD CAPE initiative(s) to improve data quality
- **Helps correct quality concerns prior to final SRDR acceptance**
- **Allows a central group of software V&V SMEs to tag SRDR data**
- **SRDR submissions are used by all DoD cost agencies when developing or assessing cost estimates**
- **Quality data underpins quality cost and schedule estimates**

BBP Principle 2: Data should drive policy. Outside my door a sign is posted that reads, "In God We Trust; All Others Must Bring Data." The quote is attributed to W. Edwards Deming

- Mr. Frank Kendall, AT&L Magazine Article, January-February 2016

SURF Purpose

How is this team unique and why do we need quality data?

Purpose:

- To supplement the Defense Cost Resource Center (DCARC) quality review for SRDR submissions
- To develop a consistent, service-wide set of quality questions for all DoD cost community members to reference
- To provide a consistent, structured list of questions, focus areas, and possible solutions to cost community members tasked with inspecting SRDR data submissions for completeness, consistency, quality, and usability (e.g. SRDR V&V Guide)

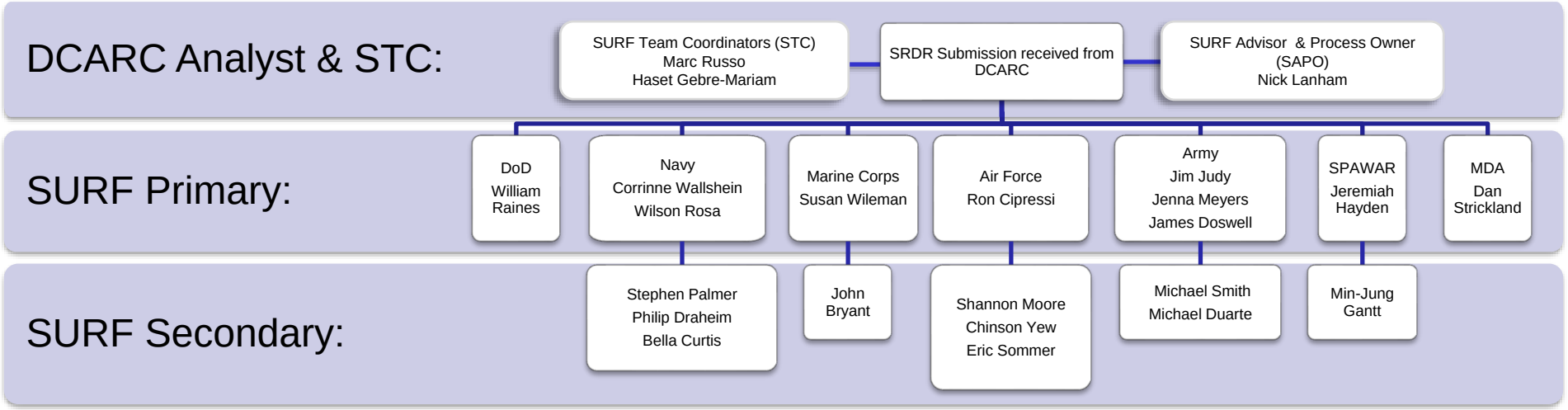
Why?

- SURF represents an effort to establish a consistent guide for any organization assessing the realism, quality, and usability of SRDR data submissions
- Quality data underpins quality cost and schedule estimates

Question: What services helped develop the questions included within the latest SRDR V&V guide?
Answer: All services participating in the SRDR WG provided feedback, comments, and reviews over a year long SRDRWG effort focused on establishing higher quality review efforts coupled with an ongoing SRDR DID update

SURF Team Structure

- Team is comprised of one primary member per service along with support from secondary team members (Government Only)
- As submissions are received, SRDR review efforts will be distributed amongst SURF team members to balance workload
- SURF Team Coordinators (STC): Marc Russo & Haset Gebre-Mariam
- Current SURF structure:

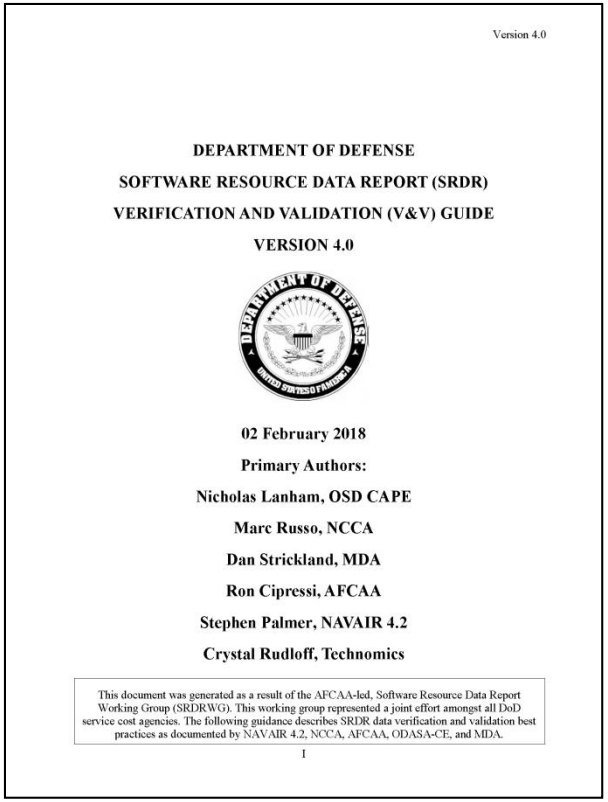


Question: How do members get involved with SURF? Why are there “primary” and “secondary” members?
Answer 1: The SURF team was established by Government SRDRWG members who were recommended/volunteered by each DoD service
Answer 2: Primary members are included on CSDR S-R IPT email notifications for their specific service. Secondary members are contacted during periods of increased review demands, if necessary.

SRDR V&V Guide

Update Completed in Feb 2018

- Update of V&V guide approved for public release on 20 March 2018
  - Incorporates question templates into V&V guide
  - Updates based on new DID, lessons learned, and feedback from DCARC and SURF team members
  - Files can be downloaded using following link: http://cade.osd.mil/(S(5ivcwktd0e3brmm1srcwqs4q))/policy/srdr
- Improves ability to consistently isolate software cost relationships and trends based on quality SRDR data
  - Additional excel question templates map to new DIDs (Format 1, 2, 3 and Legacy)
- Two main purposes:
  - SRDR V&V training guide (V&V questions)
  - Focus areas used to determine SRDR quality tags



Version 4.0

DEPARTMENT OF DEFENSE
SOFTWARE RESOURCE DATA REPORT (SRDR)
VERIFICATION AND VALIDATION (V&V) GUIDE
VERSION 4.0

02 February 2018

Primary Authors:
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Crystal Rudloff, Technomics

This document was generated as a result of the AFCAA-led, Software Resource Data Report Working Group (SRDRWG). This working group represented a joint effort amongst all DoD service cost agencies. The following guidance describes SRDR data verification and validation best practices as documented by NAVAIR 4.2, NCCA, AFCAA, ODASA-CE, and MDA.

1

V&V Outline Update

Original

- SURF Team Charter
- V&V Guide Purpose
- 1.0 Review of an SRDR submitted to DCARC
- 1.1 Reporting Event
- 1.2 Demographic and Common Heading information
- 1.3 Software Characterization and Development Process*
- 1.4 Personnel
- 1.5 Sizing and Language*
- 1.6 Effort
- 1.7 Schedule
- 1.8 Estimate at Completion Values
- 2.0 Quality Tagging
- 3.0 Solutions for Common Findings*
- 4.0 Pairing Data
- 5.0 Possible Automation
- Appendices*

2017/2018 Update

- SURF Team Charter
- V&V Guide Purpose
- Summary of Changes
- 1.0 Review of an SRDR submitted to DCARC
- 1.1 Legacy SRDR Reports
- 1.2 SRDR Development Reports
- 1.3 SRDR Maintenance Reports
- 1.4 SRDR ERP Reports
- 1.5 Additional Review Guidelines*
- 2.0 Quality Tagging
- 3.0 Solutions for Common Findings*
- 4.0 Pairing Data
- 5.0 Possible Automation
- 6.0 Process Improvement Initiatives*
- Appendices*

* Parent elements for children elements not displayed here

Key Updates
V&V Guide

- Guide rewritten to discuss use of question templates

- Provides additional guidance on the importance of using comments in defining the issue for DCARC

- Process Improvement/Initiative Section added
  - Providing additional comments and reach back for DCARC
  - Use of CADE for collecting V&V checklist data
  - Establishing process review meetings between DCARC and SURF analyst

- Updates to Quality Tagging Appendix
  - Updated definitions
  - Added new quality tags (Good-Alteration, Good- Roll Up, and Allocation)

Key Updates
Question Templates

- Additional SURF Analyst Inputs
  - Supports DCARC in determining key issues
  - Supports NAVAIR 4.2 team in inputting data into SRDR database with inputs for OE, AD, and SD

	SURF Analyst Inputs and Summary of Review
SURF Analyst Recommendation	
Operational Environment	
Application Domain	
Super Domain	
SURF Analyst Comments	

- Additional Question Templates
  - Format 1 DD Form 3026-1 (Development)
  - Format 2 DD Form 3026-2 (Maintenance)
  - Format 3 DD Form 3026-3 (ERP)

- Improved Questions
  - Questions updated so “Yes” is a positive response and “No” is a negative response
  - Removed questions that had no direct reference in new DID

- Process Improvement Section
  -

2017 Metrics

V&V Questions Most Frequently With "Yes" Response

All Reviews (2017)

Question ID	Questions from V&V Guide Template	Yes	No	N/A
1.2.12	Is the contract number reported?	35	1	0
1.2.7	Has the contractor or organization that performed the work been identified?	34	1	0
1.2.20	Has the report type been identified (for example: Initial, Interim, or Final)?	34	1	0
1.2.1	Has the program name been identified?	33	3	0
1.2.21	Is there a single submission Point of Contact (POC) and supporting contact information included within the report?	33	1	0
1.1.2	Does the report reference the CSDR Plan?	32	3	0
1.2.3	Is the Prime Mission Product (PMP) name been clearly identified (for example: most current official military designation?	31	3	1
1.7.1	Has schedule data been included in the submission?	31	2	0
1.1.6	Is there an easily identifiable event associated with the submission (for example: Contract Award, Build 2 Release, Build 1 Complete, Contract Complete, etc.)?	30	5	0
1.2.9	Has the specific site or subdivision for the contractor been identified?	30	6	0
1.3.3.2	Has the contractor indicated whether the software is an upgrade or new development? If Xt, why Xt?	30	2	1
1.7.3	Has schedule data been reported in number of months from contract start or as calendar dates?	30	2	1
1.2.5	Is the system description been included within the submission?	29	6	0
1.2.10	Has the contractor or submitting organization illustrated whether they were the primary or secondary developer?	29	5	2
1.5.2.1	Was the primary programming language reported?	29	1	2
1.2.8	Has the reporting contractor or organization address and zip code been included?	28	8	0
1.3.1.1	Does the SRDR submission, comments section, or data dictionary include a clear system level functional description and software operational overview?	28	6	0
1.7.2	Has the submitting organization clearly stated if the provided schedule data was reported as estimated, allocated, or actual results?	28	3	2
1.1.3	Has the plan type been identified (for example: prime contract, subcontract, or Xt applicable)?	27	8	0
1.3.3.1	Has the contractor listed a standard process, or is there a unique identifier in the SRDR data dictionary describing what the process is?	27	5	1
1.2.19	Has the contract Period of Performance (PoP) been identified?	26	9	0
1.3.1.4	Does each CSCI or WBS element include a naming convention specific to the intended software function?	26	6	2
1.3.3.5	Has the development method also been identified (for example: Structured Analysis, Object Oriented, Vienna Development, etc.)?	26	3	3
1.4.6	Has the contractor identified the standard hours in an accounting month when determining the peak FTE?	26	6	1
1.6.4	Is effort data broken out by activity?	26	2	2
1.7.4	Is schedule data broken out by SRDR activity?	26	2	4
1.2.4	Has the Defense material item category been provided in accordance with MIL-STD-881C guidance (for example: Aircraft, radar, ship, Unmanned Ariel Vehicle (UAV) system)?	25	9	1
1.5.1.5	Does the data dictionary provide a description of how a requirement is counted (e.g. discrete shall statements, functions derived from shall statements, etc.) and what constitutes a new requirement versus existing?	25	5	1
1.6.3	Is the effort data reported in hours?	25	6	2
1.2.14	Is the software process maturity and quality reporting definition provided (For example: Capability Maturity Model (CMM), Capability Maturity Model Integration (CMMI), or other alternative rating)?	24	10	1

V&V Questions Most Frequently With "No" Response

All Reviews (2017)

Question ID	Questions from V&V Guide Template	Yes	No	N/A
1.2.18	Has the total contract price been identified?	0	33	2
1.5.1.2	Has the submitting organization separated the provided requirements by Security, Safety, and Privacy or Cybersecurity?	4	26	2
1.2.2	Has the Major Defense Acquisition Program (MDAP) or Major Automated Information System (MAIS) designation been listed?	11	21	3
1.5.4.2	Has the priority level for each category of software defects been provided?	0	19	14
1.5.4.1	Has the submitting organization provided a breakout of the number of software defects Discovered, Removed, and Deferred?	3	18	12
1.6.7	Is there an explanation of missing activities included within the supporting SRDR data dictionary?	6	17	10
1.3.1.2	Does the SRDR submission include a detailed functional description for each CSCI? (Xte: it is Xt uncommon for submissions to include the same, abbreviated functional description for every CSCI rather than a detailed functional description specific to each CSCI included within the SRDR submission. If this scenario occurs, we recommend contacting the submitting organization for additional detail).	18	16	0
1.3.1.3	If a detailed CSCI-level functional description is Xt included within the SRDR submission, is it included within the supporting SRDR data dictionary or comment section?	9	15	10
1.3.2.3	Has the state of development been identified (For example: Prototype, Production Ready, or a mix of the two)?	17	15	1
1.3.2.1	Does the SRDR data dictionary include a clear system-level functional description and software operational overview?	17	14	2
1.5.1.1	Does the submission clearly illustrate the number of Inherited, Added, Modified, Deleted, and Deferred requirements for both internal and external categories?	14	14	4
1.5.2.16	If COTS or GOTS items have been included within the submission, has the submitting organization provided the SLOC total required to integrate the identified COTS/GOTS product (i.e. Glue code)?	2	14	16
1.6.8	Was the effort data for each activity based on a proration scheme, i.e. percentage based? The analyst will typically have to calculate and confirm if the same percentages show up across multiple CSCIs or WBS elements.	8	14	11
1.8.1	EACH: Has a description been provided that describes which ISO 12207:2008 elements have been included within the provided total?	1	14	18
1.2.16	Is the specific U.S Military service branch or customer identified (For example: Navy, Air Force, Army, prime contractor, etc.)?	22	13	0
1.5.4.3	If the report is an interim or final submission, has the number of Discovered, Removed, and Deferred defects changed from the previous submission? If significant changes have occurred, does the supporting comments section and/or data dictionary provide details regarding what drove the significant change in product quality metrics?	2	12	19
1.6.6	Were common WBS elements/labor categories such as System Engineering (SE), Program Management (PM), Configuration Management (CM), or Quality Management (QM) been broken out separately?	20	12	1
1.2.6	Have the program phase and/or milestone been included within the report (for example: Pre-A, A, B, C-LRIP, C-FRP, O&S, etc.)?	22	11	2
1.2.15	Is the Process Maturity rating reported with an associated date, and has it changed from a prior submission?	19	11	5
1.3.2.2	If a system-level functional description has been included, does it include details regarding manned or unmanned system configurations?	12	11	10
1.5.1.6	If external interface requirements are identified, does the dictionary describe what these are and how they were determined?	15	11	6
1.5.2.4	Did the submitter us the Aerospace-approved version of the University of Southern California (USC) Center for Systems and Software Engineering (CSSE) Unified Code Count (UCC) tool to count the provided SLOC totals? If Xt, was the name of the code counting tool used by the submitting organization included within the supporting comments section and/or data dictionary?	12	11	7
1.6.15	Do all CSCI or WBS elements include effort values that are inclusive of common "overhead" or "indirect" labor categories within the provided effort total? For example, are there separate CSCI or WBS elements that reflect "effort-only" data within a separately reported CSCI or WBS element? (i.e. has quality assurance or configuration management effort been reported as separate WBS/CSCI elements)? If so, can that effort be reasonably allocated back to the primary WBS/CSCI?	11	11	10
1.2.14	Is the software process maturity and quality reporting definition provided (For example: Capability Maturity Model (CMM), Capability Maturity Model Integration (CMMI), or other alternative rating)?	24	10	1

V&V Questions Most Frequently With "N/A" Response

All Reviews (2017)

Question ID	Questions from V&V Guide Template	Yes	No	N/A
1.5.3.2	If function points have been provided has the submitting organization clearly illustrated the function point count type (For example: Enhancement Project, Application, or Development Project)?	2	1	30
1.5.3.5	If the submitting organization has provided sizing metrics using the Reports, Interfaces, Conversions, Extensions, Forms, and Workflows (RICE-FW) convention, has the complexity of each RICE-FW category been provided?	3	1	29
1.6.17	If subcontractor hours have Xt been provided, did the reporting organization provide subcontractor dollars?	0	4	29
1.7.7	If the submission is a final report or includes a prior build, does the provided schedule data align with the prior report? If Xt, is there an explanation for significant changes in the schedule?	4	1	28
1.5.2.11	Were SLOC counts reported in aXther data submission and are they traceable from submission to submission or build to build, if applicable?	2	2	27
1.5.2.17	If COTS or GOTS integration or glue code has been included within the submission, does the total seem realistic when compared to the total SLOC included in the CSCI or WBS element (For example: COTS integration code equals 500 KSLOC and the total SLOC for the specific CSCI or WBS element equals 150 KSLOC)? Xte: this scenario sometime occurs when the submitting organization counts the total SLOC of the specified COTS or GOTS product vice the integration or glue code required to integrate the product.	1	4	27
1.5.3.3	Has the submitting organization provided the number of Data Functions and Transactional Functions (For example: Internal Logic Files, External Interface File, External Inquiries, External Inputs, and External Outputs)?	3	3	27
1.1.10	If this is a Final Report, was there an Initial Report it can be traced to?	4	5	26
1.2.11	If effort was outsourced, has the outsourced organization been provided?	3	6	26
1.5.2.9	For a Final report does the size look realistic? For example: is all of the code rounded to the nearest 1000 lines, or does the dictionary indicate that they had difficulty counting code that may have come from a subcontractor?	6	0	26
1.5.2.14	When subcontractor code is present, is it segregated from the prime contractor effort, and does it meet the same criteria for quality as the prime's code count?	6	0	26
1.4.2	If there was a prior submission, has the skill mix changed dramatically and, if so, is there an explanation why? Conversely, did it remain unchanged? If so, why?	3	6	24
1.5.3.4	Has the submitting organization included the Value Adjustment Factor?	3	6	24
1.8.2	EACH: Do sub-element EAC values sum to the parent EAC total value?	2	8	23
1.1.8	If a prior submissions exists, is the information that has changed readily identifiable and a reason for the change provided (either in the data dictionary or comments section)?	9	4	22
1.6.13	Has the subcontractor's effort been reported separately? For example, has the subcontractor data been mixed within the prime contractor's values, is the data missing, or has the data been reported separately?	8	3	22
1.1.5	Is there consistency of Xmenclature and WBS numbering from submission to submission?	13	2	20
1.1.7	If there are prior submissions, is this submission an update to a prior submission or a new event? If the submission is an update to an existing submission, does the latest submission clearly describe what report the prior submission is linked to?	9	7	19
1.5.2.8	Do multiple records have the same SLOC sizing data (i.e. size data is repeated for each code type or total size is repeated)? Should they be repeated because they are roll ups of WBS/CSCI elements or has a proration scheme been used to estimate sizing values?	6	7	19
1.5.2.10	Were code adaptation factors reported (percent redesign, recode, reintegration)? Do they appear to be unique for each CSCI, or are they standard rules of thumb?	3	10	19
1.5.4.3	If the report is an interim or final submission, has the number of Discovered, Removed, and Deferred defects changed from the previous submission? If significant changes have occurred, does the supporting comments section and/or data dictionary provide details regarding what drove the significant change in product quality metrics?	2	12	19
1.8.1	EACH: Has a description been provided that describes which ISO 12207:2008 elements have been included within the provided total?	1	14	18

SURF Team Status

2017 Overview

- **SURF team highlights**
  - Group includes ~19 Government team members from across the DoD
  - Has received very positive feed back from DoD cost estimation community, DCARC analyst(s), and even program office communities since inception
  - Completed update of SRDR V&V guide March 2018
  - During 2017 SURF team generated **1,879** V&V comments provided to DCARC
  - In total the SURF team generated **3,251** V&V comments from **128** SRDR submissions

- **DCARC SRDR Submissions**
  - 62 New SRDRs (does not include resubmits)
  - 30 Air Force, 11 Army, 2 DoD, 19 Navy
  - 29 Accepted, 21 Rejected, 12 Under Review/Being Corrected by Contractor

V&V Comments Have Significantly Improved SRDR Data Quality

SRDR Data Quality Review

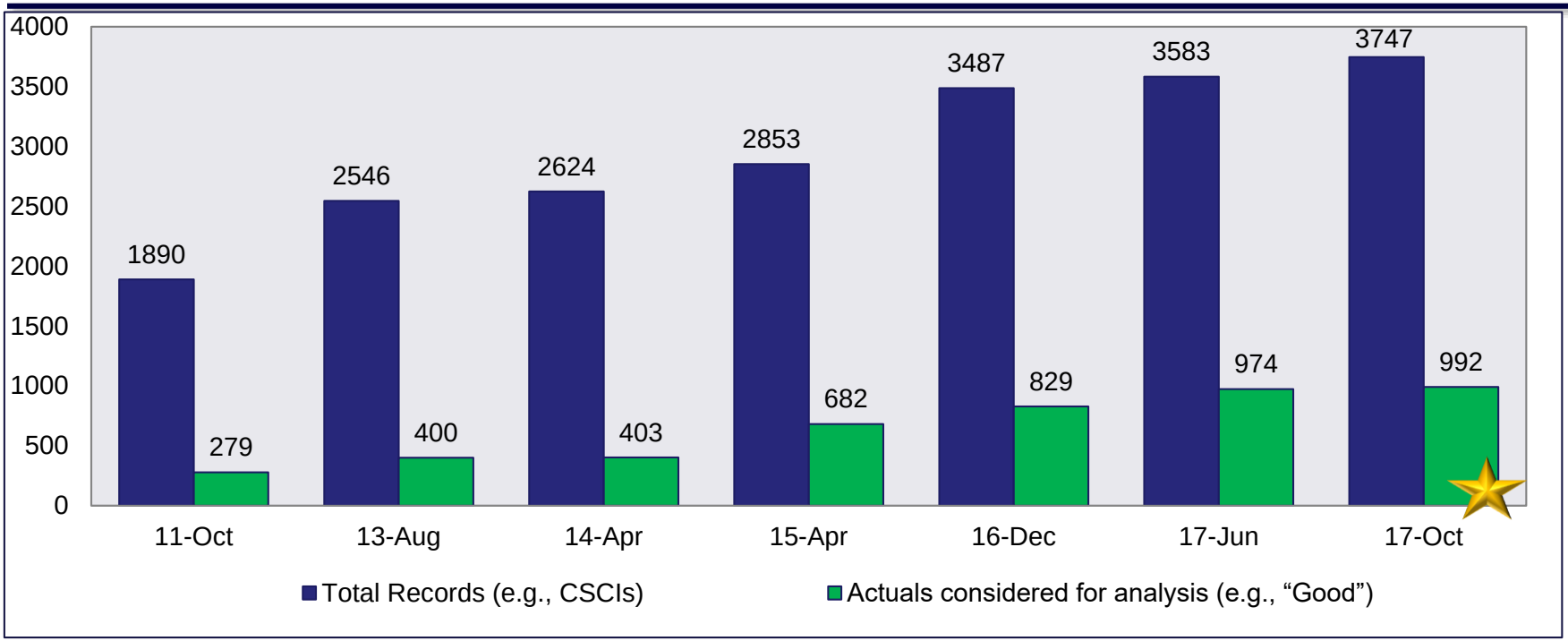
Dataset Posted to OSD CAPE DACIMS Web Portal

Data Segments	Dec-07	Dec-08	Oct-10	Oct -11	Aug-13	Apr-14	Apr-15	Dec-16	Jun-17	Oct-17
CSCI Records	688	964	1473	1890	2546	2624	2853	3487	3583	3747
Completed program or build	88	191	412	545	790	911	1074	1326	1391	1391
Actuals considered for analysis (e.g., "Good")	0	119	206	279	400	403	682	829	974	992
Paired Initial and Final Records	0	0	78	142	212	212	212	240	271	274

- SRDR database is available to Government analysts with access to the CADE portal
  - This dataset is the authoritative source for SRDR data (10+ years of uploads)
- Data is not automatically considered "Good" for analysis
- SURF team may recommend DCARC not accept a submission due several data quality concerns outlined in the V&V guide. Examples include:
  - Roll-up of lower level data (Did not want to double count effect)
  - Significant missing content in hours, productivity, and/or SLOC data missing
  - Interim build actual that is not stand alone
  - Inconsistencies or oddities in the submit
  - Additional reasons discussed in the V&V guide

SRDR Data Quality Review

2011-2017 Trend Analysis



- Prior to SURF process, only **15%** of SRDR data was considered "Good"
- After one+ year of SURF reviews, **~24%** of data has been tagged as "Good"
- Currently, **~26%** of the data had been tagged as "Good"

SURF Team Combined With V&V Guide and DCARC Have Significantly Improved Software Data Quality

SURF Summary

- **SURF is focused on improving data quality and helping support robust Government review process**
- **We would like to thank all of the DoD and Non-DoD individuals who have commented, participated, and provided feedback throughout the past few years**
- **Please feel free to use the contact information below if you would like more information regarding SURF, the SRDR V&V Guide, or checklist**

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BACK-UP

How Was SURF Created?

Cost Leadership Forum (CLF) Approved SRDR Initiatives

(Dec 2014)

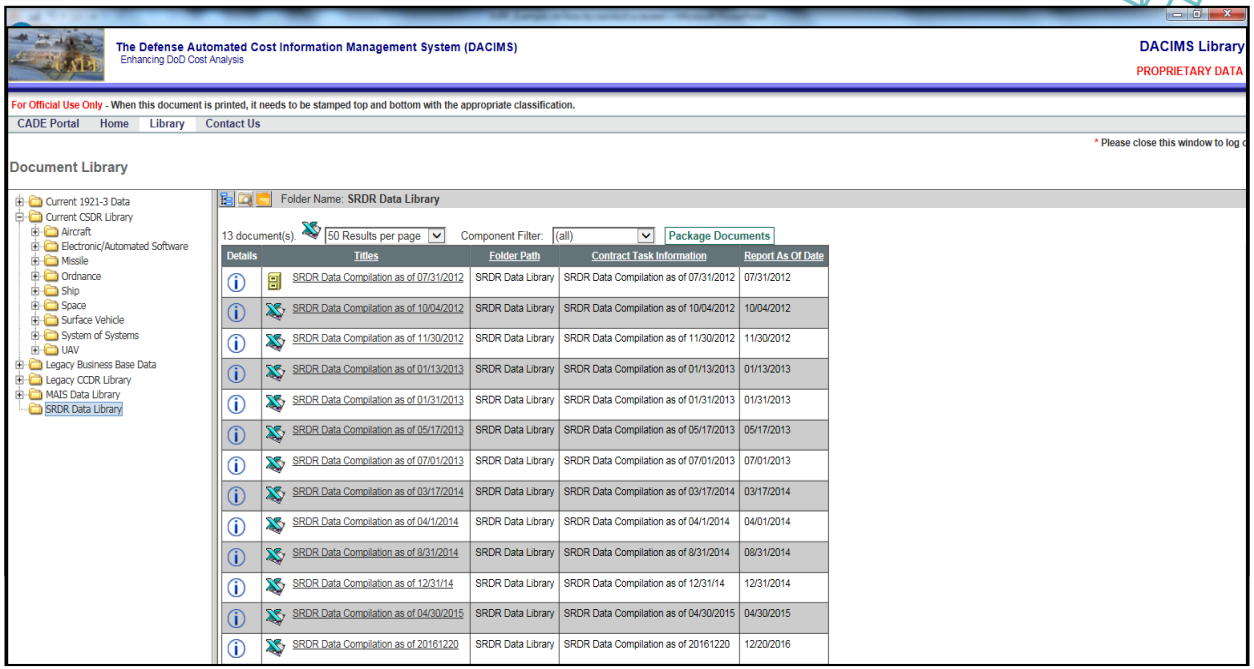
Recommendation	Benefit
1. Revised SRDR Development Data Item Description (DID)	1. Reduces inconsistency, lack of visibility, complexity, and subjectivity in reporting
2. New SRDR Maintenance Data Item Description (DID)	2. Aligned w/ dev. but w/ unique data/metrics available/desired for maintenance phase
3. Joint Validation & Verification (V&V) Guide, Team, and Process	3. Higher quality, less duplication - ONE central vs many distributed; 1 joint team & guide gives early, consistent feedback to ktrs
4. Software Database Initial Design and Implementation Process	4. Avoids duplication, variations - ONE central vs many distributed; Based on surveyed best practices and user expectations

Question: How was the SURF team created and is it linked to the SRDRWG?
Answer: Yes. The SRDR Unified Review Function (SURF) team was organized as part of the larger, SRDRWG initiative during 2015

SRDR Database Location

Where Does SRDR Go After SURF Review?

- Login to CADE
  - http://cade.osd.mil/
- Navigate to DACIMs
- Select “SRDR Data Library” from folder tree on left side of screen
- Filter by “Report As Of Date” to download latest version of dataset
- Database to be updated in CADE by end of June 2017
  - Quarterly updates to database after June release

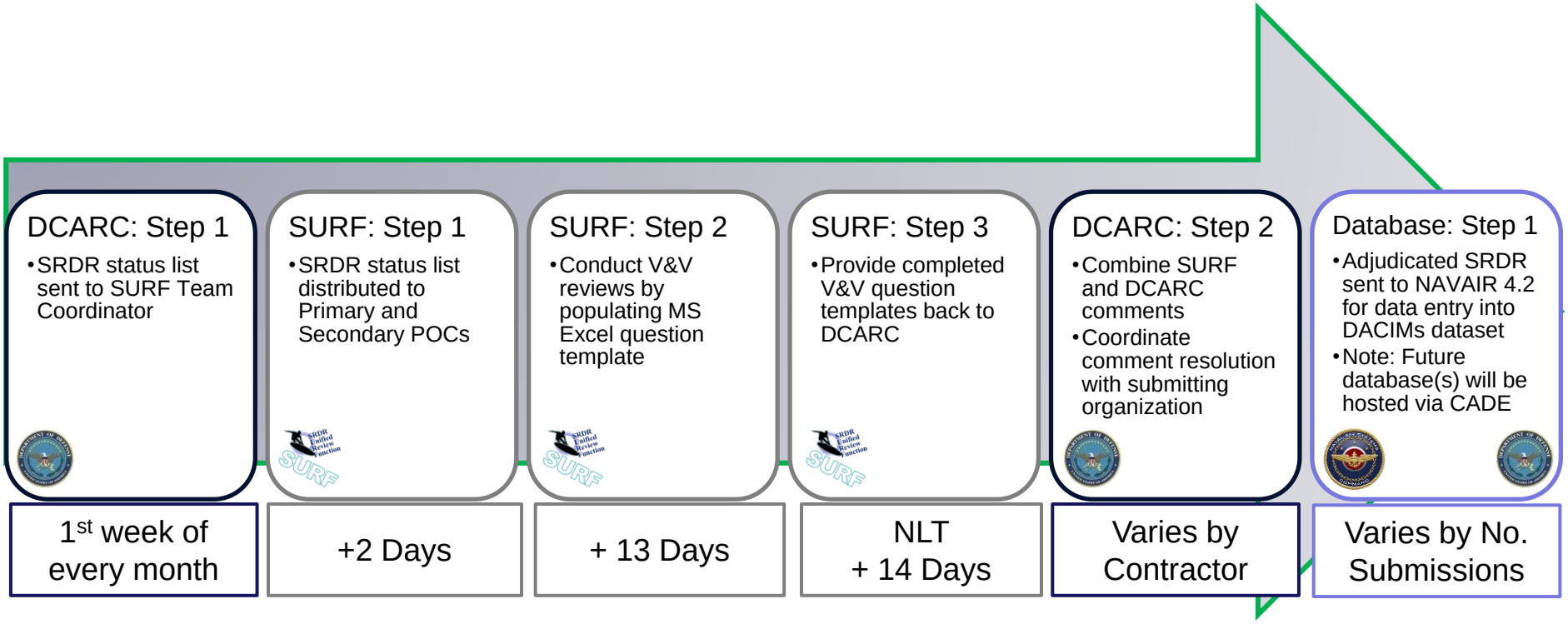


Question: Where does SRDR data go after SURF Review?
Answer: Once SRDR record has been accepted, Data is entered into SRDR dataset posted to CADE>DACIMs web portal

Question: Who enters the data into the dataset?
Answer: Currently members from NAVAIR 4.2 enter data to SRDR dataset (10+ years of experience). Future data entry is planned to be automated using .XML schemas linked to latest DID formats

SURF Team V&V Process

Monthly Recurring SURF and DCARC Communications



Purpose of SURF Process: To provide completed V&V checklists to DCARC within 2 weeks of request

Important Note: CADE is developing relational databases for new DID formats. Over time, data entry will be automated. Until that time, manual data entry continues by NAVAIR 4.2 team for only the development format. Please refer to V&V guide for additional automation details and future data quality initiatives

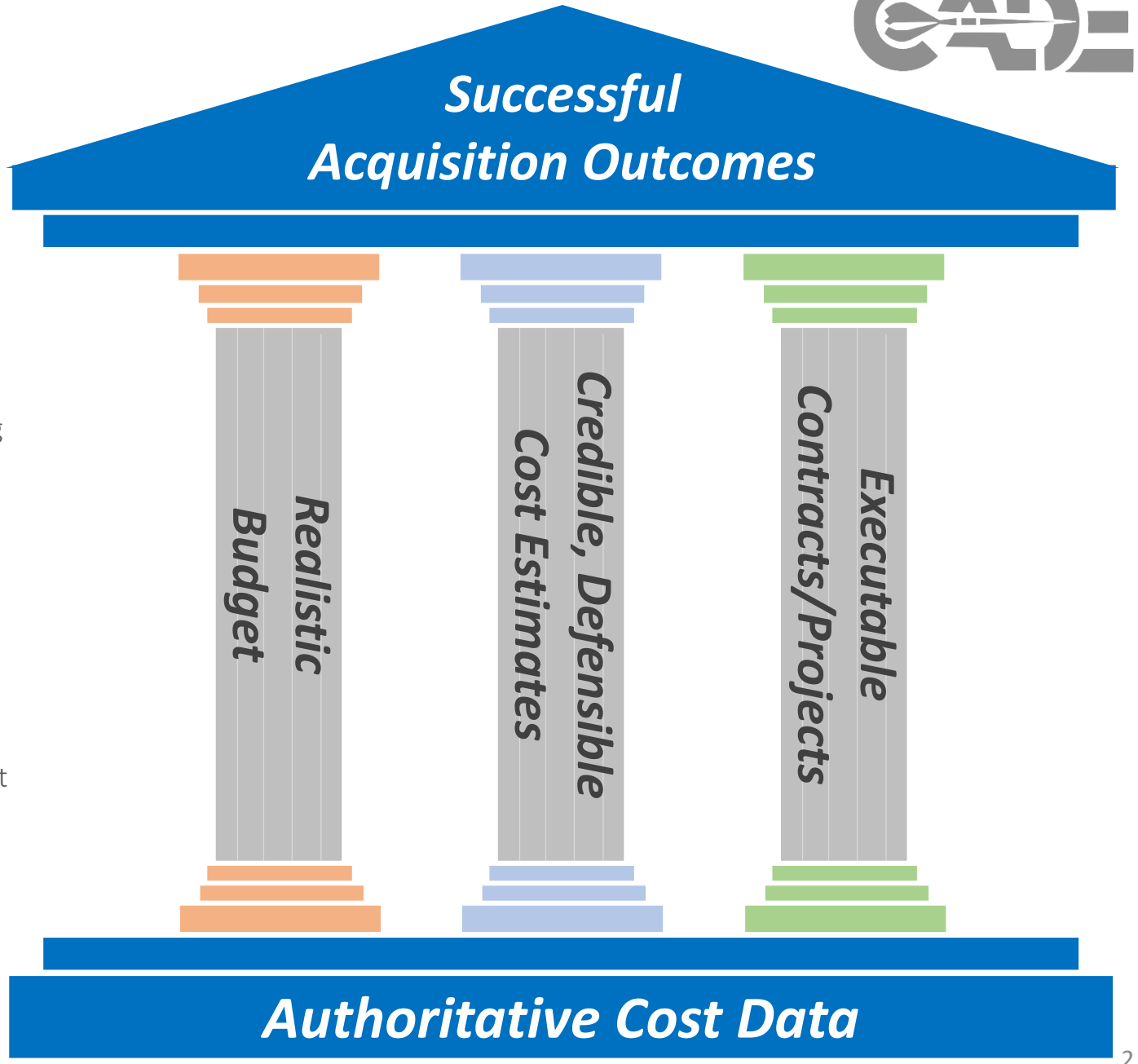
FlexFiles: The Next Generation in Contractor Cost Data Reporting

Ben Berkman (Technomics, Inc.)
Marc Stephenson (Technomics, Inc.)
Fred Janicki (OSD CAPE)

Importance of Cost Data Collection

Authoritative data is the foundation for estimate credibility and defensibility

- Decision-makers require confidence in the analysis and resulting estimates from the cost community
- To establish trust and confidence, the path from *data/facts* to *methods/models* to *estimates* must be clearly defined
- Estimates not grounded in data can be viewed as a guess or, at best, analyst opinion/judgement
- The most authoritative data is the actual cost to the government at completion of a given contract



Timeline of Cost Data Collection

1963
DCPR

Standardized forms replaced previous reports, e.g., AMPR, MMPR, MSEMPR

1965
CIR

Introduced standard cost categories, consistent WBS, subcontractor reporting, reporting on FFP contracts, and cost reporting across all phases

1973
CCDR

Kept elements from CIR but added business base reports and expanded coverage to lower valued contracts

1990s

Improvements in technology allow reports to be submitted in analytical friendly formats, as opposed to handwritten submissions

2013

Development of a centralized repository allows for greater organization of data sources

2017
FlexFile

DID approved after 5+ years of development and collaboration providing analysts the same data at a more granular level

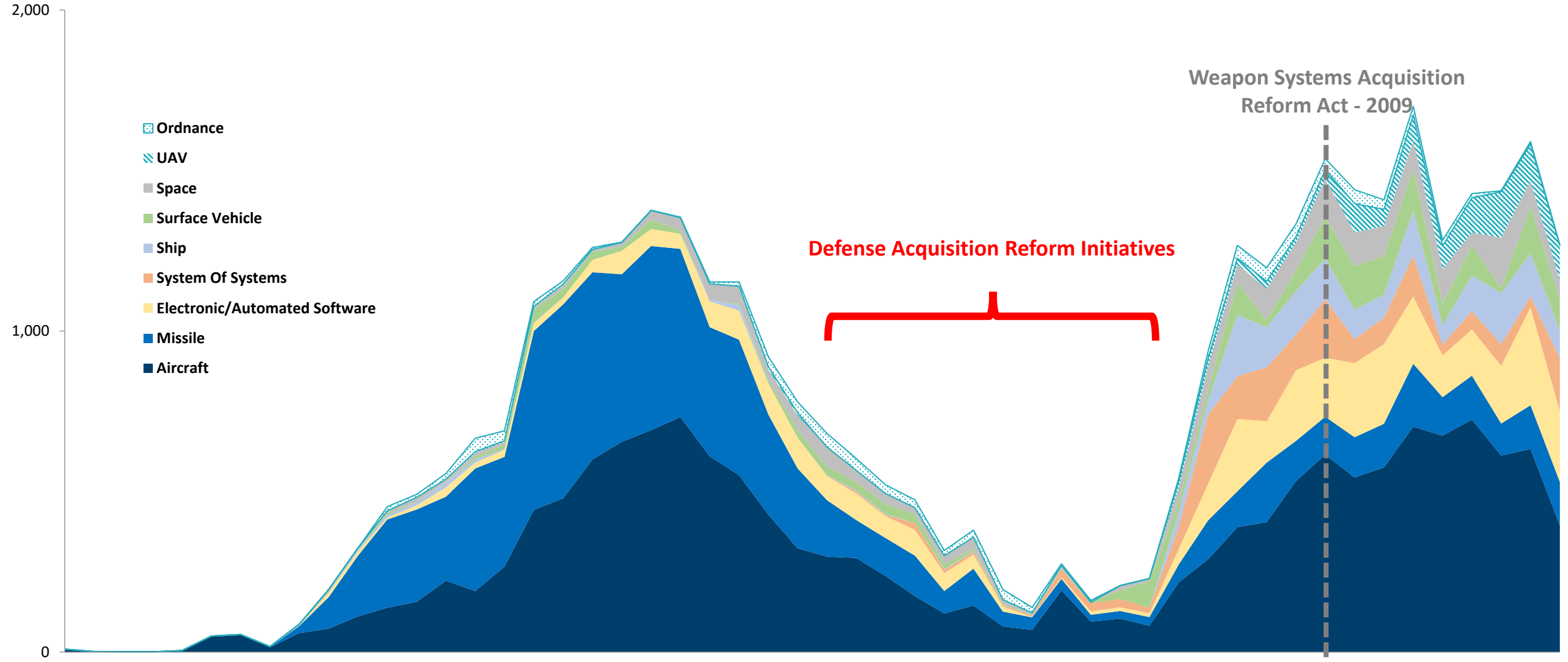
DCPR: Defense Contractors' Planning Report
CIR: Cost Information Report
CCDR: Contractor Cost Data Report

CONTRACT LINE ITEM	REPORTING ELEMENTS		ELEMENT CODE	TO DATE			AT COMPLETION			
				COSTS INCURRED			UNITS	COSTS INCURRED		
				NON-RECURRING	RECURRING	TOTAL		NON-RECURRING	RECURRING	TOTAL
a	b		c	d	e	f	g	h	i	j
15,17	1000	AIR VEHICLE	A10100	—	—	—		—	—	—
19	2000	TRAINING	A10200	—	—	—		—	—	—
21AC	3200	ORGANIZATIONAL/INTERMEDIATE SUPPORT EQUIPMENT	A10411	—	—	—		—	—	—
21AA	3300	DEPOT SUPPORT EQUIPMENT	A10440	—	—	—		—	—	—
	3400	AVIONICS INTERMEDIATE SHOP	A10450	88,358	13,209	101,567		153,359	22,926	176,285
	3400	AVIONICS INTERMEDIATE SHOP (NOT ON CONTRACT)	A10450	—	—	—		79	36	115
21	3000	PECULIAR SUPPORT EQUIPMENT	A10400	88,358	13,209	101,567		153,359	22,926	176,285
21	3000	PECULIAR SUPPORT EQUIPMENT (NOT ON CONTRACT)	A10400	—	—	—		79	36	115
22	5100	ENGINEERING MANAGEMENT/SYSTEM ENGINEERING	A10610	—	—	—		—	—	—
22	5200	SUPPORT PROJECT MANAGEMENT	A10620	—	—	—		—	—	—
22	5400	CONSORTIUM SYSTEM/PROJECT MANAGEMENT	A10630	—	—	—		—	—	—
22	5500	FOREIGN MILITARY SALES	A10660	—	—	—		—	—	—
22	5600	SYSTEM PROJECT MANAGEMENT - AIS	A10640	3,465	23,907	27,372		5,582	38,512	44,094
22	5700	SYSTEM PROJECT MANAGEMENT - DEPOT	A10650	—	—	—		—	—	—
22	5000	SYSTEM/PROJECT MANAGEMENT	A10600	3,465	23,907	27,372		5,582	38,512	44,094
23	6100	TECHNICAL PUBLICATIONS	A10710	—	—	—		—	—	—
23	6200	ENGINEERING DATA	A10720	5,845	21	5,866		6,849	25	6874
23	6300	MANAGEMENT DATA	A10730	—	—	—		—	—	—
23	6400	DATA DEPOSITORY	A10740	28	20	48		57	42	99
23	6500	ECP PREPARATION	A10750	—	—	—		—	14	14
23	6700	PROCUREMENT METHOD CODING	A10770	—	—	—		—	—	—
23	6000	DATA	A10700	5,873	41	5,914		6,906	81	6,987

REMARKS

1.0	Aircraft System – AH-95 Karuk (REMANUFACTURE)	32.9	$19,816.7	$224,682.2	$244,498.9	33.0	$22,194.3	$232,422.4	$254,616.8
1.1	Air Vehicle (AV)	32.9	$5,392.4	$224,542.5	$229,934.9	33.0	$6,261.8	$232,281.3	$238,543.1
1.1.1	Airframe	32.9	$4,058.7	$100,873.6	$104,932.3	33.0	$4,590.4	$103,104.0	$107,694.5
1.1.1.1	Airframe Integration, Assembly, Test and Checkout	32.9	$181.2	$69,990.8	$70,172.0	33.0	$172.5	$70,895.6	$71,068.1
1.1.1.2	Fuselage	32.9	$3,855.6	$25,986.8	$29,842.4	33.0	$3,642.5	$27,130.0	$30,772.5
1.1.1.3	Wing	32.9	$0.0	$686.0	$686.0	33.0	$756.0	$689.9	$1,445.9
1.1.1.4	Empennage	32.9	$0.0	$235.5	$235.5	33.0	$0.0	$243.9	$243.9
1.1.1.5	Nacelle	32.9	$21.8	$3,974.6	$3,996.4	33.0	$19.4	$4,144.7	$4,164.0
1.1.2	Propulsion	32.9	$0.0	$1,901.3	$1,901.3	33.0	$0.0	$2,206.7	$2,206.7
1.1.3	Vehicle Subsystems	32.9	$182.0	$85,768.6	$85,950.6	33.0	$157.6	$88,924.8	$89,082.3
1.1.3.1	Flight Control Subsystem	32.9	$0.0	$2,277.7	$2,277.7	33.0	$0.0	$2,123.4	$2,123.4
1.1.3.2	Hydraulic Subsystem	32.9	$0.0	$4,463.4	$4,463.4	33.0	$0.0	$4,201.2	$4,201.2
1.1.3.3	Electrical Subsystem	32.9	$19.8	$23,162.7	$23,182.5	33.0	$19.3	$27,136.9	$27,156.1
1.1.3.4	Crew Station Subsystem	0.0	$0.9	$0.0	$0.9	0.0	$0.8	$0.0	$0.8
1.1.3.5	Environmental Control Subsystem	32.9	$156.7	$3,406.3	$3,562.9	33.0	$132.8	$3,465.3	$3,598.0
1.1.3.6	Fuel Subsystem	32.9	$0.0	$1,345.2	$1,345.2	33.0	$0.0	$1,421.6	$1,421.6
1.1.3.7	Landing Gear	32.9	$4.6	$785.8	$790.4	33.0	$4.8	$780.1	$784.9
1.1.3.8	Rotor Group	32.9	$0.0	$18,003.4	$18,003.4	33.0	$0.0	$17,690.4	$17,690.4
1.1.3.9	Drive Group	32.9	$0.0	$32,324.2	$32,324.2	33.0	$0.0	$32,106.0	$32,106.0
1.1.4	Avionics	32.9	$35.8	$22,707.9	$22,743.7	33.0	$39.6	$23,852.8	$23,892.4
1.1.4.1	Avionics Integration, Assembly, Test, and Checkout	0.0	$0.0	$0.0	$0.0	0.0	$0.0	$0.0	$0.0
1.1.4.2	Communications/Identification	32.9	$0.0	$2,388.5	$2,388.5	33.0	$0.0	$2,565.4	$2,565.4
1.1.4.3	Navigation/Guidance	32.9	$0.0	$2,245.6	$2,245.6	33.0	$0.0	$2,243.7	$2,243.7
1.1.4.4	Mission Computer/Processing	32.9	$0.0	$11,525.7	$11,525.7	33.0	$0.0	$11,889.0	$11,889.0
1.1.4.5	Fire Control	32.9	$35.8	$3,717.2	$3,753.0	33.0	$39.6	$4,141.1	$4,180.7
1.1.4.6	Data Display and Controls	32.9	$0.0	$187.6	$187.6	33.0	$0.0	$181.7	$181.7
1.1.4.7	Survivability	32.9	$0.0	$2,643.3	$2,643.3	33.0	$0.0	$2,831.9	$2,831.9
1.1.4.8	Reconnaissance	0.0	$0.0	$0.0	$0.0	0.0	$0.0	$0.0	$0.0
1.1.5	Armament/Weapons Delivery	32.9	$0.0	$2,506.2	$2,506.2	33.0	$0.0	$2,703.3	$2,703.3
1.1.6	Air Vehicle Software Release	0.0	$28.7	$0.0	$28.7	0.0	$42.2	$0.0	$42.2
1.1.7	Air Vehicle Integration, Assembly, Test, and Checkout	32.9	$1,087.3	$10,784.8	$11,872.1	33.0	$1,432.0	$11,489.6	$12,921.6
1.2	SE/PM	0.0	$2,237.7	$0.0	$2,237.7	0.0	$2,562.5	$0.0	$2,562.5
1.2.1	Systems Engineering	0.0	$506.2	$0.0	$506.2	0.0	$654.6	$0.0	$654.6
1.2.2	Program Management	0.0	$1,731.5	$0.0	$1,731.5	0.0	$1,907.9	$0.0	$1,907.9
1.3	System Test and Evaluation	0.0	$0.0	$0.0	$0.0	0.0	$0.0	$0.0	$0.0
1.4	Training	0.0	$5,898.5	$31.1	$5,929.6	0.0	$6,196.0	$28.6	$6,224.6
1.5	Data	0.0	$781.5	$0.0	$781.5	0.0	$739.8	$0.0	$739.8
1.6	Peculiar Support Equipment	0.0	$1,107.5	$108.5	$1,216.0	0.0	$1,192.1	$112.6	$1,304.7
1.7	Common Support Equipment	0.0	$0.0	$0.0	$0.0	0.0	$0.0	$0.0	$0.0
1.8	Operational/Site Activation	0.0	$0.0	$0.0	$0.0	0.0	$0.0	$0.0	$0.0
1.9	Industrial Facilities	0.0	$0.0	$0.0	$0.0	0.0	$0.0	$0.0	$0.0
1.10	Initial Spares and Repair Parts	0.0	$4,399.2	$0.0	$4,399.2	0.0	$5,242.1	$0.0	$5,242.1
	Subtotal Cost				$244,498.9				$254,616.8
	Reporting Contractor G&A				$29,339.9				$30,554.0
	Reporting Contractor Undistributed Budget								$2,444.7
	Reporting Contractor Management Reserve								$0.0
	Reporting Contractor FCCM				$252.8				$289.6
	Total Cost				$274,091.5				$287,905.1
	Reporting Contractor Profit/Loss or Fee				$34,585.0				$31,923.5
	Total Price				$308,676.6				$319,828.6

Number of CSDRs Over Time

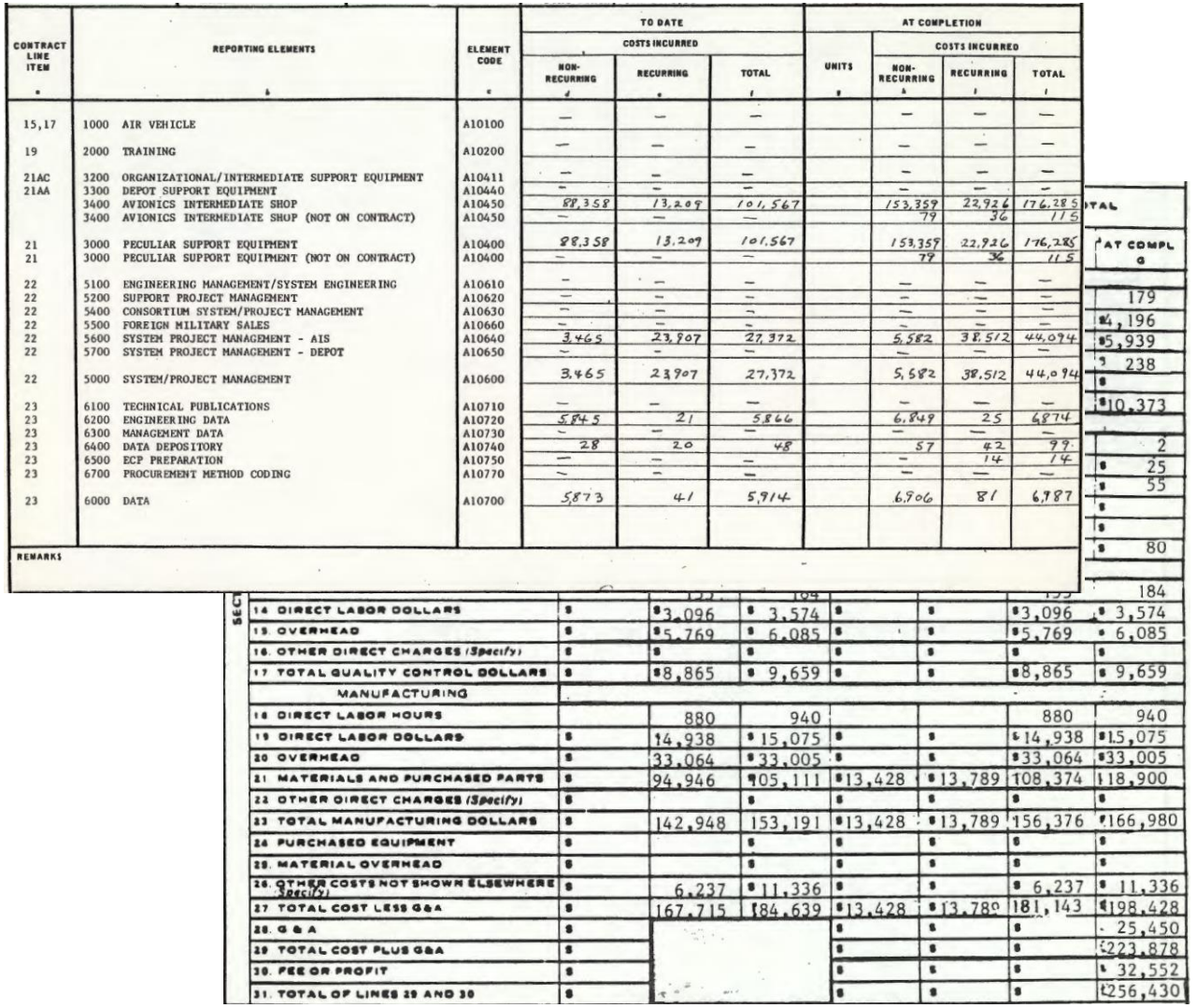


1990's reform efforts limited cost data collection and damaged DoD's ability to produce quality cost estimates

Legacy Reports and the FlexFile

Old "Big Three"

- ❑ Work Breakdown Structure
- ❑ Nonrecurring and Recurring
- ❑ Standard Functional Categories



CONTRACT LINE ITEM	REPORTING ELEMENTS	ELEMENT CODE	TO DATE COSTS INCURRED NON-RECURRING	TO DATE COSTS INCURRED RECURRING	TO DATE COSTS INCURRED TOTAL	AT COMPLETION UNITS	AT COMPLETION COSTS INCURRED NON-RECURRING	AT COMPLETION COSTS INCURRED RECURRING	AT COMPLETION COSTS INCURRED TOTAL
15,17	1000 AIR VEHICLE	A10100	—	—	—		—	—	—
19	2000 TRAINING	A10200	—	—	—		—	—	—
21AC	3200 ORGANIZATIONAL/INTERMEDIATE SUPPORT EQUIPMENT	A10411	—	—	—		—	—	—
21AA	3300 DEPOT SUPPORT EQUIPMENT	A10440	—	—	—		—	—	—
	3400 AVIONICS INTERMEDIATE SHOP	A10450	88,358	13,209	101,567		153,359	22,926	176,285
	3400 AVIONICS INTERMEDIATE SHOP (NOT ON CONTRACT)	A10450	—	—	—		79	36	115
21	3000 PECULIAR SUPPORT EQUIPMENT	A10400	88,358	13,209	101,567		153,359	22,926	176,285
21	3000 PECULIAR SUPPORT EQUIPMENT (NOT ON CONTRACT)	A10400	—	—	—		79	36	115
22	5100 ENGINEERING MANAGEMENT/SYSTEM ENGINEERING	A10610	—	—	—		—	—	—
22	5200 SUPPORT PROJECT MANAGEMENT	A10620	—	—	—		—	—	—
22	5400 CONSORTIUM SYSTEM/PROJECT MANAGEMENT	A10630	—	—	—		—	—	—
22	5500 FOREIGN MILITARY SALES	A10660	—	—	—		—	—	—
22	5600 SYSTEM PROJECT MANAGEMENT - AIS	A10640	3,465	23,907	27,372		5,582	38,512	44,094
22	5700 SYSTEM PROJECT MANAGEMENT - DEPOT	A10650	—	—	—		—	—	—
22	5000 SYSTEM/PROJECT MANAGEMENT	A10600	3,465	23,907	27,372		5,582	38,512	44,094
23	6100 TECHNICAL PUBLICATIONS	A10710	—	—	—		—	—	—
23	6200 ENGINEERING DATA	A10720	5845	21	5866		6,849	25	6874
23	6300 MANAGEMENT DATA	A10730	—	—	—		—	—	—
23	6400 DATA DEPOSITORY	A10740	28	20	48		57	42	99
23	6500 ECP PREPARATION	A10750	—	—	—		—	14	14
23	6700 PROCUREMENT METHOD CODING	A10770	—	—	—		—	—	—
23	6000 DATA	A10700	5873	41	5,914		6,906	81	6,787

REMARKS

SECT								
	14 DIRECT LABOR DOLLARS	$	$3,096	$ 3,574	$	$	$3,096	$ 3,574
	15 OVERHEAD	$	$5,769	$ 6,085	$	$	$5,769	$ 6,085
	16 OTHER DIRECT CHARGES (Specify)	$	$	$	$	$	$	$
	17 TOTAL QUALITY CONTROL DOLLARS	$	$8,865	$ 9,659	$	$	$8,865	$ 9,659
	MANUFACTURING							
	18 DIRECT LABOR HOURS		880	940			880	940
	19 DIRECT LABOR DOLLARS	$	$14,938	$ 15,075	$	$	$14,938	$15,075
	20 OVERHEAD	$	$33,064	$ 33,005	$	$	$33,064	$33,005
	21 MATERIALS AND PURCHASED PARTS	$	$94,946	$105,111	$13,428	$13,789	$108,374	$118,900
	22 OTHER DIRECT CHARGES (Specify)	$		$	$	$	$	$
	23 TOTAL MANUFACTURING DOLLARS	$	$142,948	$153,191	$13,428	$13,789	$156,376	$166,980
	24 PURCHASED EQUIPMENT	$		$	$	$	$	$
	25 MATERIAL OVERHEAD	$		$	$	$	$	$
	26 OTHER COSTS NOT SHOWN ELSEWHERE (Specify)	$	$ 6,237	$ 11,336	$	$	$ 6,237	$ 11,336
	27 TOTAL COST LESS G&A	$	$167,715	$184,639	$13,428	$13,789	$181,143	$198,428
	28 G & A	$			$	$	$	$ 25,450
	29 TOTAL COST PLUS G&A	$			$	$	$	$223,878
	30 FEE OR PROFIT	$			$	$	$	$ 32,552
	31 TOTAL OF LINES 29 AND 30	$			$	$	$	$256,430

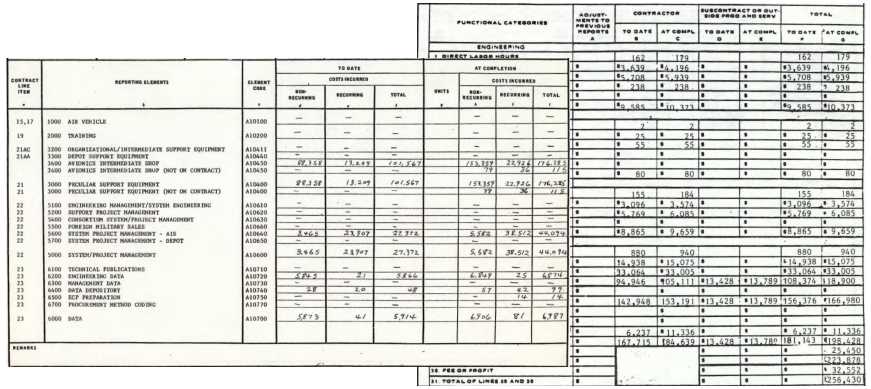
Legacy Reports and the FlexFile

Old "Big Three"

- ❑ Work Breakdown Structure
- ❑ Nonrecurring and Recurring
- ❑ Standard Functional Categories

New "Big Three"

- ❑ Monthly Time-phased Data
- ❑ "Account" Level Detail
- ❑ Contractor Functional Categories



Data Group A
Report Metadata
Approved Plan Number
Submission Event
Period of Performance
Reporting Organization
As of Date
Date Prepared
more in the DID...

Data Group B
DD Form 2794 Data Elements
WBS Element
Order/Lot
End Item

Data Group C
Definitions and Remarks
WBS Element Definitions
Remarks by WBS Element
Summary Remarks

Data Group D
Summary Elements
Order/Lot
Subtotal
General and Administrative
Undistributed Budget
Management Reserve
Facilities Capital Cost of Money
Contract Fee
Contract Price

Data Group E
Actuals To Date (ATD)
Account
Reporting Period
CLIN
Nonrecurring or Recurring
Functional Category / Overhead
Standard Functional Category
Unit/Sublot
WBS Element
Order/Lot and End Item
ATD (Dollars and Labor Hours)

Greatest value to cost estimator, in many cases, will be the additional insight requested in Group E

Data Group F
Allocation Methodology
Allocation Method

Legacy Element

Data Group G
Forecasts At Completion (FAC)
FAC (Dollars)
FAC (Labor Hours)

FlexFile Data Fields will be explained on the next few slides

The FlexFile combines both the old and the new in one report that supports both top-down and bottom-up estimates

Approved FlexFile Data Requirements

Data Group A

Report Metadata

- Approved Plan Number
- Submission Event
- Period of Performance
- Reporting Organization
- As of Date
- Date Prepared
- more in the DID…

Data Group B

DD Form 2794 Data Elements

- WBS Element
- Order/Lot
- End Item

Data Group C

Definitions and Remarks

- WBS Element Definitions
- Remarks by WBS Element
- Summary Remarks

Data Group D

Summary Elements

- Order/Lot
- Subtotal
- General and Administrative
- Undistributed Budget
- Management Reserve
- Facilities Capital Cost of Money
- Contract Fee
- Contract Price

Data Group E

Actuals To Date (ATD)

- Account
- Reporting Period
- CLIN
- Nonrecurring or Recurring
- Functional Category / Overhead
- Standard Functional Category
- Unit/Sublot
- WBS Element
- Order/Lot and End Item
- ATD (Dollars and Labor Hours)

Greatest value to cost estimator, in many cases, will be the additional insight requested in Group E

Data Group F

Allocation Methodology

- Allocation Method

Legacy Element

Data Group G

Forecasts At Completion (FAC)

- FAC (Dollars)
- FAC (Labor Hours)

The core of the FlexFile is dollars and hours at the **account** level in **contractor native categories**, **time phased**.

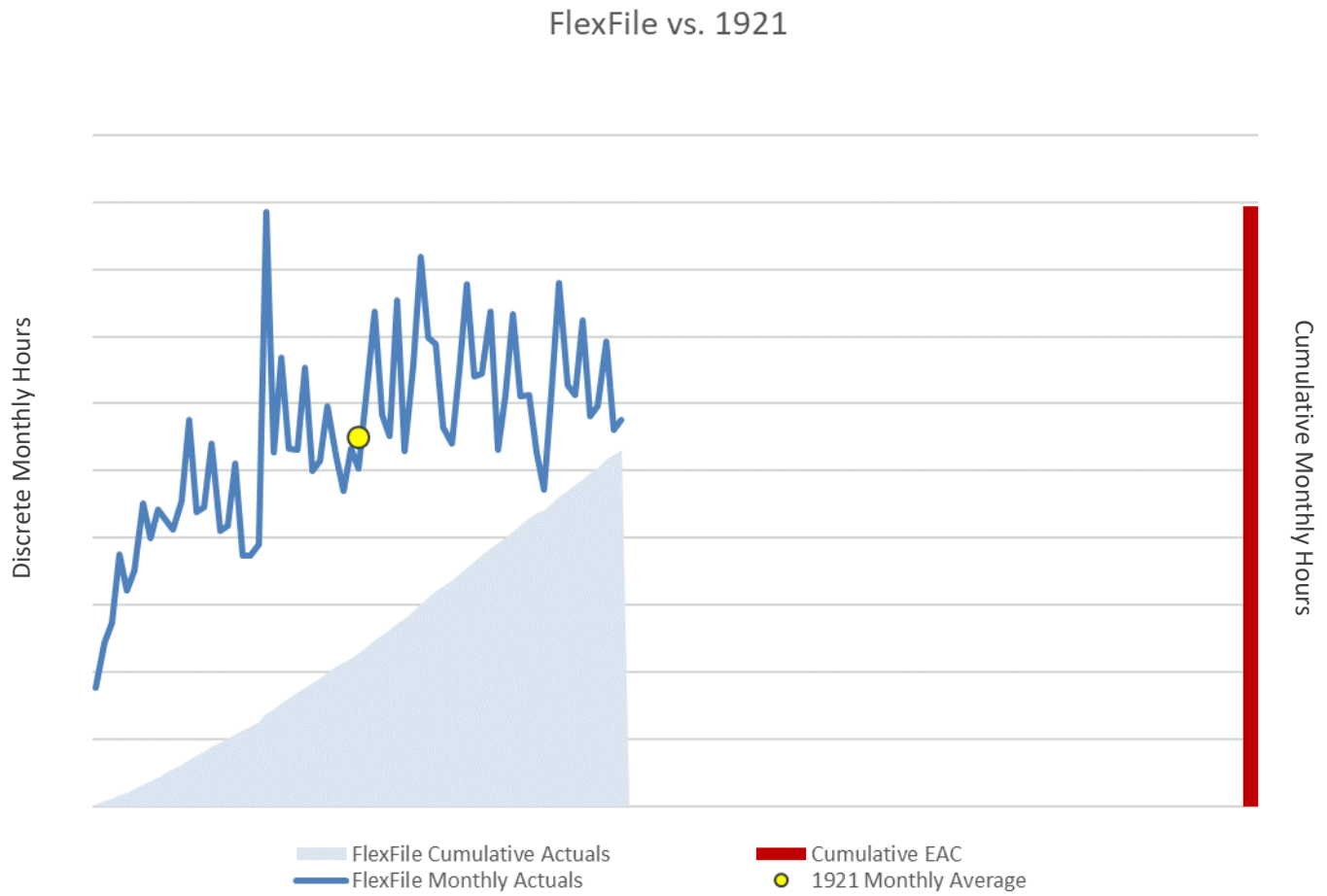
- Insight into contractor's native Functional Categories
- Account level reporting at or below the WBS
- Data time-phased monthly or to align with contractor's financial calendars
- Continuity with prior reports by requiring the **legacy government tags**

Monthly Time-phased Data

Default requirement for FlexFile is actual cost data time-phased discretely by month (e.g., a reporting period of 5 years would have 60 discrete monthly data points)

A 1921 only reports cumulative data for the given reporting period

To obtain the same number of data points, a contractor would have to submit 60 monthly 1921s



One FlexFile provides the analyst more data points than a contract's worth of 1921s

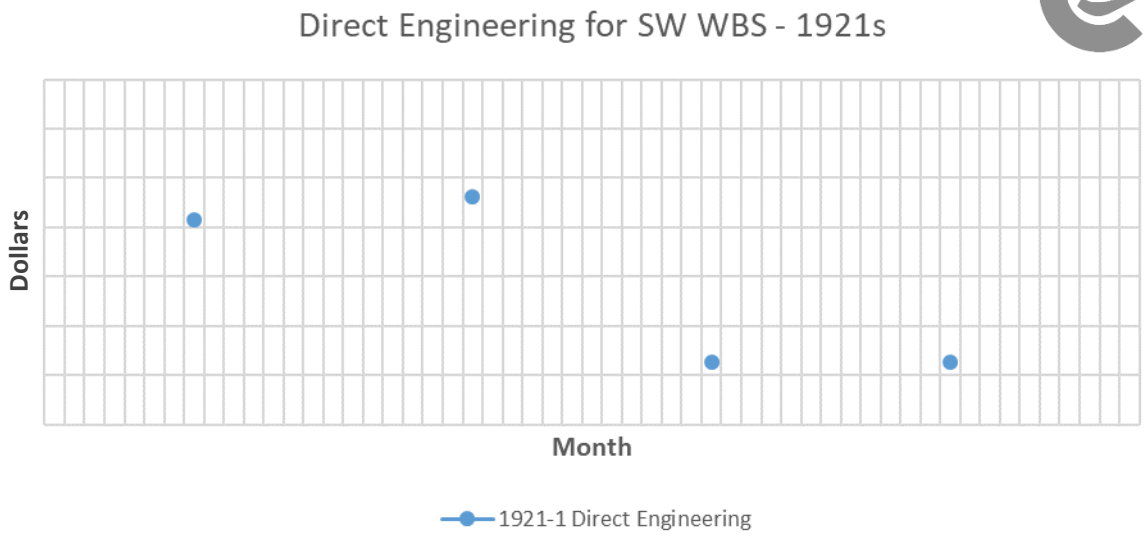
“Account” Level Data

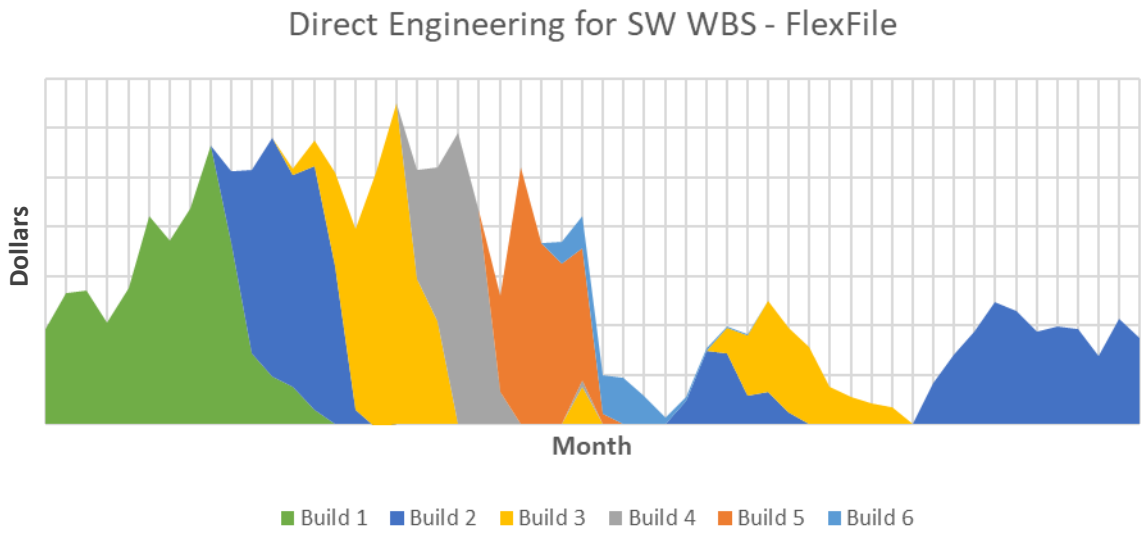
The 1921 provides no detail below the WBS or Standard Functional Category

Leads to ad-hoc data calls for insight into control account, work package, or similar data

The FlexFile asks for data at an “Account” Level which is meant to be at or below the lowest level of the WBS

“Account” can be control account, work package, charge code, or similar categories where actual costs are incurred and reflect the contractor’s native system





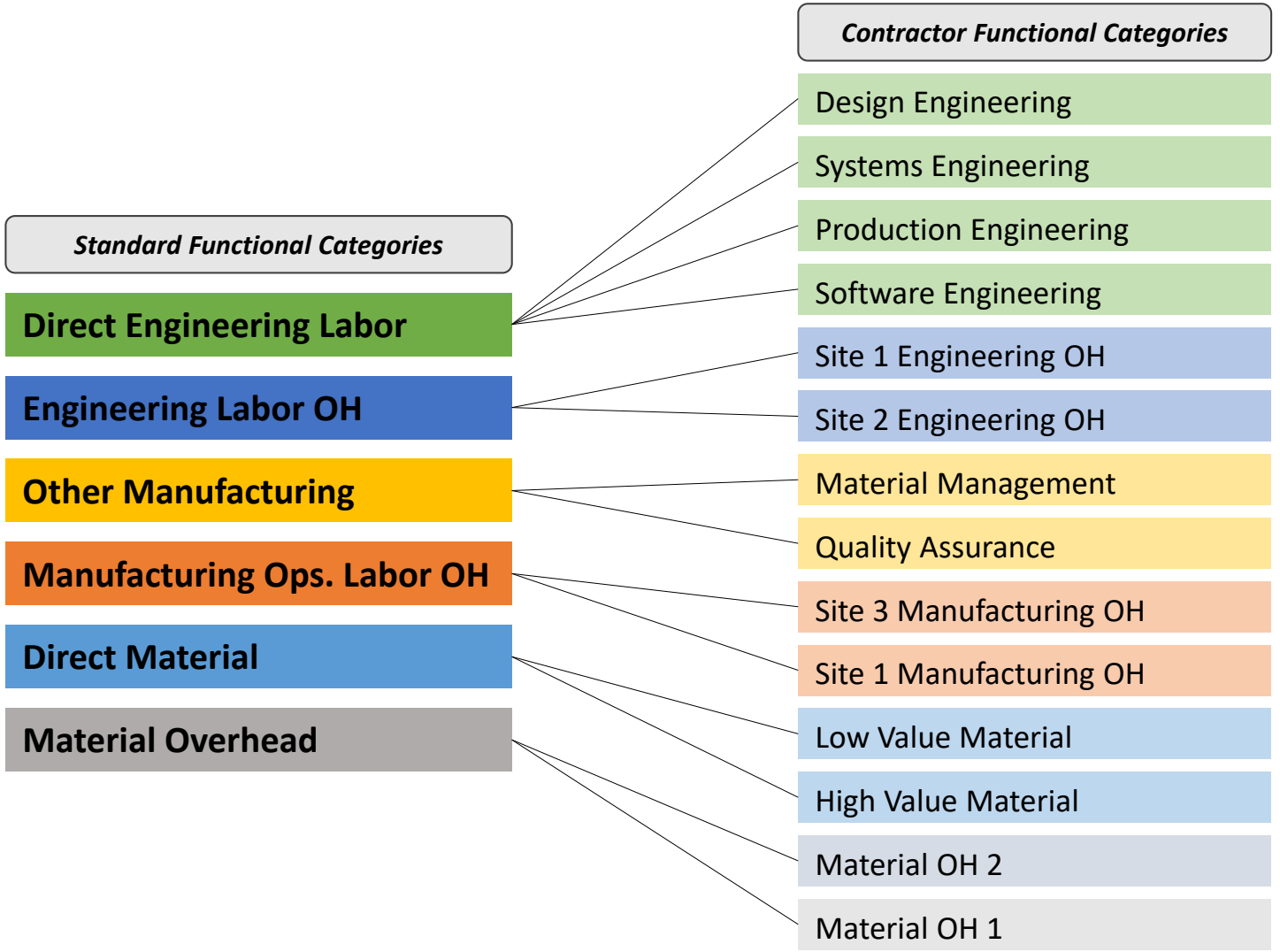
FlexFile provides the analysts insight into “Account” level detail and reduces need for ad-hoc reporting

Contractor Functional Categories

1921-1s provide analysts a standard view of functional categories across programs, contracts, and business units

However, there may be inconsistencies and there exists no clear mapping from the contractor's internal categories to the standard categories

FlexFile provides insight into the contractor's pricing categories, enabling a clear mapping to the standard categories



FlexFile Functional Categories intended to align with pricing categories for comparability with proposals, negotiations, and FPRA

Summary

FlexFile will improve upon the data collected via the DD 1921 forms by including…

- Monthly Time-Phased Data
- "Account" Level Detail
- Contractor Functional Categories

FlexFile will provide the analyst…

- More data points in a single submission
- More detail, thereby reducing the need for ad-hoc reporting
- More applicable data when used in contract proposals and negotiations

DD 1921 Reporting

DIDs	Reporting Elements	Submission mechanism	Formats available to analysts
• CWBS • 1921 • 1921-1 • 1921-2 • 1921-5	• WBS • NR/R • Standard Functional Category • Unit/Sublot Cost Reporting • ATDs and FACs • To Date Quantities • At Completion Quantities • Sequencing • Definitions	• XML DD Forms generated by cPet desktop or web	• 1921 DD Forms • Excel flat file

FlexFile/Quantity Report

DIDs	Reporting Elements	Submission mechanism	Formats available to analysts
• FlexFile • Quantity Report	• ***All Legacy reporting elements*** • Account • End Item and Order/Lot • CLIN • Functional (Internal) Category • Functional (Internal) Overhead Category • Time-phasing • Allocation Methodology • GFE units	• JSON Data Model or • Excel-Compatible Format	• 1921 DD Form • Excel flat File

FlexFile provides more data and greater native detail enhancing estimate credibility and defensibility

Additional FlexFile Data Views

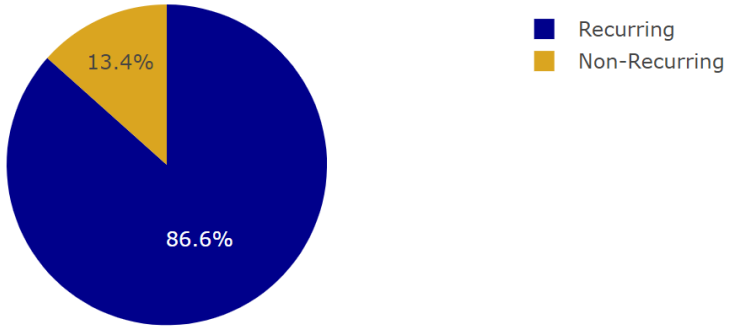
FlexFile | Recurring and Nonrecurring | Functional Element | Direct and Overhead | Rates Over Time | Relationships | Unit Costs | Other Over Time

$1,230,309,661
Total Contract Cost

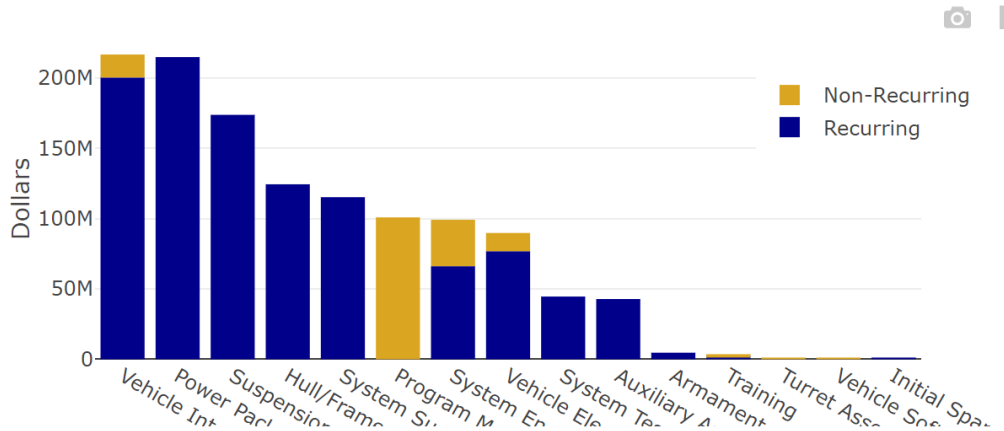
Jan. 1, 2012 - April 1, 2014
Period of Performance

11.2%
Contractor Reported Profit

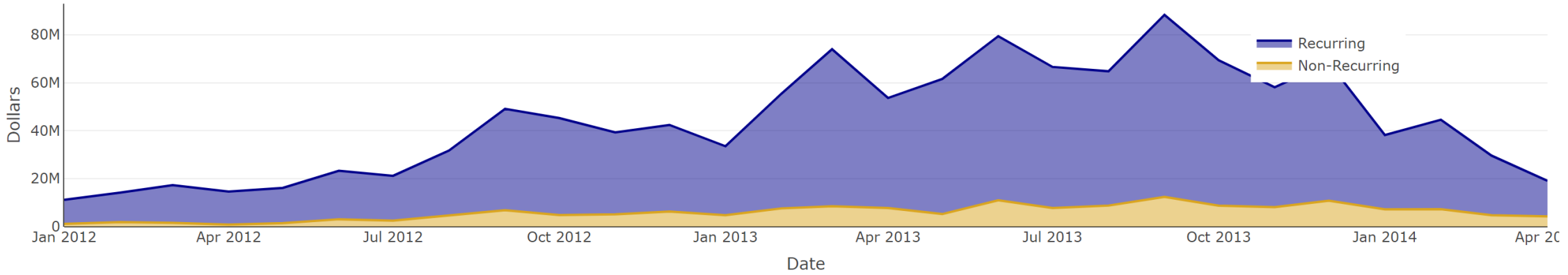
Contract Costs by Cost Type



Contract Costs by WBS



Costs Over Time



Additional FlexFile Data Views

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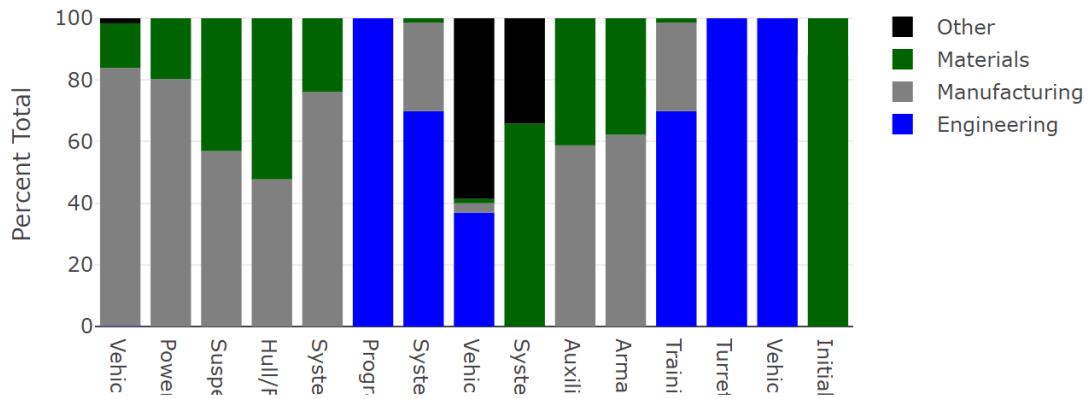
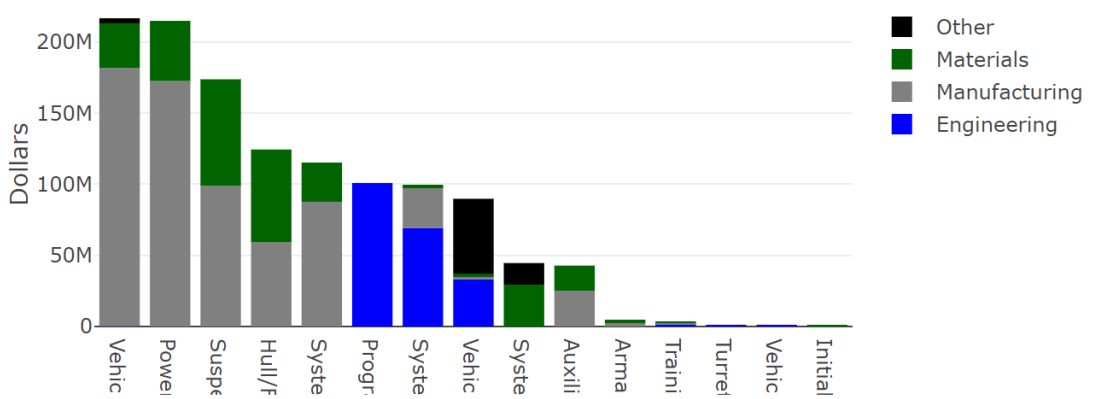
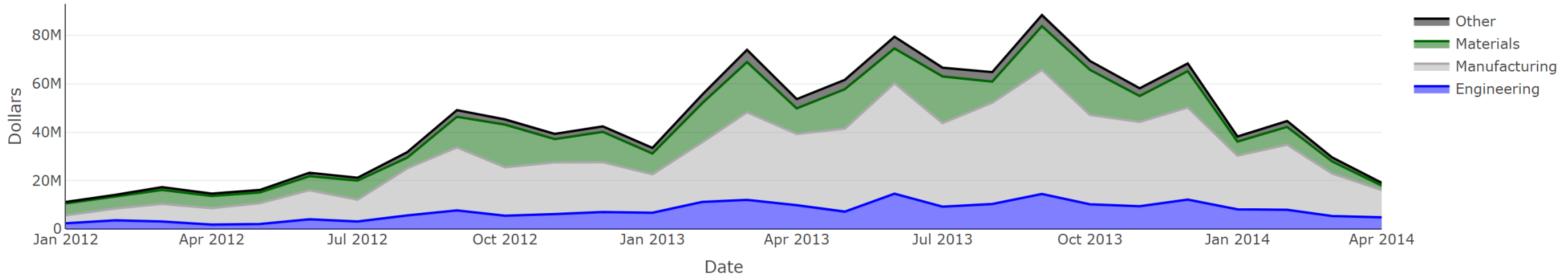
Functional Element by Percent of WBS Element



Contract Costs by WBS



Costs Over Time



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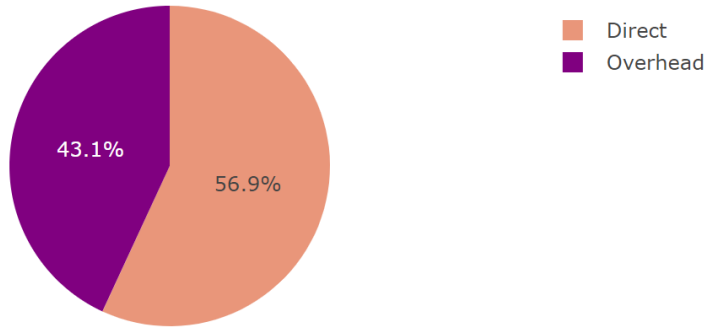
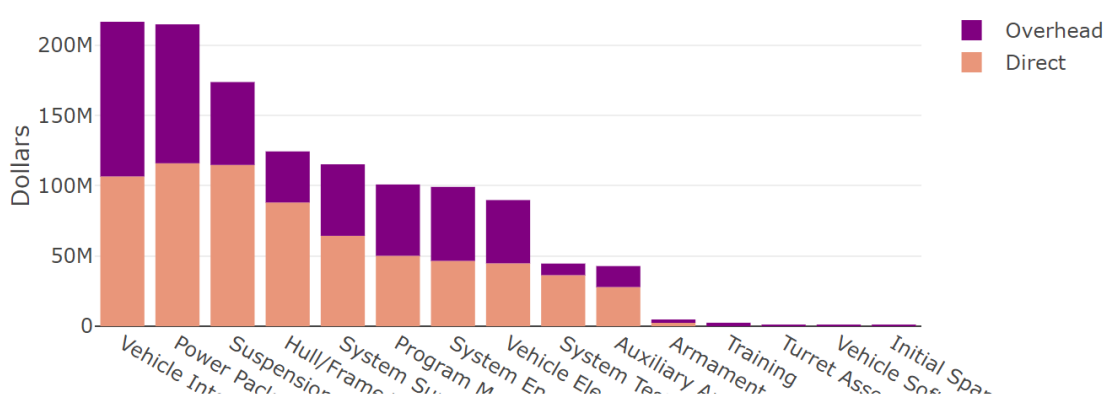
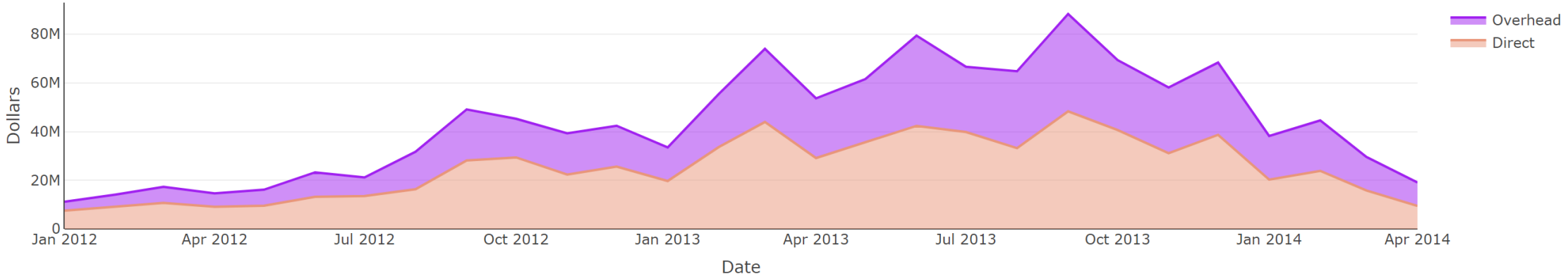


Contract Costs by WBS



Costs Over Time



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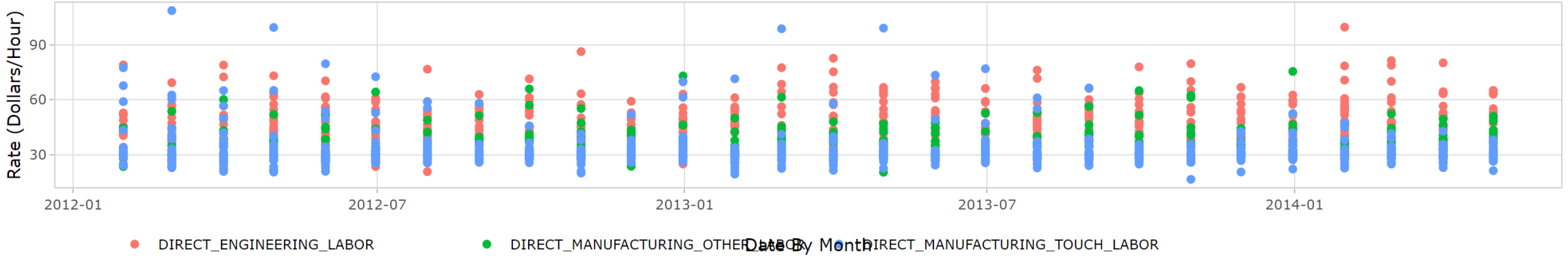
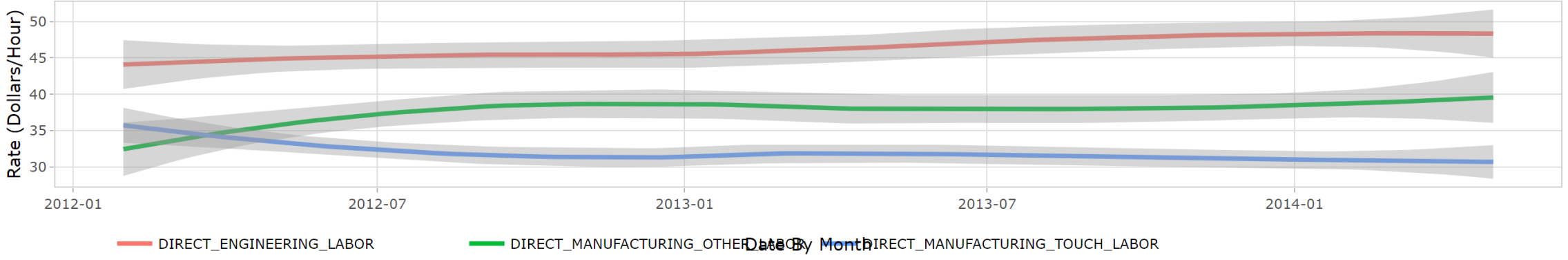
Contractor Category to Functional Category Mapping



Contract Rates Over Time



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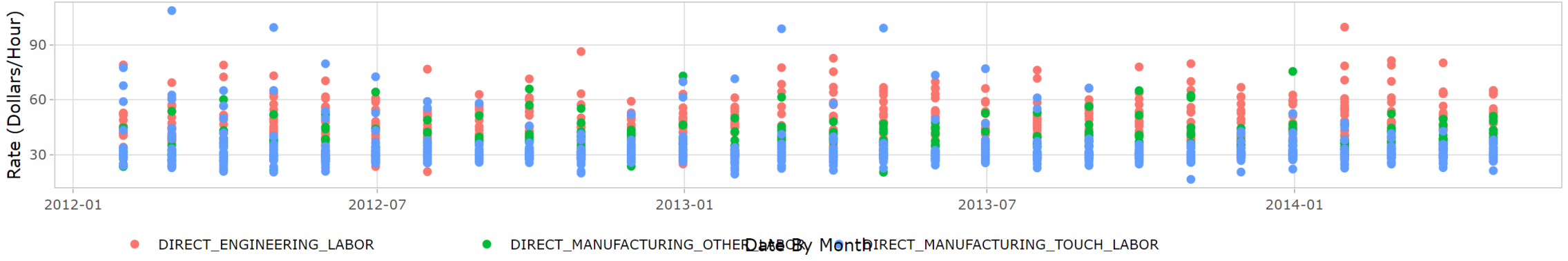
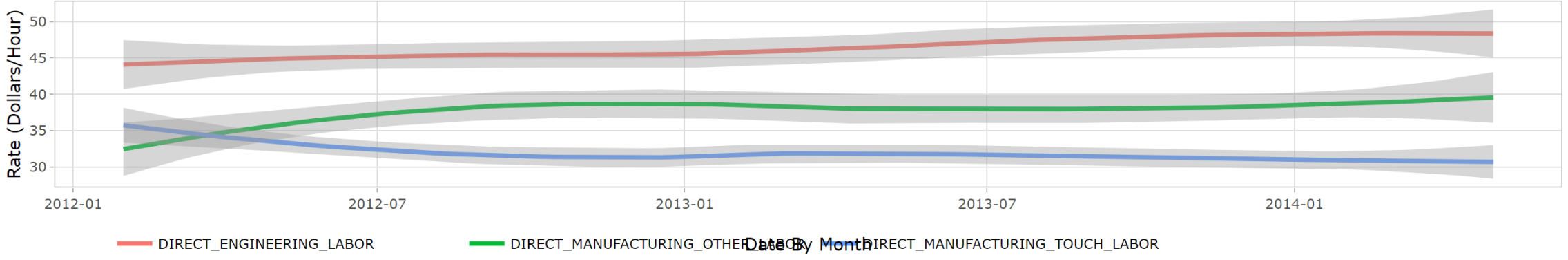


Contract Rates Over Time



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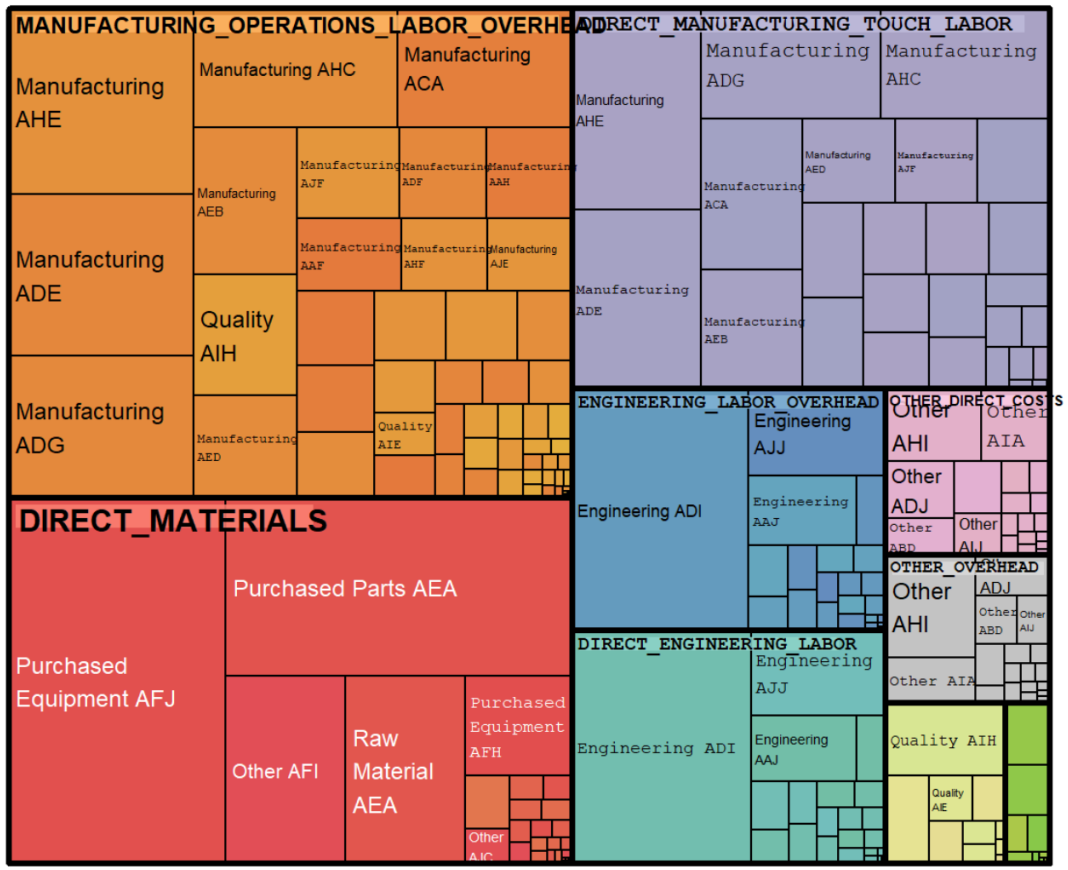
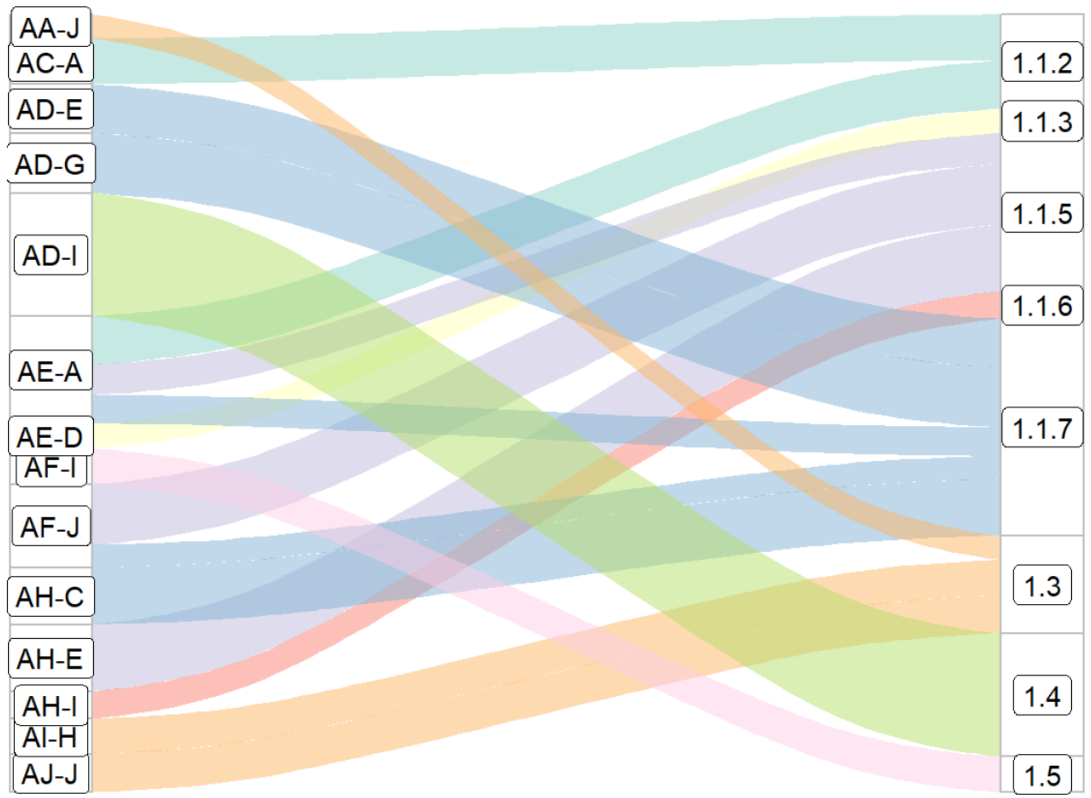
Contractor Category to Functional Category Relationship

==========



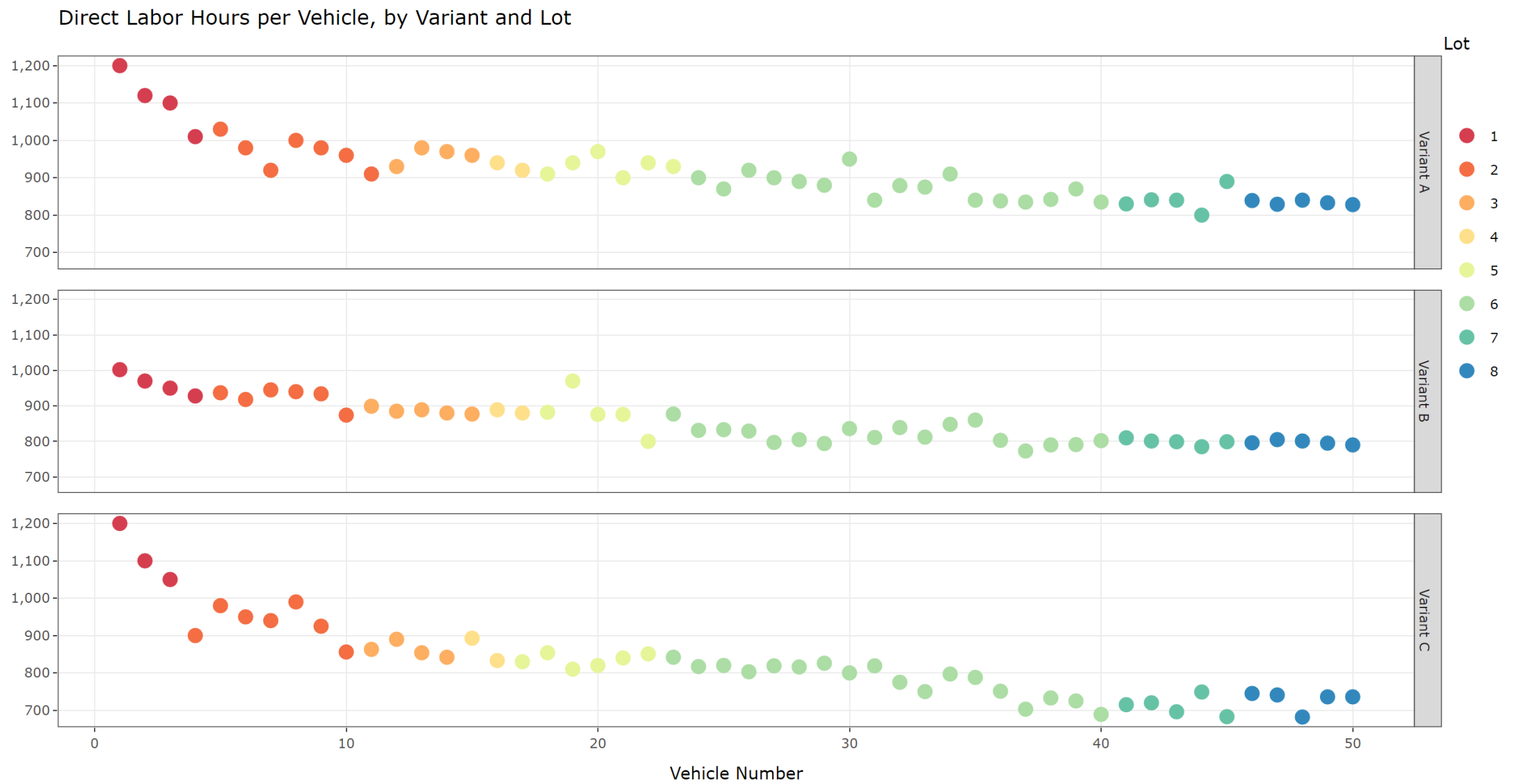
Account to WBS Relationship



Additional FlexFile Data Views

FlexFile | Recurring and Nonrecurring | Functional Element | Direct and Overhead | Rates Over Time | Relationships | Unit Costs | Other Over Time

Learning Curve



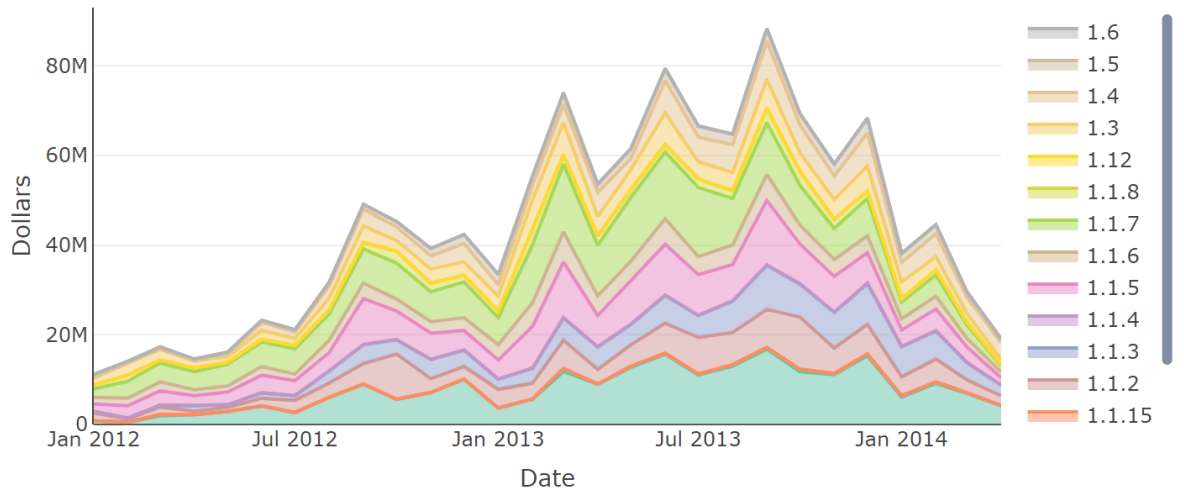
Additional FlexFile Data Views

FlexFile | Recurring and Nonrecurring | Functional Element | Direct and Overhead | Rates Over Time | Relationships | Unit Costs | Other Over Time

Data Table WBS Over Time

WBS ID	WBS Element Name	Date	Total Dollars
1.1.1	Vehicle Integration, Assembly, Test and Checkout	2012-01-01	$793,086.44
1.1.10	Armament	2012-01-01	$368.03
1.1.2	Hull/Frame/Body/Cab	2012-01-01	$1,801,513.03
1.1.3	System Survivability	2012-01-01	$342,479.08
1.1.5	Suspension/Steering	2012-01-01	$1,613,654.02
1.1.6	Vehicle Electronics	2012-01-01	$1,511,928.99
1.1.7	Power Package/Drive Train	2012-01-01	$1,898,772.69
1.1.8	Auxiliary Automotive	2012-01-01	$902,464.19
1.12	Initial Spares and Repair Parts	2012-01-01	$-2,499.98

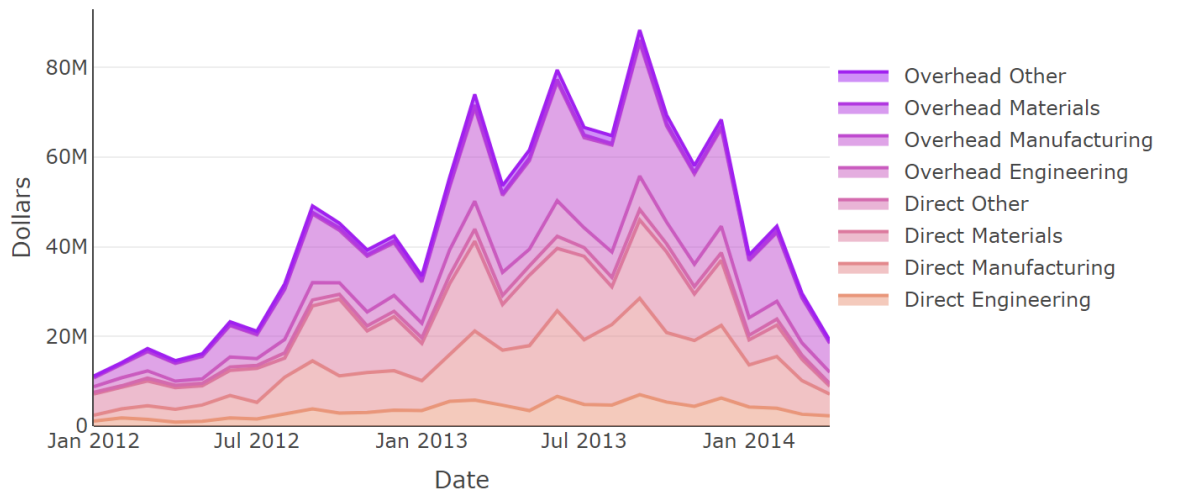
WBS Over Time



Data Table Overhead and Direct Over Time

Category	SFC	Date	Total Dollars
Direct	Engineering	2012-01-01	$1,143,949.00
Direct	Manufacturing	2012-01-01	$1,304,707.00
Direct	Materials	2012-01-01	$4,703,055.00
Direct	Other	2012-01-01	$364,037.00
Overhead	Engineering	2012-01-01	$1,261,306.00
Overhead	Manufacturing	2012-01-01	$1,966,525.00
Overhead	Materials	2012-01-01	$169,998.00
Overhead	Other	2012-01-01	$249,898.00
Direct	Engineering	2012-02-01	$1,812,258.00

Overhead and Direct Costs Over Time



The Road Ahead

FlexFile and Quantity Report will replace DD 1921 Series as the default required cost reporting requirement for newly approved CSDR plan as of May 15th.

All relevant documents can be found at https://cade.osd.mil/policy

- ✓ FlexFile and Quantity Data Report DIDs
- ✓ Implementation Guide
- ✓ Date Exchange Instructions (DEI)
- ✓ File Format Specifications (FFS)
- ✓ Excel-Compatible File Guidance
- ✓ New DD Form 2794 Format
- ✓ Draft CDRL Language

See https://cade.osd.mil/support for training material and information on upcoming training events

Director, SSSCA
Fred Janicki

Director, CDSG
Kelly Hazel

CDSG Analyst
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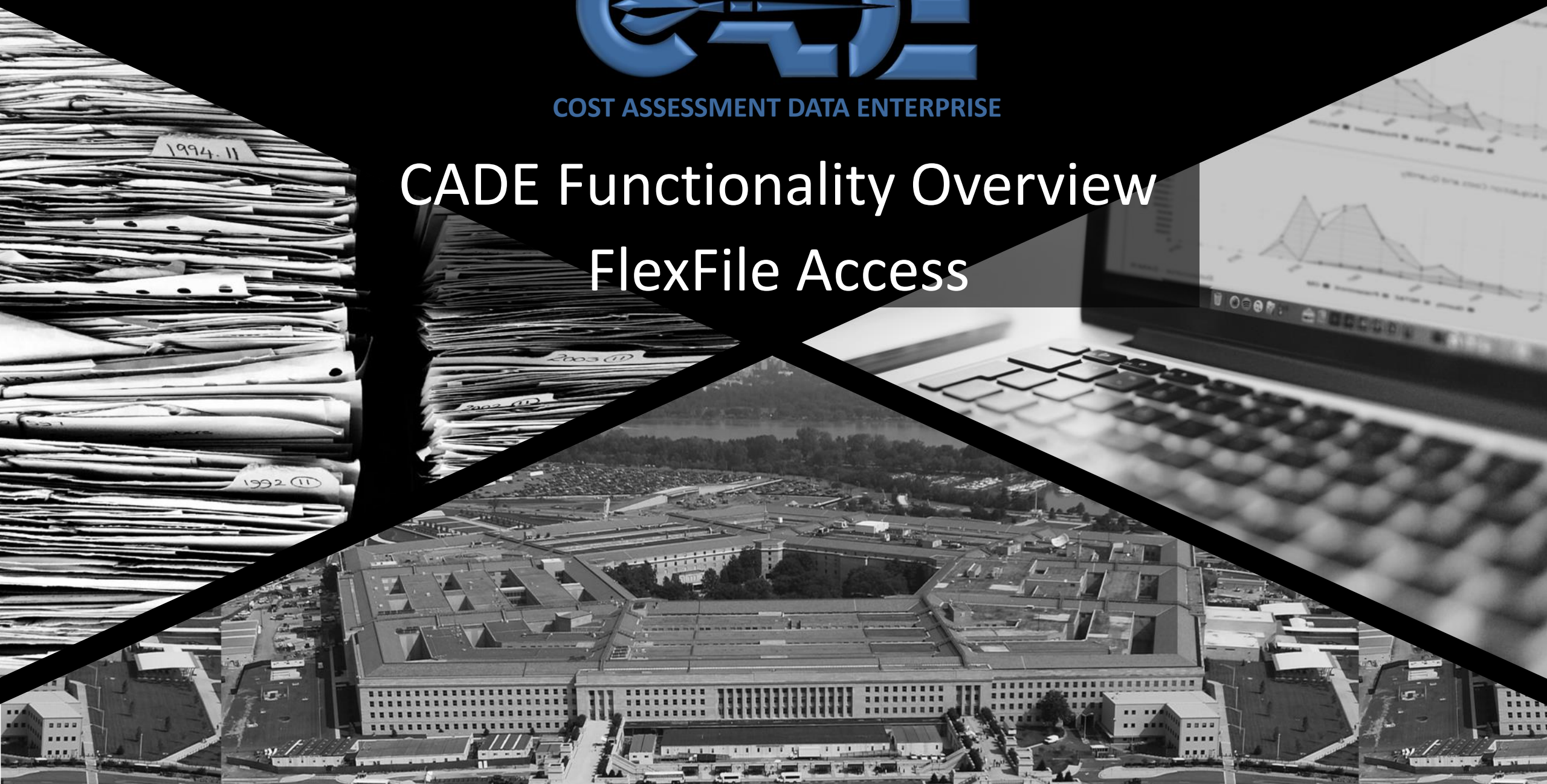
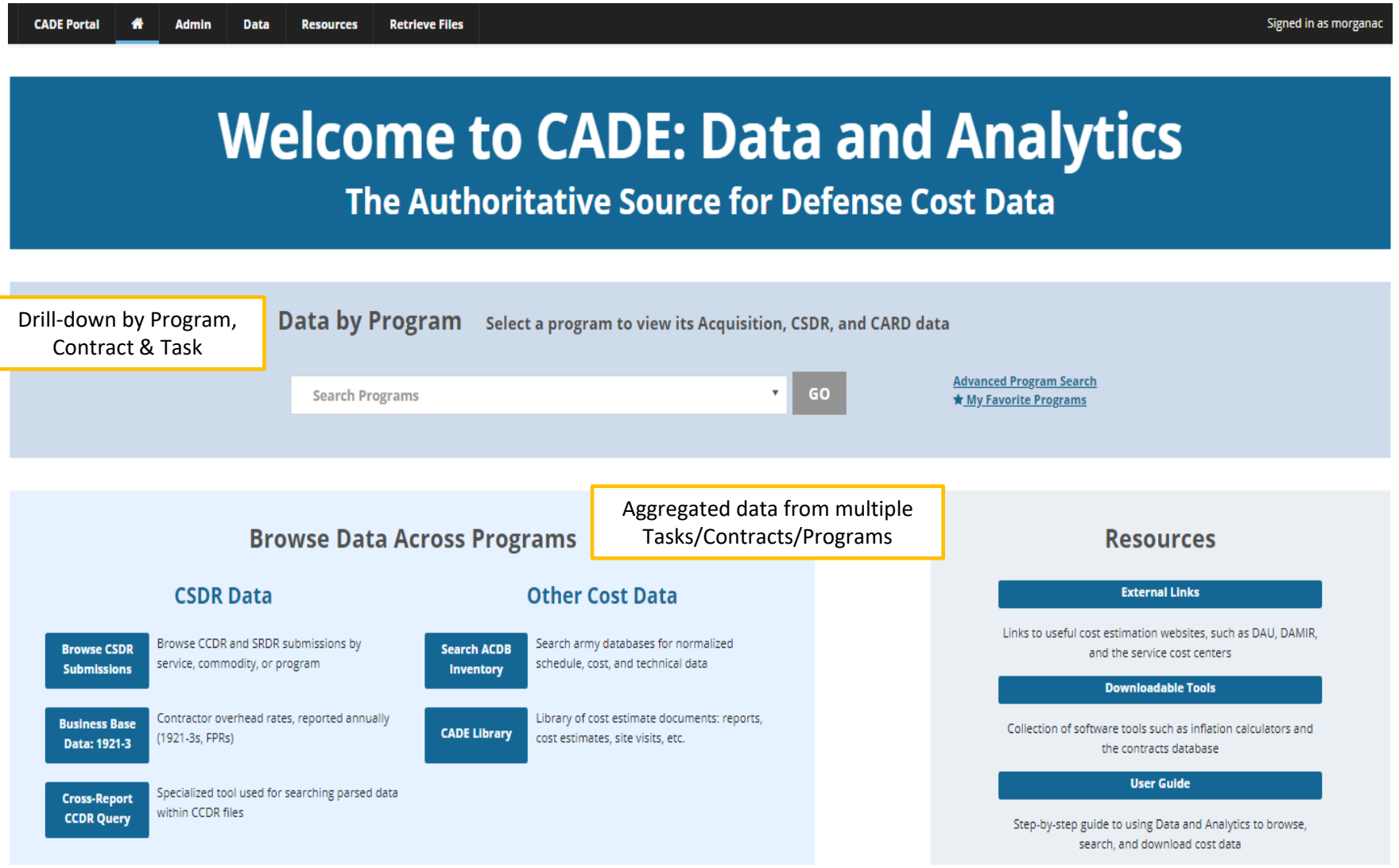
COST ASSESSMENT DATA ENTERPRISE

CADE Functionality Overview
FlexFile Access



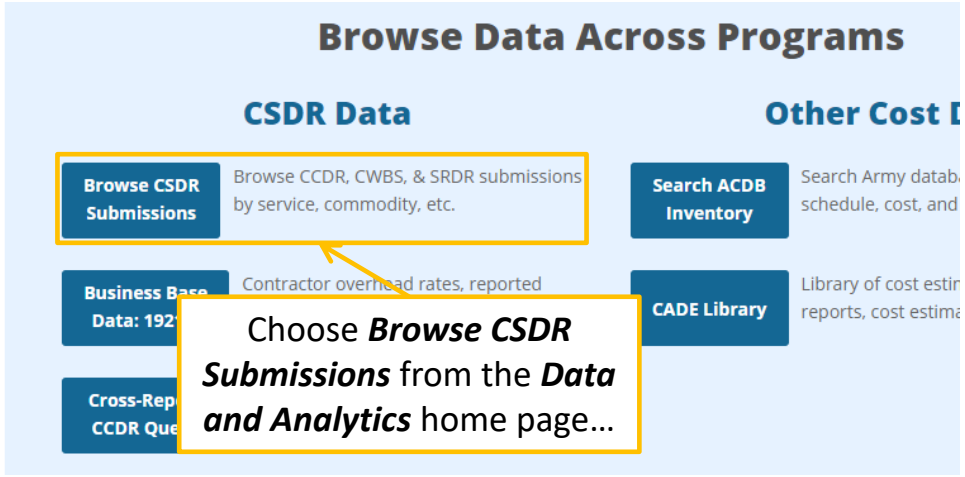
Data and Analytics Landing Page

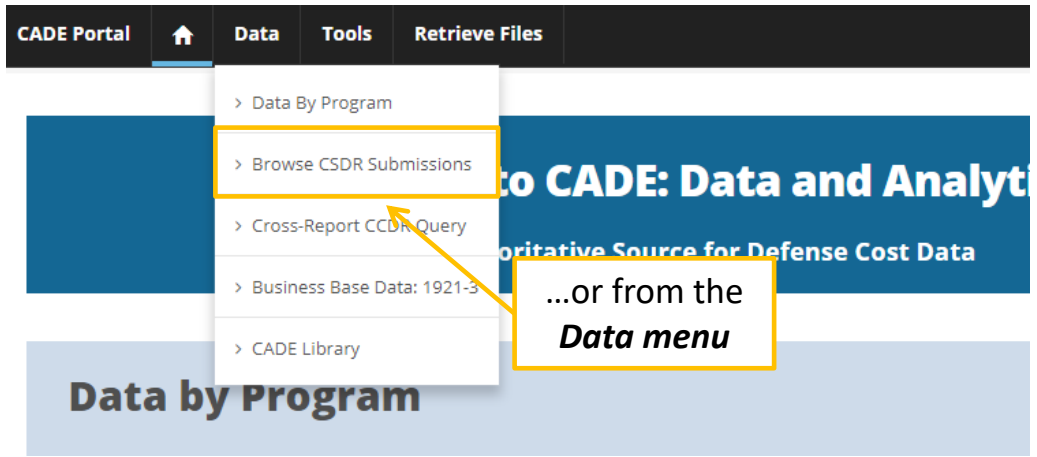
- A new design for the ***Data and Analytics home page*** was published on 05 Dec 2018
- It is intended to better support two primary modes of accessing data
  - **Browse Data Across Programs**: Aggregate data from multiple Tasks/Contracts/Programs
    - Think "*analysis-ready flat files*"
  - **Data by Program**: Drill-down by Program, Contract, and Task
    - Think "*standard reporting formats*"



Multiple CSDRs – Flexible Search

- The ***Browse CSDR Submissions*** function provides a more flexible "DACIMS-like" search/browse
  - Simultaneously locate and download multiple CSDRs
  - Works with any mix of Contractor Cost Data Reports (CCDRs) and Software Resources Data Reports (SRDRs)
- Access to all contract-specific 1921-series forms
  - CDSR (1921), FCHR (1921-1), PCR (1921-2), Sustainment FCHR (1921-5)
  - **Includes <u>FlexFiles</u>!**
- CCDRs are available as both "formatted" and flat file downloads





Browse CSDR Submissions

- Apply filters to narrow down search

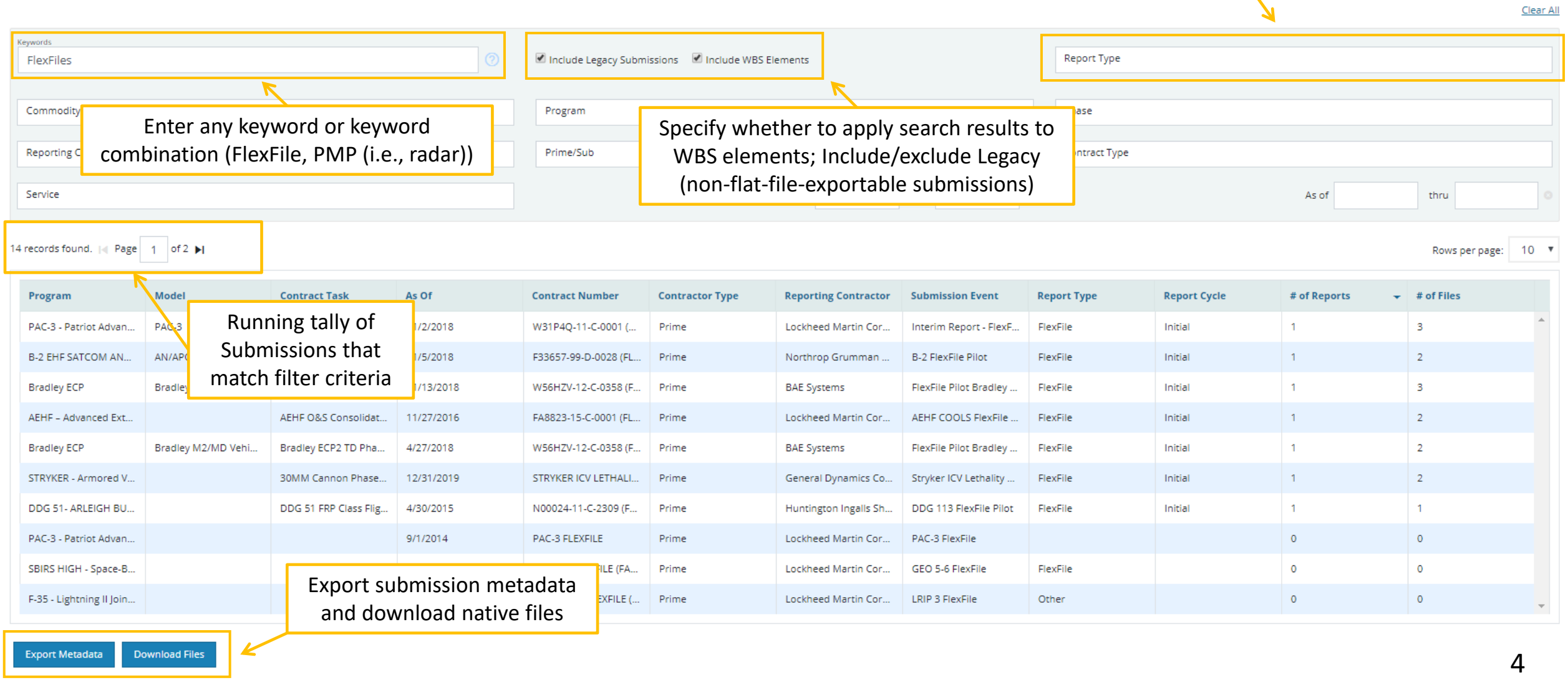
Use ***Report Type*** to select CCDR, SRDR or CWBS Dictionary

Enter any keyword or keyword combination (FlexFile, PMP (i.e., radar))

Specify whether to apply search results to WBS elements; Include/exclude Legacy (non-flat-file-exportable submissions)

Running tally of Submissions that match filter criteria

Export submission metadata and download native files



Browse CSDR Submissions Details Page

Back to Search

Submission Metadata

Program:	STRYKER - Armored Vehicle	Phase:	N/A
MIL-STD:	SURFACE VEHICLE	Contract Task:	30MM Cannon Phase 2 Development
Contract #:	STRYKER ICV LETHALITY UPGRADE PHASE II DEVELOPMENT	Sub Event:	Stryker ICV Lethality Upgrade Phase II Development
Reporting Ctr:	General Dynamics Corporation	Report Cycle:	Initial
Division:	Land Systems Division	As Of Date:	12/31/2019
Location:	Sterling Heights, MI	Plan #:	WBS given in original submission
Prime/Sub:	Prime	Submission ID:	47866

Submission Files

File Name
Round 3_STRYKER_GDLS 30MM Production_Jan17_D
Round 3_STRYKER_GDLS 30MM Production_DO5.zip

Expor

Header Data | 1921 Cost Data

Formatted File Export | Export to Excel

WBS ELEMENT CODE	WBS REPORTING ELEMENTS	NUMBER OF UNITS TO DATE	COSTS INCURRED TO DATE (thousands of U.S. Dollars)			NUMBER OF UNITS AT COMPLETION	COSTS INCURRED AT COMPLETION (thousands of U.S. Dollars)		
			NONRECURRING	RECURRING	TOTAL		NONRECURRING	RECURRING	TOTAL
1.0	TOTAL	10	$4452822977.0	$4449920771.0	$8902743748.0	10/0	$4452822977.0	$4449920771.0	$8902743748.0
1.1	Subsystem 1.1	20	$3598704958.0	$3594763883.0	$7193468841.0	20/0	$3598704958.0	$3594763883.0	$7193468841.0
1.1.1	Subsystem 1.1.1	0	$15571725.0	$15540979.0	$31112704.0	0	$15571725.0	$15540979.0	$31112704.0
1.1.2	Subsystem 1.1.2	200	$36076646.0	$36099436.0	$72176082.0	200/0	$36076646.0	$36099436.0	$72176082.0
1.1.3	Subsystem 1.1.3	0	$105062496.0	$104141873.0	$209204369.0	0	$105062496.0	$104141873.0	$209204369.0
1.1.4	Subsystem 1.1.4	0	$3205411874.0	$3201941379.0	$6407353253.0	0	$3205411874.0	$3201941379.0	$6407353253.0
1.1.4.1	Subsystem 1.1.4.1	0	$811353545.0	$810383227.0	$1621736772.0	0	$-	$-	$-
1.1.4.2	Subsystem 1.1.4.2	0	$1271507537.0	$1268989134.0	$2540496671.0	0	$-	$-	$-
1.1.4.3	Subsystem 1.1.4.3	0	$15901322.0	$15945578.0	$31846900.0	0	$-	$-	$-
1.1.4.4	Subsystem 1.1.4.4	0	$679893027.0	$682025741.0	$1361918768.0	0	$-	$-	$-
1.1.4.5	Subsystem 1.1.4.5	0	$74647228.0	$75129132.0	$149776360.0	0	$-	$-	$-
1.1.4.6	Subsystem 1.1.4.6	0	$352109215.0	$349468567.0	$701577782.0	0	$-	$-	$-
1.1.5	Subsystem 1.1.5	0	$236582217.0	$237040216.0	$473622433.0	0	$236582217.0	$237040216.0	$473622433.0
1.1.5.1	Subsystem 1.1.5.1	0	$11504988.0	$11503700.0	$23008688.0	0	$-	$-	$-
1.1.5.2	Subsystem 1.1.5.2	0	$18999518.0	$19017065.0	$38016583.0	0	$-	$-	$-
1.1.5.3	Subsystem 1.1.5.3	0	$21234824.0	$21293666.0	$42528490.0	0	$-	$-	$-
1.1.5.4	Subsystem 1.1.5.4	0	$50216239.0	$50251521.0	$100467760.0	0	$-	$-	$-
1.1.5.5	Subsystem 1.1.5.5	0	$17939627.0	$17985623.0	$35925250.0	0	$-	$-	$-
1.1.5.6	Subsystem 1.1.5.6	0	$116687021.0	$116988641.0	$233675662.0	0	$-	$-	$-
1.2	Subsystem 1.2	0	$46416008.0	$46624880.0	$93040888.0	0	$46416008.0	$46624880.0	$93040888.0
1.3	Subsystem 1.3	0	$432744539.0	$432534470.0	$865279009.0	0	$432744539.0	$432534470.0	$865279009.0
1.3.1	Subsystem 1.3.1	0	$349900225.0	$349585498.0	$699485723.0	0	$349900225.0	$349585498.0	$699485723.0
1.3.2	Subsystem 1.3.2	0	$60594104.0	$60678795.0	$121272899.0	0	$60594104.0	$60678795.0	$121272899.0

Administrative Files

File Name
CSDR Cost and Hour Report Template_STRYKER R

Parsed 1921-Series Reports

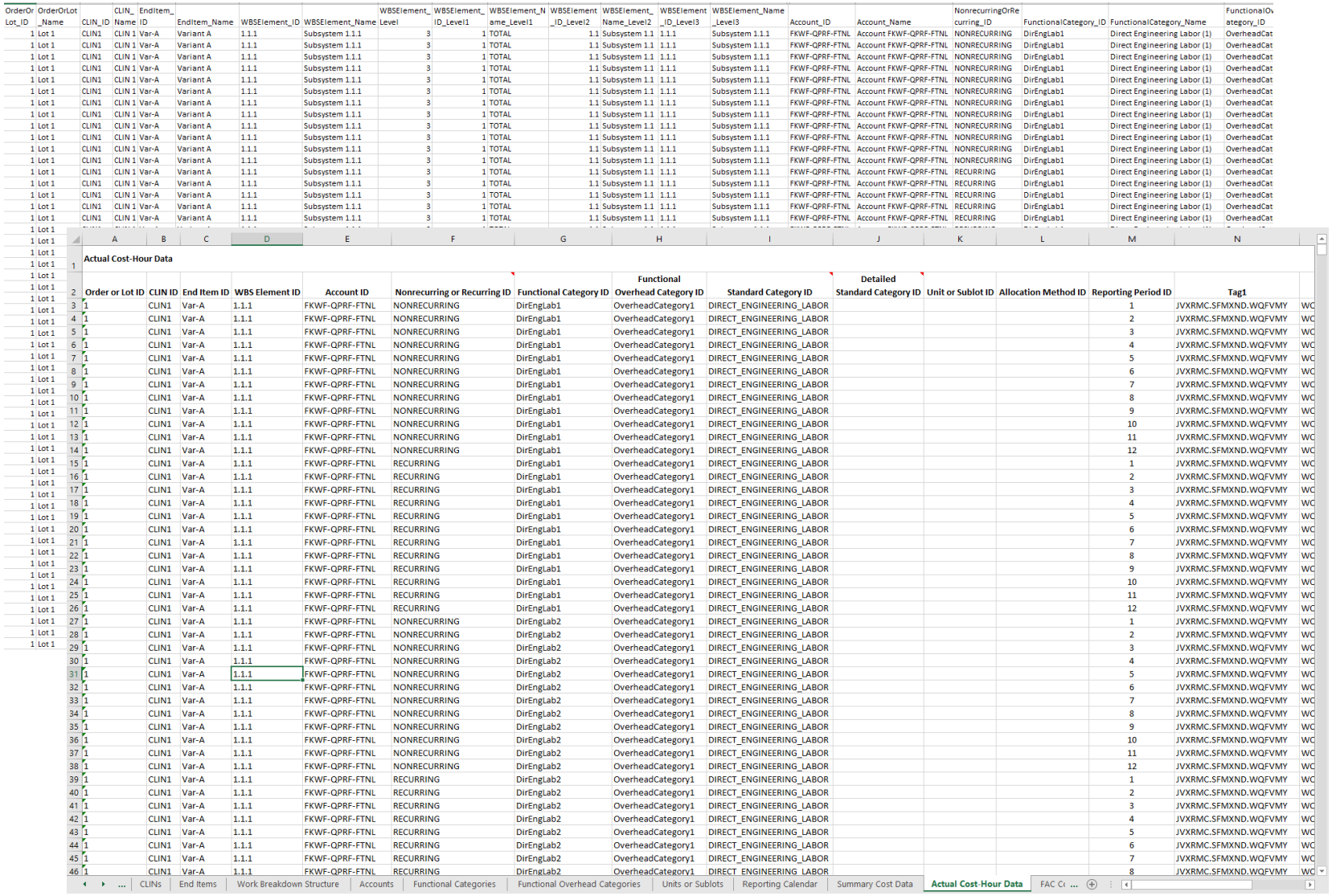
Report Name	Derived From	As Of Date	Subtotal, At Complete ($k)			% Complete	Actions
			NR	Rec	Tot		
Stryker ICV Lethality Upgrade Phase II Development							

Bulk download submission files

Download excel version of formatted 1921 & flat file export *(metadata, remarks & definitions)*

FlexFile Exports

- ***FlexFile Pivot Export*** flattens (de-normalizes) the structured data in the FlexFile
  - Supports filtering & pivot table creation
  - Repeat values on every row (de-normalized)
  - Requires familiarity to source/intent of specific columns
- **FlexFile Template Export** 1921-series forms
  - FlexFile data provided in Excel data model structure



Actual Cost-Hour Data

Order or Lot ID	CLIN ID	End Item ID	WBS Element ID	Account ID	Nonrecurring or Recurring ID	Functional Category ID	Functional Overhead Category ID	Standard Category ID	Detailed Standard Category ID	Unit or Sublot ID	Allocation Method ID	Reporting Period ID	Tag1
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				1	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				2	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				3	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				4	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				5	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				6	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				7	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				9	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				10	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				1	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				2	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				3	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				4	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab1	OverheadCategory1	DIRECT_ENGINEERING_LABOR				8	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				1	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				7	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				11	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	NONRECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				12	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				1	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				2	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				3	JVXRMC.SFMXND.WQFVMY
1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				4	JVXRMC.SFMXND.WQFVMY
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1	CLIN1	Var-A	1.1.1	FKWF-QPRF-FTNL	RECURRING	DirEngLab2	OverheadCategory1	DIRECT_ENGINEERING_LABOR				6	JVXRMC.SFMXND.WQFVMY
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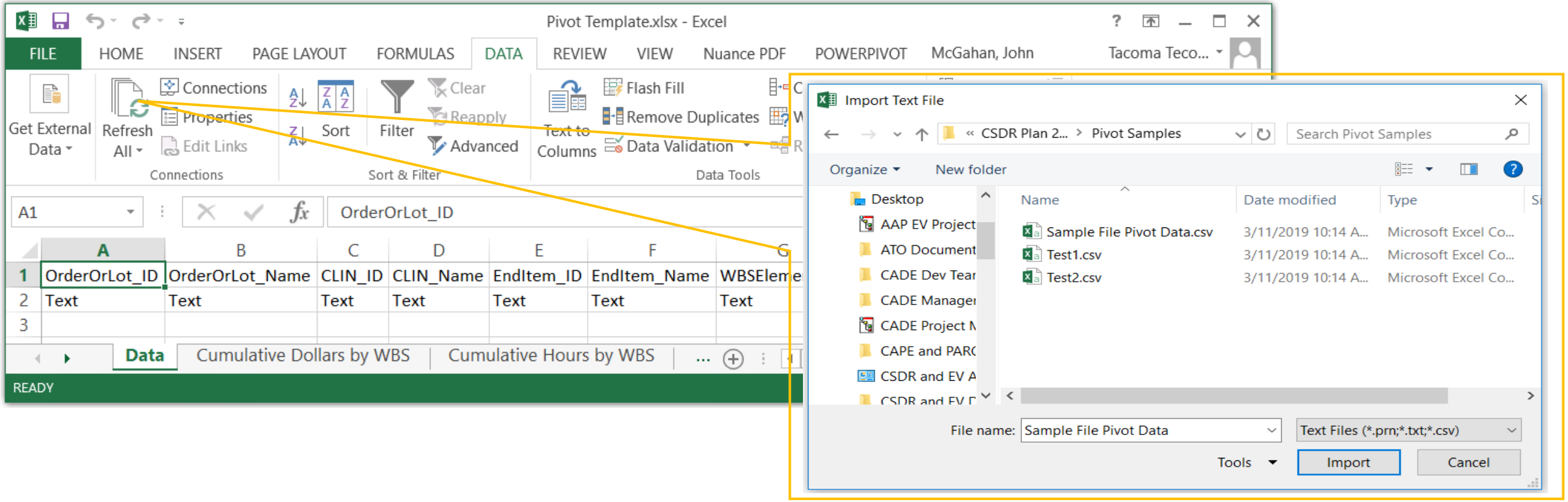
CLINs | End Items | Work Breakdown Structure | Accounts | Functional Categories | Functional Overhead Categories | Units or Sublots | Reporting Calendar | Summary Cost Data | Actual Cost-Hour Data | FAC C(

Excel Pivot Table Template (ECD: Aug 2019)

- FlexFile Pivot Export will produce a zip file containing FF Pivot Data Export & New Pivot Table Template
  - Excel workbook “shell” containing pre-formatted pivot tables
  - Configured with an “External Data Connection” that can point to a FF CSV File



FlexFile Pivot Data is typically very large; may not fit in excel
Example File Is 215,000 Rows; Refresh Time Approximately 15 Seconds

Pivot Table Template Example – REC/NRE to Date

Recurring / Non Recurring To Date By WBS

Actual To Date (Dollars)	Column Labels		
Row Labels	NONRECURRING	RECURRING	Grand Total
TOTAL	**12,605,528,204**	**12,426,772,570**	**25,032,300,774**
Subsystem 1.1	**10,103,913,302**	**10,123,613,365**	**20,227,526,667**
Subsystem 1.2	**133,355,674**	**127,722,937**	**261,078,611**
Subsystem 1.2	133,355,674	127,722,937	261,078,611
Subsystem 1.3	**1,272,886,648**	**1,160,647,449**	**2,433,534,097**
Subsystem 1.3.1	1,039,243,795	928,388,113	1,967,631,908
Subsystem 1.3.2	172,522,418	168,112,630	340,635,048
Subsystem 1.3.3	61,120,435	64,146,706	125,267,141
Subsystem 1.4	**841,462,234**	**754,716,610**	**1,596,178,844**
Subsystem 1.4	841,462,234	754,716,610	1,596,178,844
Subsystem 1.5	**253,910,346**	**260,072,209**	**513,982,555**
Subsystem 1.5	253,910,346	260,072,209	513,982,555
Grand Total	**12,605,528,204**	**12,426,772,570**	**25,032,300,774**

Recurring / Non Recurring To Date By CLIN/End Item

Actual To Date (Dollars)	Column Labels		
Row Labels	NONRECURRING	RECURRING	Grand Total
CLIN 1	**4,983,155,115**	**5,010,693,625**	**9,993,848,740**
Variant A	2,497,021,739	2,499,480,176	4,996,501,915
Variant B	2,486,133,376	2,511,213,449	4,997,346,825
CLIN 2	**5,124,875,709**	**4,891,529,619**	**10,016,405,328**
Variant A	2,532,796,593	2,476,183,592	5,008,980,185
Variant B	2,592,079,116	2,415,346,027	5,007,425,143
CLIN 3	**2,497,497,380**	**2,524,549,326**	**5,022,046,706**
Variant A	1,256,671,890	1,257,162,395	2,513,834,285
Variant B	1,240,825,490	1,267,386,931	2,508,212,421
Grand Total	**12,605,528,204**	**12,426,772,570**	**25,032,300,774**

Pivot Table Template Examples – CLIN/WBS Relationship

CLIN / WBS Relationship

Actual To Date (Dollars)	Column Labels		
Row Labels	NONRECURRING	RECURRING	Grand Total
TOTAL	**12,605,528,204**	**12,426,772,570**	**25,032,300,774**
Subsystem 1.1	**10,103,913,302**	**10,123,613,365**	**20,227,526,667**
Subsystem 1.2	**133,355,674**	**127,722,937**	**261,078,611**
CLIN 1	49,636,240	54,975,963	104,612,203
CLIN 2	55,319,526	48,782,405	104,101,931
CLIN 3	28,399,908	23,964,569	52,364,477
Subsystem 1.3	**1,272,886,648**	**1,160,647,449**	**2,433,534,097**
CLIN 1	525,955,805	439,802,971	965,758,776
CLIN 2	497,280,879	479,573,658	976,854,537
CLIN 3	249,649,964	241,270,820	490,920,784
Subsystem 1.4	**841,462,234**	**754,716,610**	**1,596,178,844**
CLIN 1	328,463,449	308,470,488	636,933,937
CLIN 2	345,831,910	293,998,581	639,830,491
CLIN 3	167,166,875	152,247,541	319,414,416
Subsystem 1.5	**253,910,346**	**260,072,209**	**513,982,555**
CLIN 1	115,741,930	89,704,972	205,446,902
CLIN 2	92,158,084	112,555,184	204,713,268
CLIN 3	46,010,332	57,812,053	103,822,385
Grand Total	**12,605,528,204**	**12,426,772,570**	**25,032,300,774**

Actual To Date (Dollars)	Column Labels		
Row Labels	NONRECURRING	RECURRING	Grand Total
CLIN 1	**4,983,155,115**	**5,010,693,625**	**9,993,848,740**
Subsystem 1.1	3,963,357,691	4,117,739,231	8,081,096,922
Subsystem 1.2	49,636,240	54,975,963	104,612,203
Subsystem 1.3	525,955,805	439,802,971	965,758,776
Subsystem 1.4	328,463,449	308,470,488	636,933,937
Subsystem 1.5	115,741,930	89,704,972	205,446,902
CLIN 2	**5,124,875,709**	**4,891,529,619**	**10,016,405,328**
Subsystem 1.1	4,134,285,310	3,956,619,791	8,090,905,101
Subsystem 1.2	55,319,526	48,782,405	104,101,931
Subsystem 1.3	497,280,879	479,573,658	976,854,537
Subsystem 1.4	345,831,910	293,998,581	639,830,491
Subsystem 1.5	92,158,084	112,555,184	204,713,268
CLIN 3	**2,497,497,380**	**2,524,549,326**	**5,022,046,706**
Subsystem 1.1	2,006,270,301	2,049,254,343	4,055,524,644
Subsystem 1.2	28,399,908	23,964,569	52,364,477
Subsystem 1.3	249,649,964	241,270,820	490,920,784
Subsystem 1.4	167,166,875	152,247,541	319,414,416
Subsystem 1.5	46,010,332	57,812,053	103,822,385
Grand Total	**12,605,528,204**	**12,426,772,570**	**25,032,300,774**

Pivot Table Template Examples – Standard Categories

Standard Categories By WBS

NonrecurringOrRecurring_ID	RECURRING
Row Labels	**Actual To Date (Dollars)**
DIRECT_ENGINEERING_LABOR	**6,207,404,106**
Subsystem 1.1	5,057,018,865
Subsystem 1.2	63,783,840
Subsystem 1.3	579,583,346
Subsystem 1.4	377,067,080
Subsystem 1.5	129,950,975
DIRECT_MANUFACTURING_OTHER_LABOR	**1,221,971,052**
DIRECT_MANUFACTURING_TOUCH_LABOR	**1,261,312,135**
DIRECT_MATERIALS	**1,241,153,706**
ENGINEERING_LABOR_OVERHEAD	**620,637,316**
FACILITIES_CAPITAL_COST_OF_MONEY	**124,120,188**
GENERAL_AND_ADMINISTRATIVE	**1,241,131,429**
MANUFACTURING_OPERATIONS_LABOR_OVERHEAD	**248,224,616**
MATERIAL_OVERHEAD	**124,187,398**
OTHER_DIRECT_COSTS	**124,217,158**
OTHER_OVERHEAD	**12,413,466**
Grand Total	**12,426,772,570**

Contractor Categories vs. Standard Categories

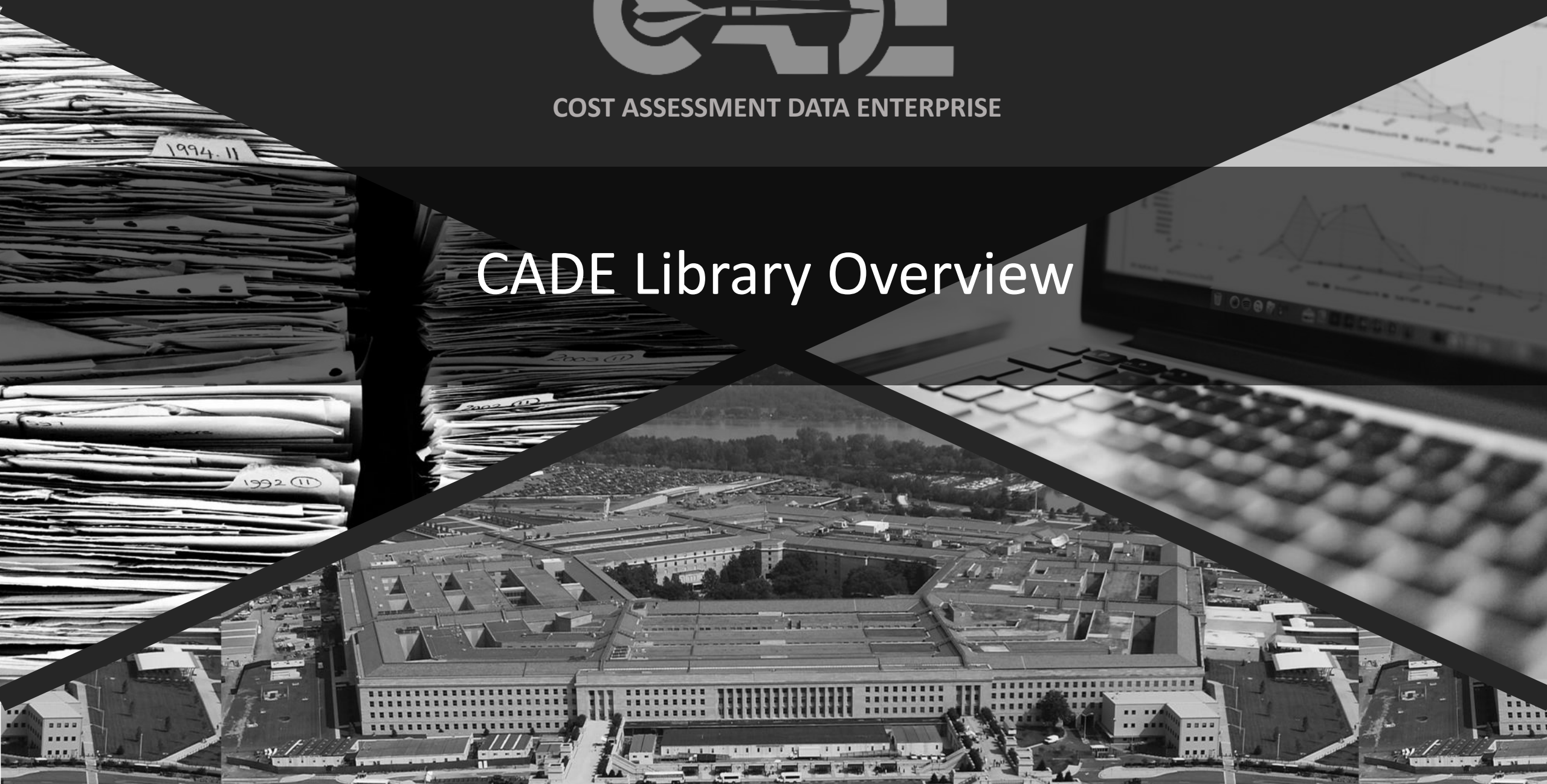
NonrecurringOrRecurring_ID	RECURRING
Row Labels	**Actual To Date (Dollars)**
DIRECT_ENGINEERING_LABOR	**6,207,404,106**
Direct Engineering Labor (1)	1,241,140,137
Direct Engineering Labor (2)	1,241,213,842
Direct Engineering Labor (3)	1,241,999,794
Direct Engineering Labor (4)	1,241,165,702
Direct Engineering Labor (5)	1,241,884,631
DIRECT_MANUFACTURING_OTHER_LABOR	**1,221,971,052**
DIRECT_MANUFACTURING_TOUCH_LABOR	**1,261,312,135**
DIRECT_MATERIALS	**1,241,153,706**
ENGINEERING_LABOR_OVERHEAD	**620,637,316**
FACILITIES_CAPITAL_COST_OF_MONEY	**124,120,188**
GENERAL_AND_ADMINISTRATIVE	**1,241,131,429**
MANUFACTURING_OPERATIONS_LABOR_OVERHEAD	**248,224,616**
MATERIAL_OVERHEAD	**124,187,398**
OTHER_DIRECT_COSTS	**124,217,158**
OTHER_OVERHEAD	**12,413,466**
Grand Total	**12,426,772,570**

Pivot Table Template Example - Phasing

NonrecurringOrRecurring_ID	RECURRING									
StandardCategory_ID	DIRECT_MA	JFACTURING_TOUCH_LABOR								
	Column Lab									
	Sum of ActualToDate_Hours									
Row Labels	1/31/2016	2/29/2016	3/31/2016	4/30/2016	5/31/2016	6/30/2016	7/31/2016	8/31/2016	9/30/2016	10/31/2016
Subsystem 1.1.1	1836	1744	1938	1798	1896	1836	1859	1861	1812	1905
Subsystem 1.1.2	4617	4395	4704	4484	4713	4528	4566	4660	4506	4589
Subsystem 1.1.3	13302	12521	13657	13046	13117	13327	13269	13449	12782	13275
Subsystem 1.1.4.1	99222	95144	100177	96730	100964	96857	97071	99524	97963	100469
Subsystem 1.1.4.2	179482	166996	182764	173528	181660	174058	174122	180150	174986	179585
Subsystem 1.1.4.3	2041	1886	2043	1956	2027	1994	1951	2057	1978	2016
Subsystem 1.1.4.4	86795	83206	89393	83393	89485	86520	86138	87478	85786	87978
Subsystem 1.1.4.5	9610	9085	9756	9418	9659	9383	9457	9714	9296	9735
Subsystem 1.1.4.6	46096	43921	46584	43915	46997	45697	45349	46374	44890	46117
Subsystem 1.1.5.1	1490	1426	1534	1472	1535	1449	1482	1507	1475	1511
Subsystem 1.1.5.2	2737	2571	2737	2632	2768	2655	2688	2703	2671	2744
Subsystem 1.1.5.3	2823	2667	2928	2752	2844	2827	2759	2882	2790	2906
Subsystem 1.1.5.4	6262	5898	6411	6083	6376	6118	6145	6364	6075	6311
Subsystem 1.1.5.5	2132	1966	2160	2003	2175	2088	2088	2105	2078	2112
Subsystem 1.1.5.6	13627	12588	14020	13195	13675	13374	13363	13876	13012	13493
Subsystem 1.2	6229	6201	6516	6127	6556	6271	6318	6431	6212	6401
Subsystem 1.3.1	39929	37209	40340	38046	39936	39503	38541	40509	38443	39964
Subsystem 1.3.2	7317	6894	7557	7001	7598	7178	7100	7392	7294	7292
Subsystem 1.3.3	3142	2979	3133	3028	3130	3103	3065	3114	3086	3091
Subsystem 1.4	34155	32634	34136	32784	34297	33855	33081	34831	33030	34319
Subsystem 1.5	10065	9285	10209	9638	10011	9921	9863	9897	9818	9994
Grand Total	**572909**	**541216**	**582697**	**553029**	**581419**	**562542**	**560275**	**576878**	**559983**	**575807**

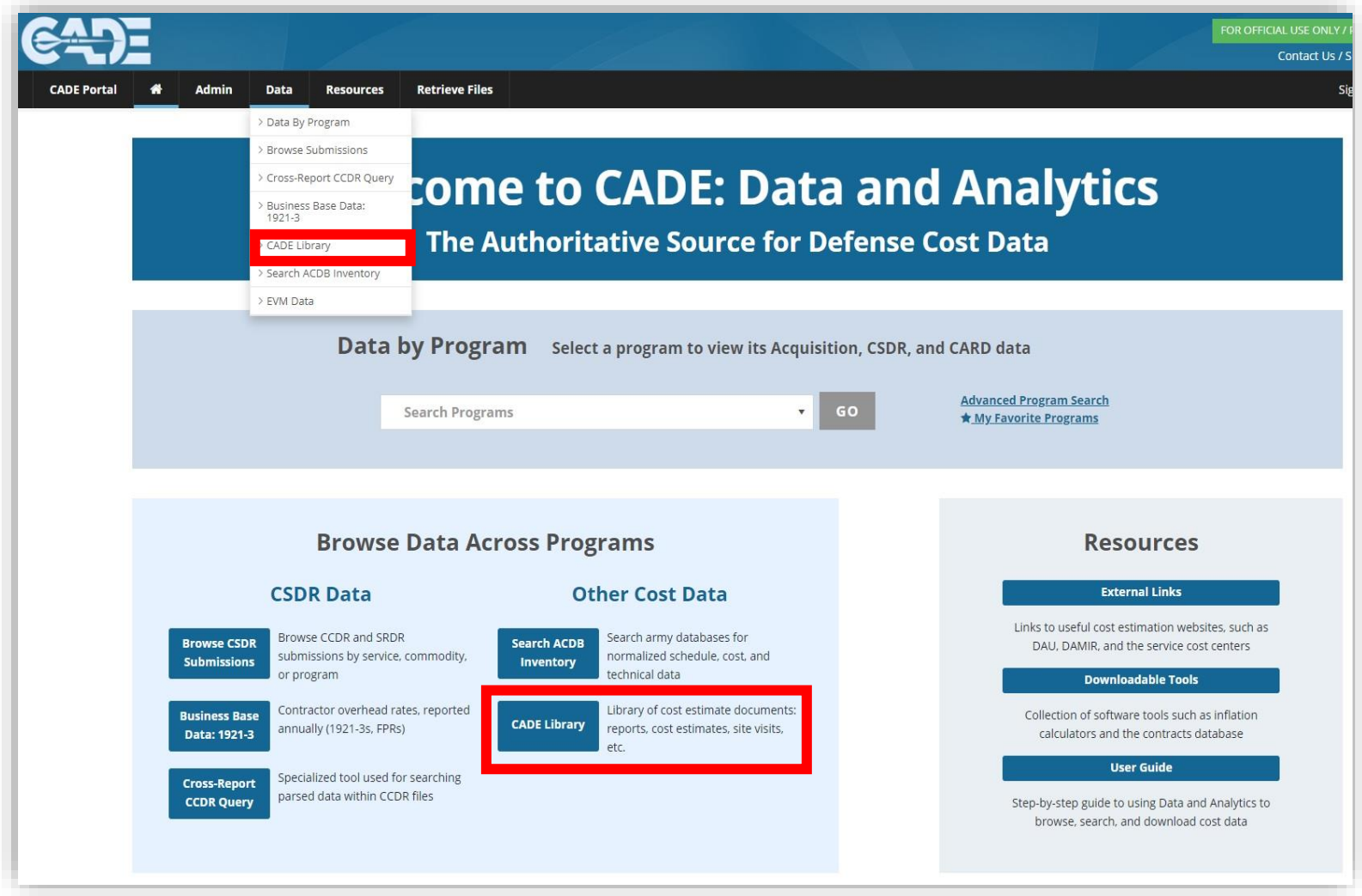
COST ASSESSMENT DATA ENTERPRISE

CADE Library Overview



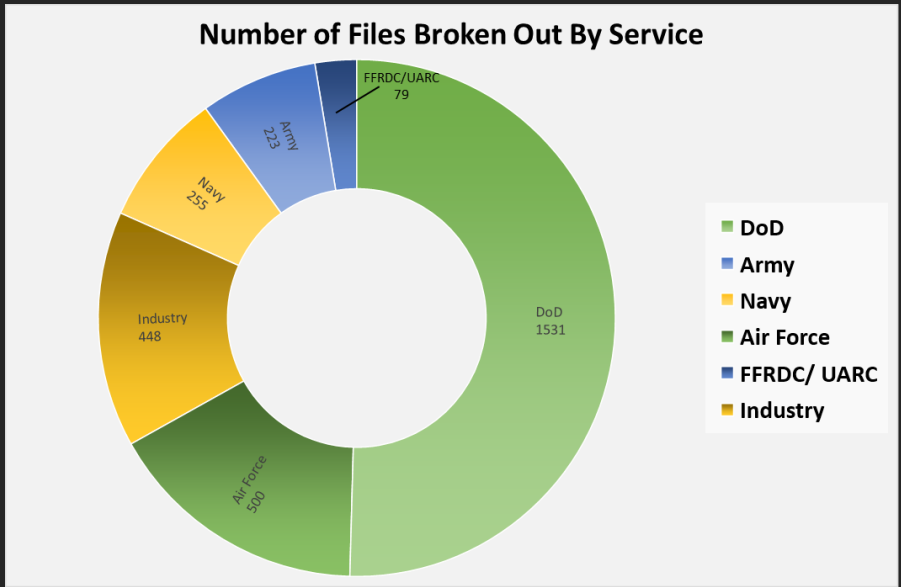
Where Can I Find the Library?

- The CADE Library provides a space for user-uploaded files in a Government-only environment.
- The library is accessible from the Data & Analytics homepage.
- The CADE Team is actively seeking out new files and data sources to collect within the DoD Community.



What Files are Currently in the Library?

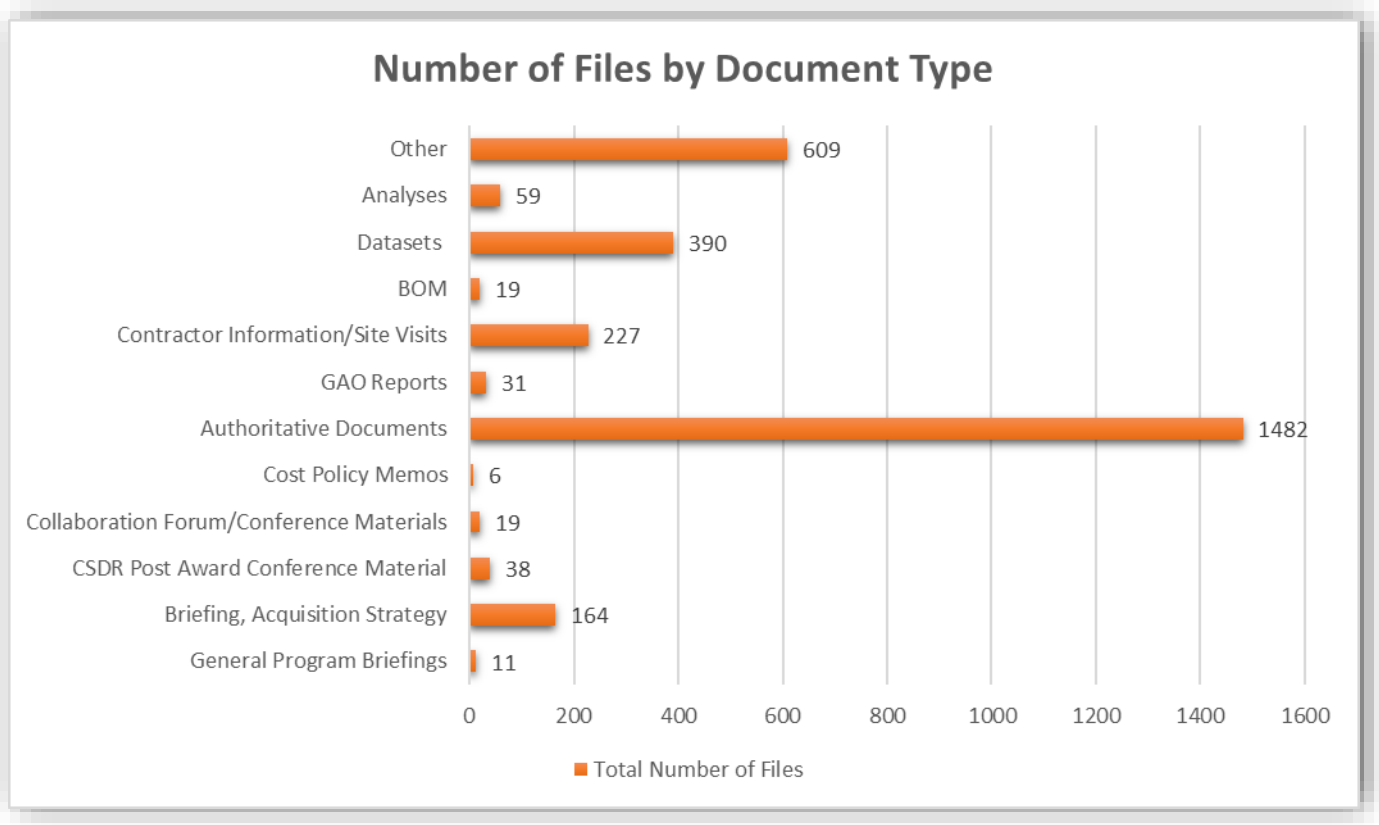
- There are currently over 3,000 files in the library.



- The library stores hanging files that are searchable by document title, as-of-date, container type, commodity type, organization name, life-cycle phase and program name.

- All government users with CADE access can upload files to the library directly or contact the CADE Support Team.

- Currently, the majority of library documents consist of authoritative information such as ADMs, OIPT Briefings, ICE Reports, CARDs, etc.



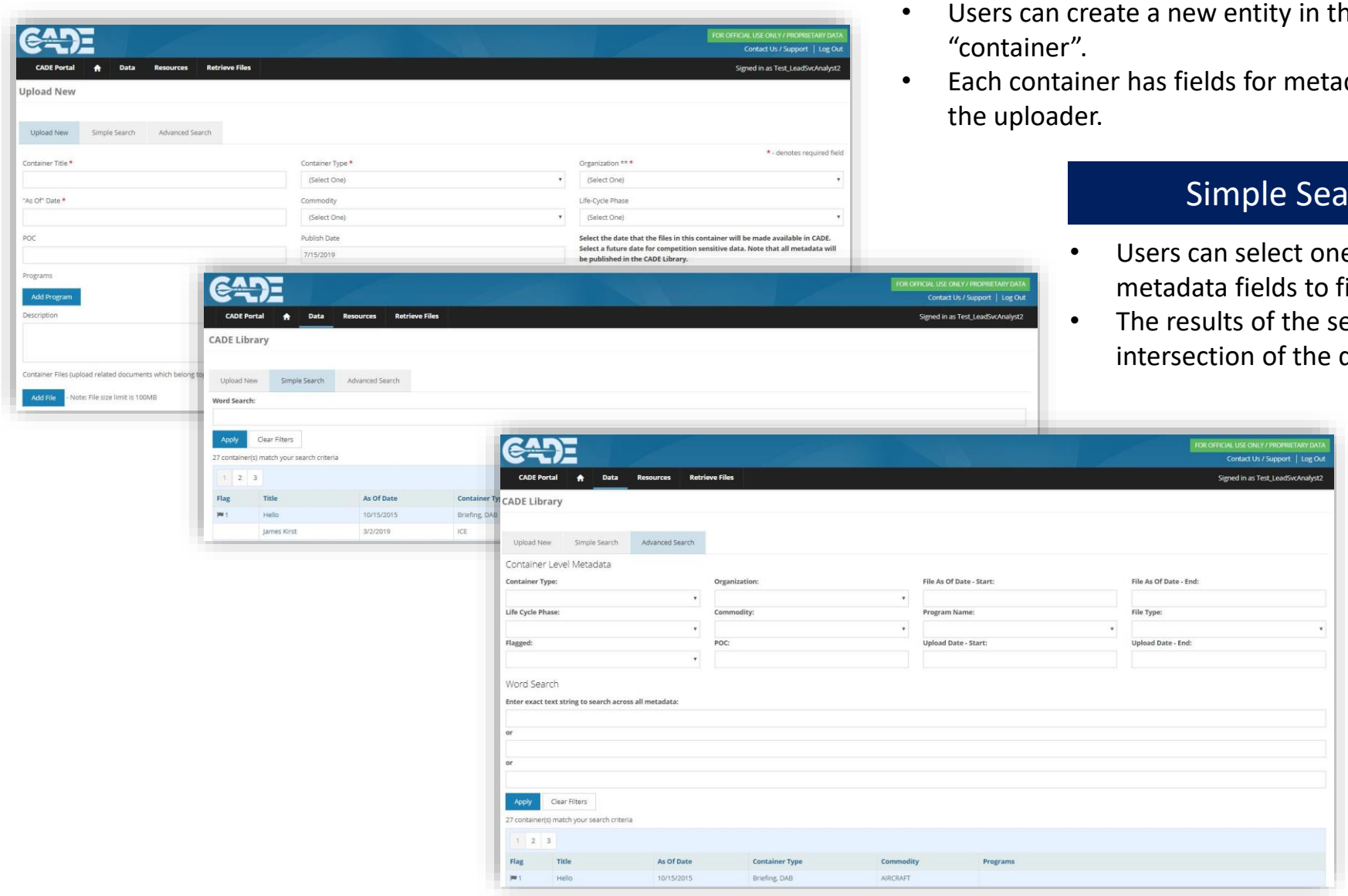
What Gets Uploaded?

- Ad-hoc “Cost” Data From Contractor (e.g., Cost, Price, Effort, BoM)
- Ad-Hoc Non-Cost Data From Contractor:
  - Data provided during site visits (e.g., presentations, supporting files, miscellaneous files)
  - Non-cost CDRLs
- Final-Signed Cost Estimate and Supporting Documentation
  - ICE
  - SCP
  - POE
- Formal Non-cost Milestone Acquisition Documentation (should minimize duplication w/AIR)
  - Acquisition Decision Memorandums (ADM)
  - Test and Evaluation Management Plan (TEMP)
  - Manpower Estimate Reports (MER)
  - Systems Engineering Plans (SEP)
- Other Acquisition Docs
  - Review briefings (e.g., CDRs, PDRs, IIPT, OIPT, DAB)
- “Formally-Signed and Approved” Studies/Research
- Normalized-data sets
- Government Meetings/DoD-related conference material

CADE Library Upload Guidelines:

- ❖ Files cannot contain any classified or source selection sensitive markings
- ❖ No drafts - final documents only
- ❖ Files considered “updates” to older files will replace prior versions

Functions of the CADE Library



Upload New

- Users can create a new entity in the CADE library called a “container”.
- Each container has fields for metadata that are populated by the uploader.

Simple Search

- Users can select one or more of the container level metadata fields to filter results of a search.
- The results of the search will represent the intersection of the data sets.

Advanced Search

- Users can search or scroll to view all of the documents that are available in the CADE library.
- Users can use a “word search” function to filter results.

Full List of Container Types

- Briefing, CIPT
- Briefing, Acquisition Strategy
- Briefing, PAC
- Authoritative Documents
  - (Acquisition Decision Memorandum (ADM)
  - Independent Cost Estimate (ICE)
  - Component Cost Position (CCP)
  - Component Cost Estimate (CCE)
  - Program Office Estimate (POE)
  - CARD
  - Report, ICE
  - Report, OIPT
  - Briefing, OIPT
  - Briefing, DAB
  - Memo, CA
  - Memo, Full Funding
  - MYP
  - Nunn McCurdy
  - Guidance, AoA
- Report, GAO
- Bill of Materials (BOM)
- Contractor Info
  - Government Furnished Equipment (GFE List)
  - Report, Site Visit
- Datasets
  - Miscellaneous Data
  - Cost Data
    - Functional Cost
    - Unit Cost
  - Earned Value Data
    - Schedule Data
  - Software Data
  - Technical Data
  - O&S Data
- Analyses
  - Cost Model
    - CER
  - Learning Curve
  - Sensitivity Analysis
  - Risk Analysis
- Other

COST ASSESSMENT DATA ENTERPRISE

Training & Educational Tools

to get Better Cost Estimates

CADE Cost & Technical Focus Group

July 16-17, 2019

Thomas Henry, OSD CAPE

Upcoming Training Events | CADE Learn

Bridge Learning Management System

https://cade.bridgeapp.com

Current CADE Learn Library (33 Courses)

CADE 101- Fundamentals of CADE

- CSDR Policy, CSDR Reporting Forms, Sustainment
- Validations , Portal Navigations: Data & Analytics

AVAILABLE NOW

CADE For Submitters

- Submitter Guide, Creating Cost Reports using cPet, CSDR Submissions , Program Planning Module

FlexFile 101- The Future of Cost Reporting

- FlexFile Policy, Submission Process, IT Solutions, DILO Scenario

CADE for Project Managers

- Insight into Contracting Fee, Utility of SAR Data, CSDR Compliance, Affordability Analysis, DILO Scenario

CADE For Contracting Officers

- Value of Certified Cost & Pricing Data in CADE, CDRL Process, RFP Identification, DFARS, Other Than Cost & Pricing Data, DILO

Programs in Review/Development (10+ Courses)

CADE 201- Intermediate CADE Skills

- CSDR Data Utility, Using CSDR Data for Credible Estimates , CPQ (Data Browse) -Performance Over Time -Profit (PAC-3) - Learning Curve - Labor Rate Analysis -ICA/ Cost Module Review (CaSES) - KdB

CADE 301- Other CADE Initiatives (Tech Data , -M/R)

Regional Training/ Community Engagement

Regional Training Series Events**

REGIONAL TRAINING SOUTH

- AMCOM (PEOs), MDA| FlexFile 101| Huntsville, AL|19 February 19 ✓
- AFLCMC Eglin| FlexFile 101| Eglin AFB,FL| 20 February 19 ✓
- DAU South Acquisition Update| Huntsville, AL| 21 February 19 ✓

REGIONAL TRAINING MID-ATLANTIC

- CECOM (PEOs)| FlexFile 101| Aberdeen, MD|26 March 19 ✓
- NAVAIR (PEO U&W, T)|FlexFile 101| Pax River, MD|9-10 April 19 ✓
- DAU L@L Series| FlexFile Overview/Update| WebEx Broadcast| 17 April 19 ✓
- AFCAA| FlexFile 101|JB Andrews, MD| 18 April 19 ✓
- NAVSEA |FlexFile 101| Washington Navy Yard, D.C|9 May 19 ✓
- DASA-CE/USMC| FlexFile 101|Fort Belvoir, VA| TBD October 19

REGIONAL TRAINING MOUNTAIN WEST

- AFLCMC| FlexFile 101| Hill AFB, UT|17 June 19 ✓
- PEOs/Industry| FlexFile 101| Denver, CO|18 June 19 ✓

REGIONAL TRAINING WEST

- SMC| FlexFile 101| Los Angeles, CA|6 August 19
- SPAWAR| FlexFile 101| San Diego, CA|7 August 19
- Raytheon/Industry | FlexFile 101 | Tucson, AZ | 8 Aug 19

REGIONAL TRAINING MIDWEST

- TACOM | FlexFile 101| Detroit, MI|10 September 19
- AFLCMC WP |FlexFile 101| Dayton, OH|11 September 19

REGIONAL TRAINING SOUTHWEST

- Industry (Host: Raytheon/LMCO) | FlexFile 101|Dallas-Ft Worth, TX|24 September 19

REGIONAL TRAINING NORTHEAST

- NAVSUP |FlexFile 101| Philadelphia, PA|1 October 19
- NAVAIR/ Boeing || FlexFile 101| JB McGuire-Dix-Lakehurst, NJ|2 October 19

Community Engagement Events**

- ICEAA Conference | Flex File 101 | Tampa, FL| 14-17 May 19* ✓
- MORS Symposium | Flex File 101 | Colorado Springs, CO | 17-20 June 19 ✓
- CADE FOCUS GROUP| FlexFile Update| Arlington, VA| 16-17 July 19 ✓
- AIA Cost Principles Meeting | FlexFile 101 | Dallas-Ft. Worth, TX | 25-27 September 19
- Ground Vehicle Cost Working Group| FlexFile Update| 29-31 October 19

* Tentative Events

** Excludes Monthly Telecons/Other 1-on-1 Industry Events

New DoD Cost Estimating Handbook

Coming SOON!!!

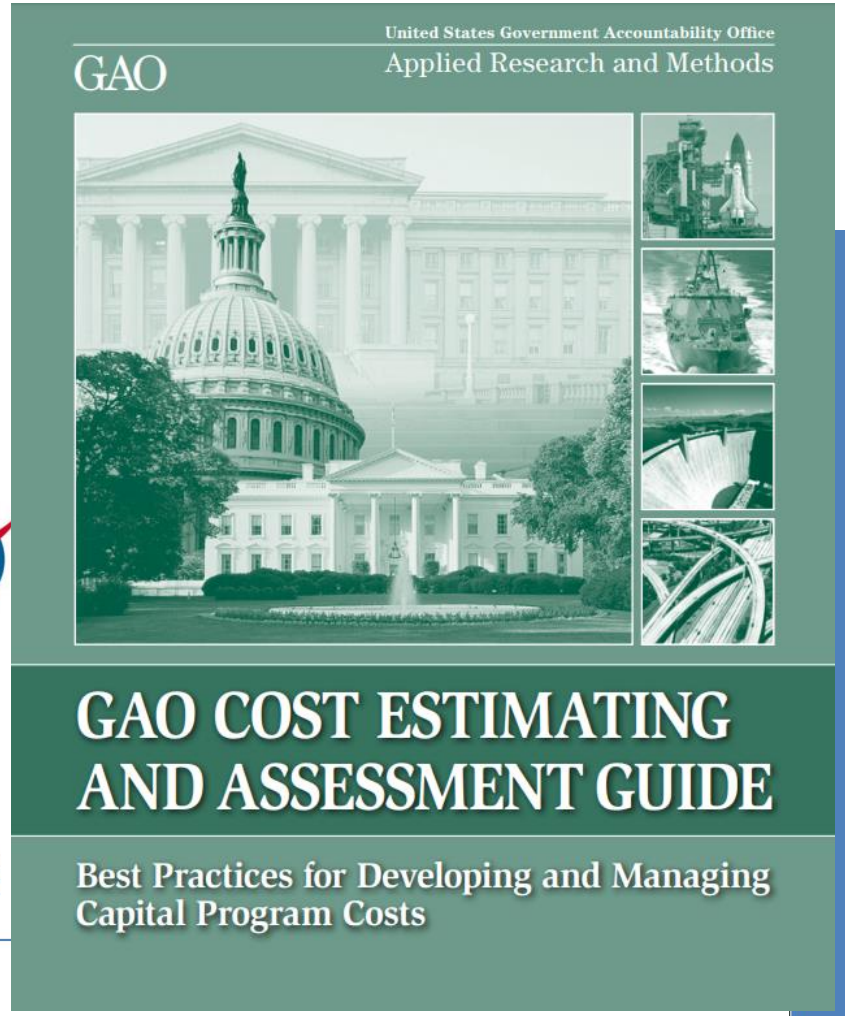
Joint Agency
Cost Schedule Risk and Uncertainty Handbook

This Handbook defines processes and procedures for performing cost and schedule risk and uncertainty analysis in support of life cycle cost estimates for major acquisition programs.

12 March 2014

Joint Agency
Cost Estimating Relationship (CER) Development Handbook

10 August 2018



INFLATION AND ESCALATION BEST PRACTICES FOR COST ANALYSIS

OPERATING AND SUPPORT COST-ESTIMATING GUIDE

OFFICE OF THE SECRETARY OF DEFENSE

COST ASSESSMENT AND PROGRAM EVALUATION

MARCH 2014

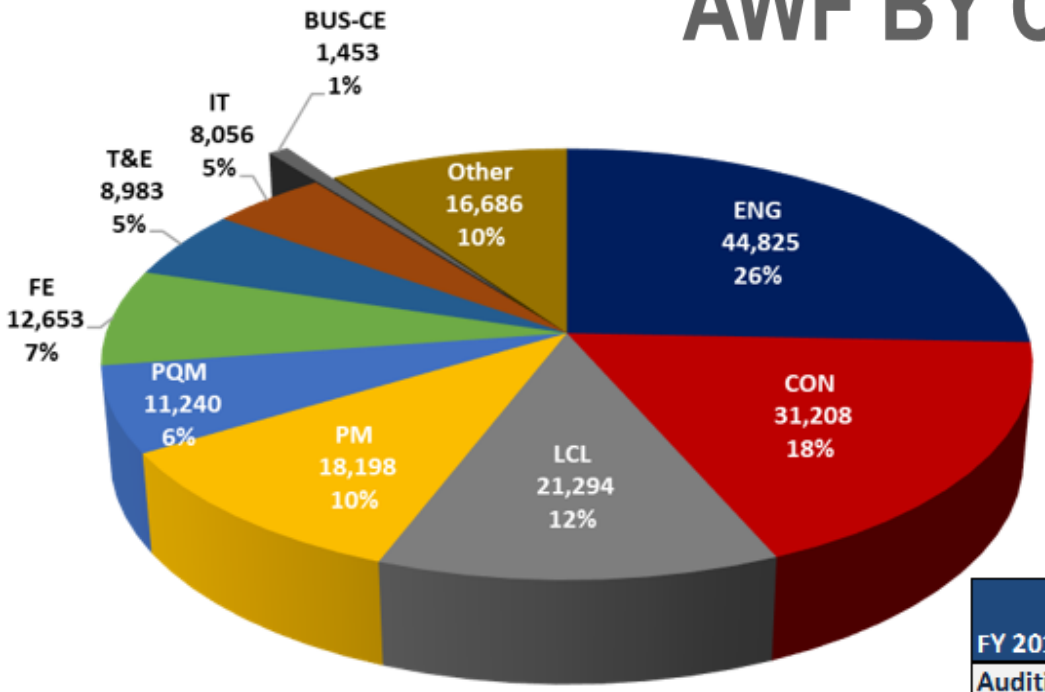
Training & Educational Tools to get Better Cost Estimates

DAU Foundational Learning Directorate

Business Center

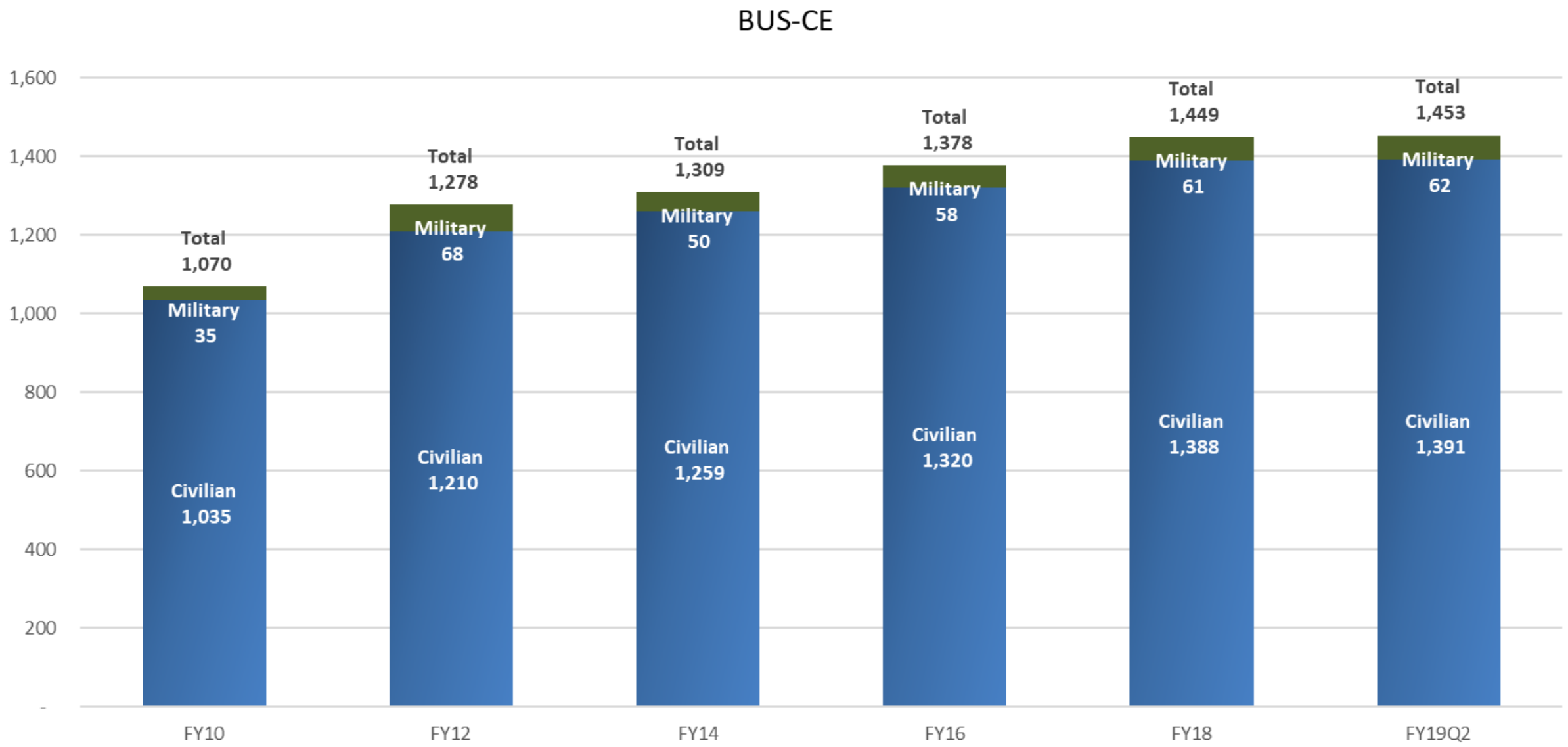
Status for July 17, 2019

AWF BY COMPONENT AND CAREER FIELD



FY 2019 Q2	Army	Navy	Marine Corps	Air Force	4th Estate	Totals	% Total
Auditing	-	-	-	-	4,082	4,082	2.3%
Business - CE	254	555	35	517	92	1,453	0.8%
Business - FM	1,775	2,194	179	2,218	604	6,970	4.0%
Contracting	8,045	6,250	538	8,170	8,205	31,208	17.9%
Engineering	9,094	23,608	325	9,652	2,146	44,825	25.7%
Facilities Engineering	5,954	5,871	32	701	95	12,653	7.2%
Information Technology	1,860	3,477	226	1,422	1,071	8,056	4.6%
Life Cycle Logistics	6,941	6,451	705	3,762	3,435	21,294	12.2%
Production, Quality and Man	1,368	3,804	43	472	5,553	11,240	6.4%
Program Management	3,334	5,780	761	6,417	1,906	18,198	10.4%
Property	50	71	-	14	277	412	0.2%
Purchasing	273	373	37	47	474	1,204	0.7%
S&T Manager	489	518	4	2,854	135	4,000	2.3%
Test and Evaluation	1,930	3,292	142	3,265	354	8,983	5.1%
Unknown/Other	7	2	1	-	8	18	0.01%
Totals	41,374	62,246	3,028	39,511	28,437	174,596	
Component %	23.7%	35.7%	1.7%	22.6%	16.3%		

TOTAL HISTORIC WORKFORCE



Data Source: A&S DataMart as of 31 Mar 2019

FY19 Training - Cost Estimating

Level I Certification

Knowledge Based

ACQ 101
Fundamentals of Systems Acquisition Management
30 hours, online

EVM 101
Fundamentals of Earned Value Management
19 hours, online

BCF 110
Fundamentals of Business Financial Management
23 hours, online

BCF 130
Fundamentals of Cost Analysis
22 hours, online

BCF 131
Applied Cost Analysis
10 days classroom

CLB 035
Statistical Analysis
3 hours, online

CLB 042
Cost Risk and Uncertainty Analysis
8 hours, online

CLM 013
Work-Breakdown Structure
6 hours, online

2 Years of Acquisition Experience in CE

Level II Certification

Case/Scenario Based

ACQ 202
Intermediate Systems Acquisition, Part A
34 hours, online

ACQ 203
Intermediate Systems Acquisition, Part B
5 days classroom

BCF 230
Intermediate Cost Analysis
9.5 days classroom

BCF 206
Cost Risk Analysis
3.5 days classroom

BCF 216
Applied Operating and Support Cost Analysis
4.5 days classroom

BCF 221
Intermediate Financial Management Concepts
30 hours, online

BCF 225
Acquisition Business Management Application
5 days classroom

BCF 250
Applied Software Cost Estimating
4.5 days classroom

CLB 026
Forecasting Techniques
2 hours, online

CLE 076
Introduction to Agile Software Acquisition
5 hours, online

4 Years of Acquisition Experience in CE

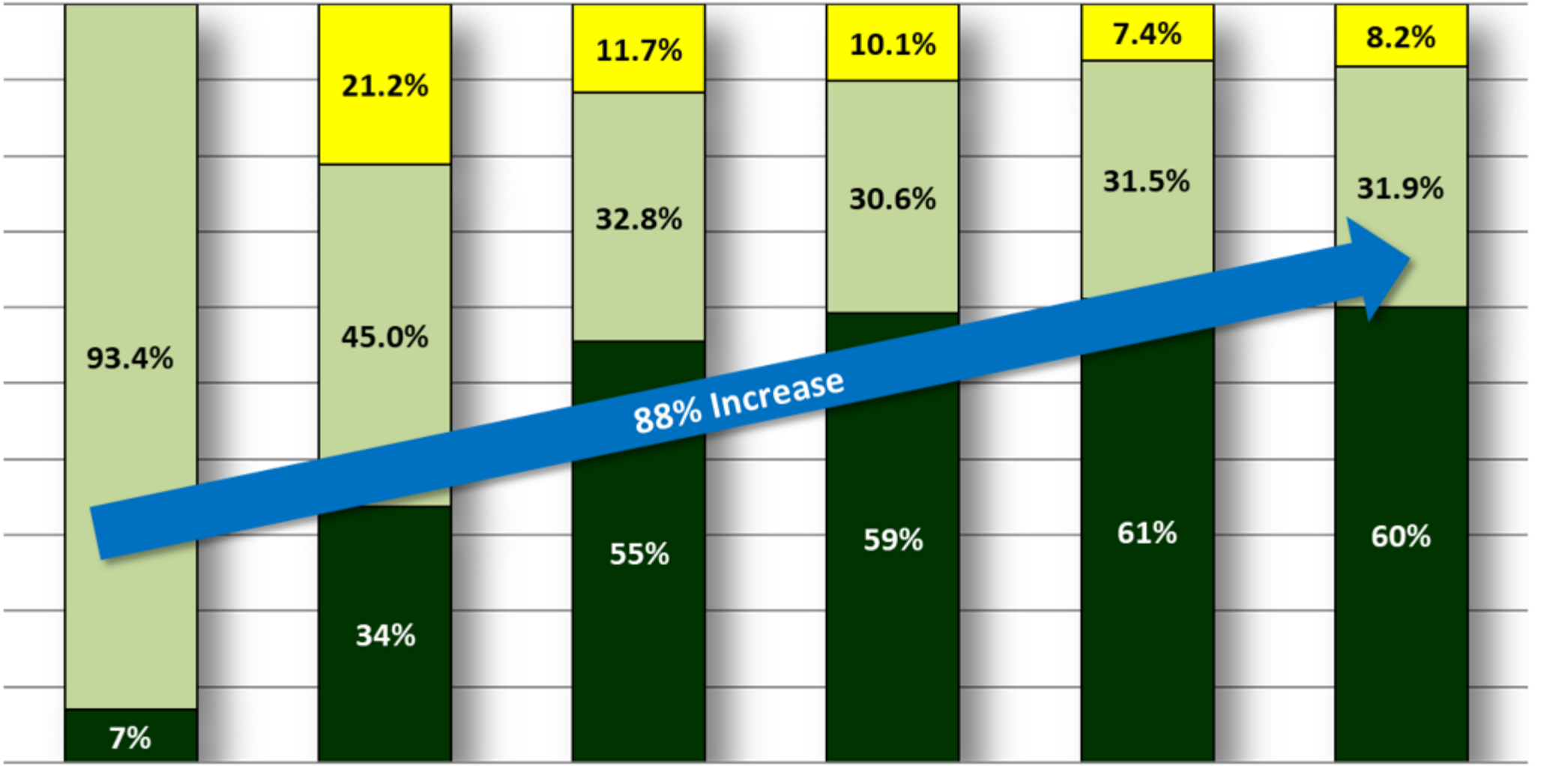
Level III Certification

Case/Scenario Based

BCF 330
Advanced Concepts in Cost Analysis
5 days classroom

6 Years of Acquisition Experience 5 in CE

Business - CE


93.4%
7%
21.2%
45.0%
34%
11.7%
32.8%
55%
10.1%
30.6%
59%
7.4%
31.5%
61%
8.2%
31.9%
60%
88% Increase
FY10
FY12
FY14
FY16
FY18
FY19Q2
Meets/Exceeds
Within 24 Months
Does Not Meet
* Rounded to nearest 0.1%

Cost Estimating Continuous Learning Modules

CLB 007 – Cost Analysis

CLB 008 – Program Execution

CLB 009 – PPBE and Execution

CLB 010 – Congressional Enactment

CLB 011 – Budget Policy

CLB 023 – Software Cost Estimating

CLB 025 – Total Ownership Cost

CLB 026 – Forecasting Techniques

CLB 029 – Rates

CLB 031 – Time Phasing Techniques

CLB 032 – Force Structure Costing

CLB 033 – DoD Databases for CE

CLB 034 – Probability Trees

CLB 035 – Statistical Analysis

CLB 036 – Foreign Military Sales

CLB 037 – Defense Working Capital Fund

CLB 038 – Comparative Analysis

CLB 039 – Common Cost Terms

CLB 040 – Should Cost Management

CLB 042 – Cost Risk and Uncertainty Analysis

Helping Your People Earn Their Degrees

DAU partners with more than 150 colleges & universities to obtain credit for DAU courses toward degrees and certificates

***"Excel-erate"* Your Master's Degree…**

Through this program, partner universities are offering the Defense Acquisition Workforce credit toward masters degrees for DAWIA Level II and III certification.

Grantham UNIVERSITY

UMT

Webster UNIVERSITY WORLDWIDE

BELLEVUE UNIVERSITY

VILLANOVA UNIVERSITY

Get College Credit Here

Impact: Saves time, tuition assistance dollars and out of pocket expenses

How We Can Help Your Organization

Short, hands-on training for your teams

Workshops

- Services Acquisition Workshops
- Acquisition Program Transition Workshops
- Program Termination Workshops
- Systems Engineering Plan Workshops
- Risk Management Workshops
- Technology Transition Workshops
- Source Selection Simulation

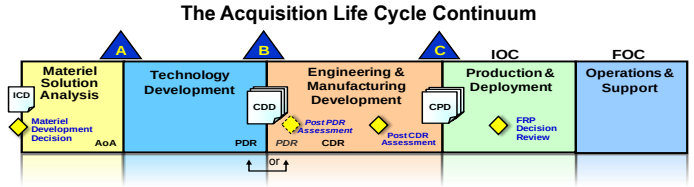
Customized for your program

Applied critical thinking for your program or organization

Consulting

- MDAPs/non-MDAPS
- Identifies problems
- Uses multiple data collection methods
- Intensive analyses
- Actionable results

Acquisition Milestone Reviews



Sets your program up for success

Individual leadership development

Executive Coaching

Helps Senior Leaders achieve their Extraordinary Futures

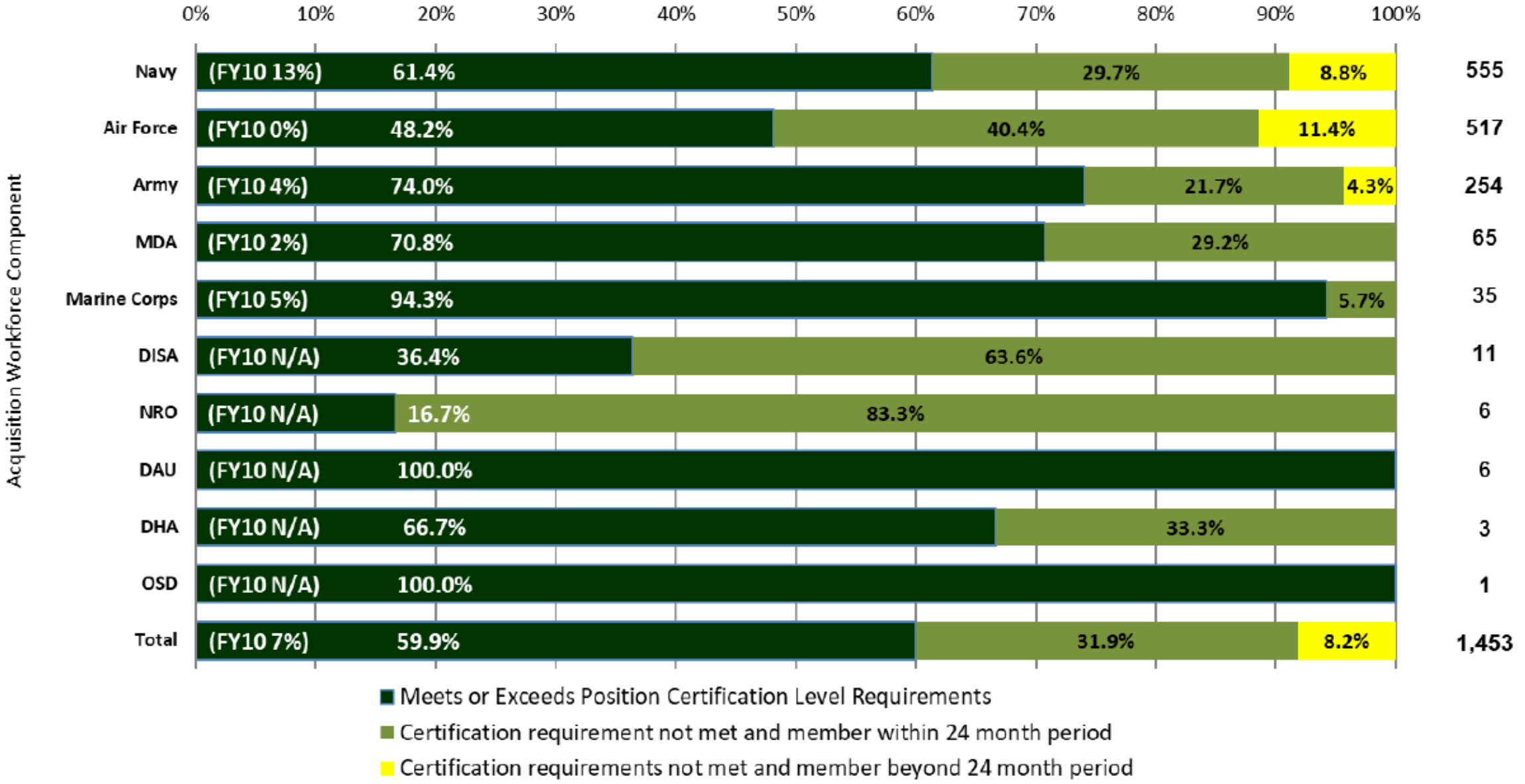
Defense Acquisition Executive Overview Workshop (DAEOW)

- Focused on high-level interest areas
- "Quick learn" venue
- Tailorable
- One-on-one

http://www.dau.mil/ma

BACKUP

Certification Level "Meet/Exceed" Rates by Component
BUS-CE (FY19Q2)



BCF 132 Update

- Course extended to two weeks to provide more in-depth coverage of topics.
- Incorporated continuing exercise using to focus on application of cost estimating tools over the life of a system.
- Course incorporates more “hands-on” exercises where students go into databases (CADE; JIAT; DAMIR) and pull data.
- Emphasis placed on data analysis during the course – students.

BCF 216/216V Update

- Created a virtual version of the course to facilitate delivery of the course online.
- First two lessons expound on coverage of context for O&S conversation.
- Emphasis placed on importance of consideration of O&S early in the acquisition life cycle and affordability.
- More emphasis on examining databases (VAMOSC, OSCAM, SAR, JIAT, etc.).
- Students have more exercises and “hands-on” activities (especially with information from databases)

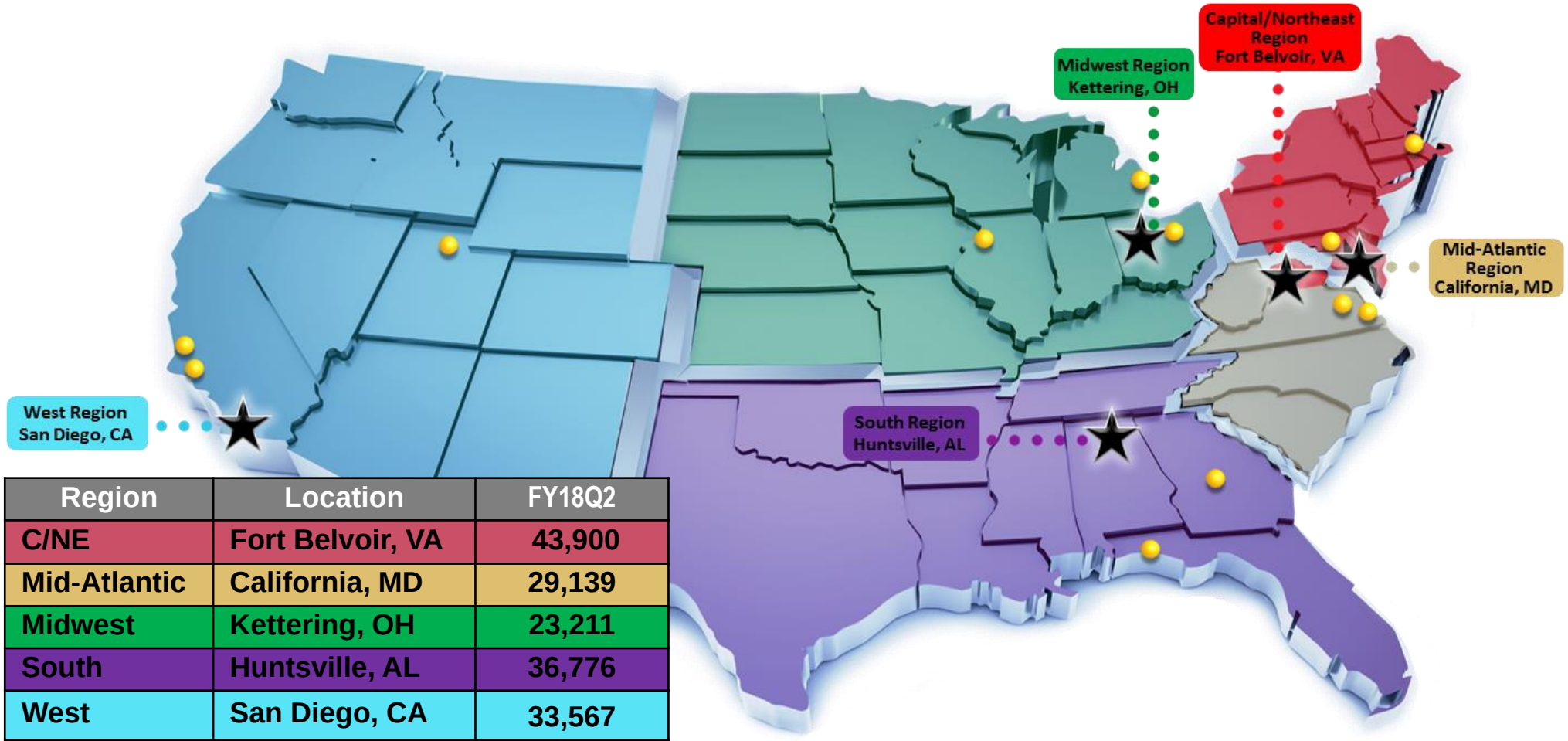
BCF 331 Update

- Reduced to One Week
- Redesigned – Less platform instructor lead more student/group facilitated discussions
- Students will participate in a continuing case study in the role of a senior cost estimator to successfully guide a hypothetical cost team through a milestone review cost estimate.
- Case study involves making difficult but realistic judgement calls often faced by people in those positions. Emphasis is placed on critical thinking, analytical decision making and leadership.

BCF 331 Way Ahead

- Student pilot on 19 – 24 August at Kettering
- Next offerings:
  - 13 – 17 January 2020 at Fort Belvoir
  - 15 – 19 June 2020 at Pax River
  - 10 – 14 August 2020 at Kettering

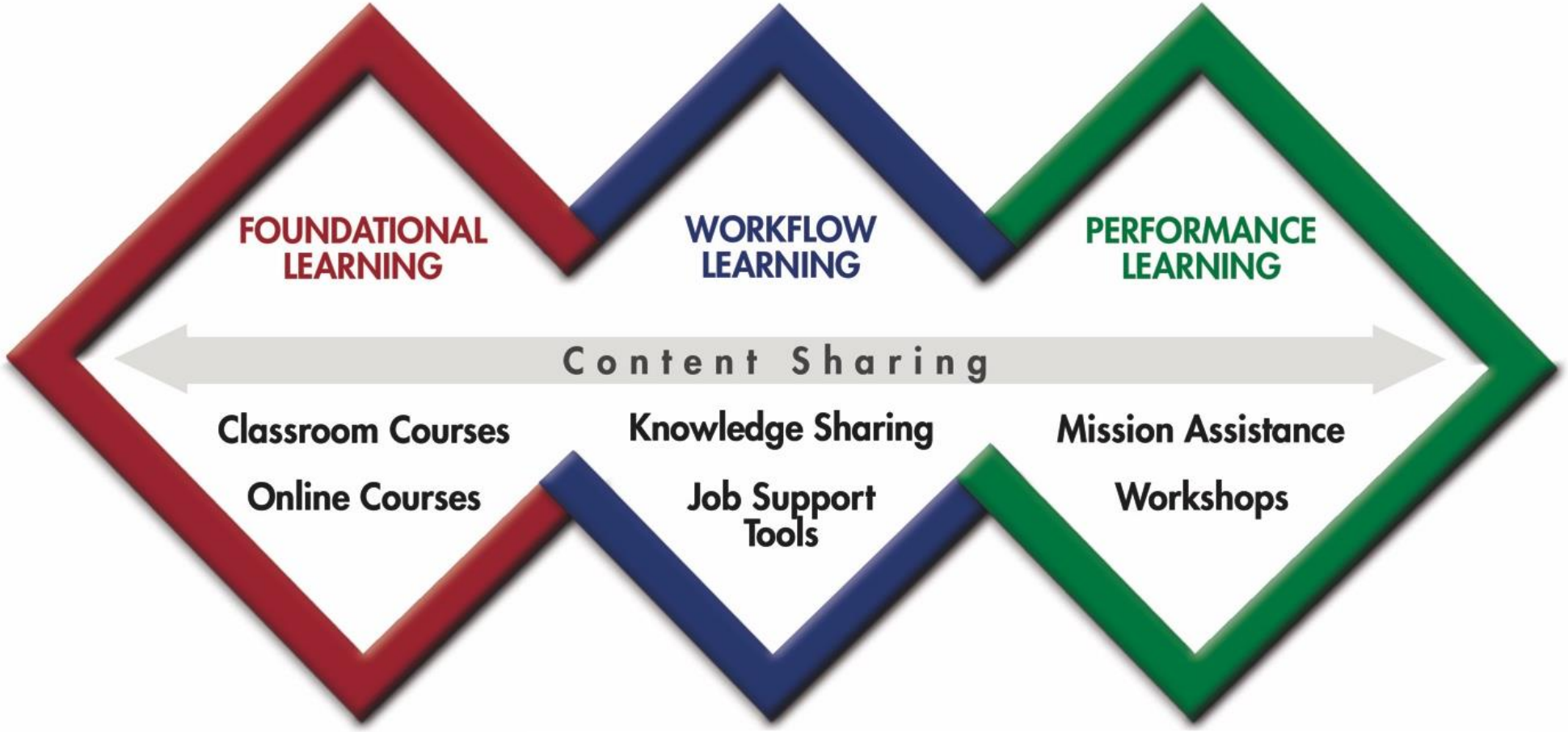
We are Located Near You



Region	Location	FY18Q2
C/NE	Fort Belvoir, VA	43,900
Mid-Atlantic	California, MD	29,139
Midwest	Kettering, OH	23,211
South	Huntsville, AL	36,776
West	San Diego, CA	33,567
Total		166,593

We are part of the community, not just a place to take classes.

Courses…and so much more



Gain Acquisition Knowledge and Skills

Courses to help you meet certification and continuous learning requirements

Find Acquisition Resources to Help You on the Job

Online information and tools to help you be more effective in doing everyday tasks at work

Receive Assistance Tailored to Your Organization's Needs

Consulting, executive coaching, and customized workshops, all tailored to your organization

Accreditation of DAU Learning Assets

	Council on Occupational Education*	**Six Year Reaffirmation of Accreditation, Three Commendations**
	American Council on Education	**College Credit Recommendations for Training Courses**
	International Association for Continuing Education & Training*	**Continuing Education Units Awarded for Training Courses**

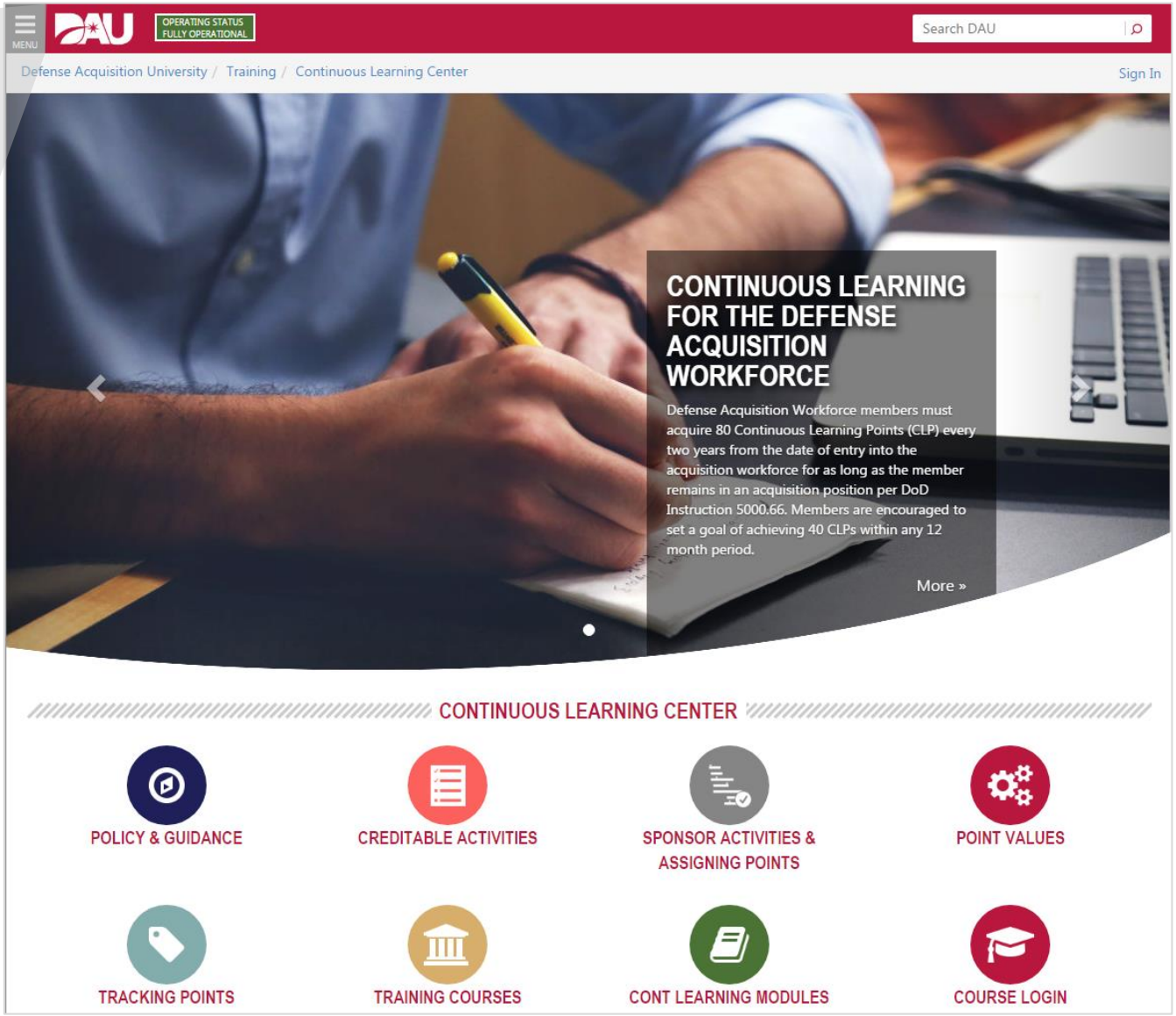
***Defense Acquisition University is accredited by the Commission of the Council on Occupational Education.**

****Defense Acquisition University is accredited as by the International Association for Continuing Education and Training (IACET) and is authorized to issue the IACET CEU.**

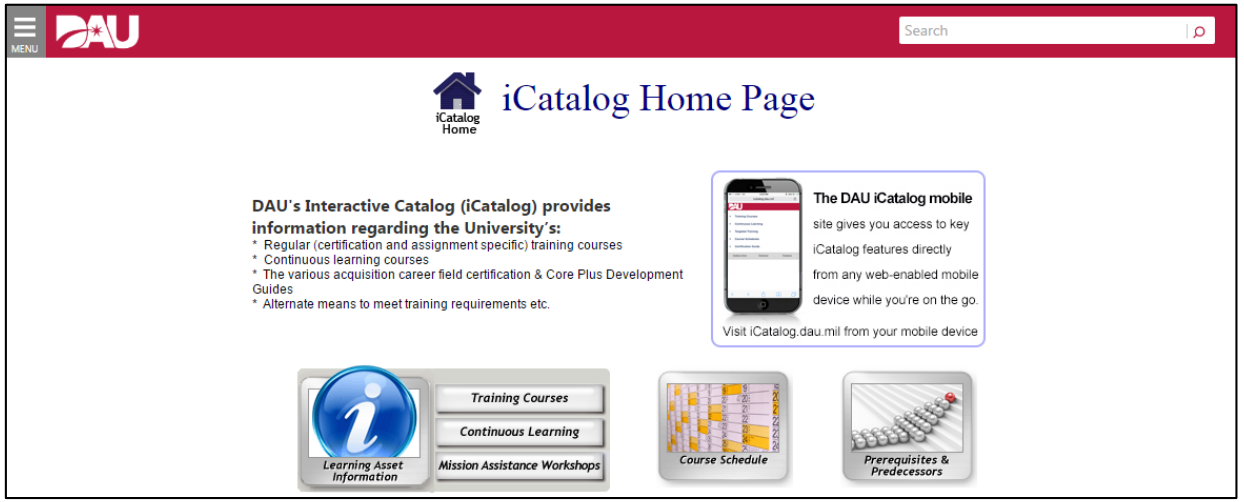
We Help You Earn "CL" Points

DAU MENU

- DAU HOME
- TRAINING CENTER
  - COURSE LOGIN
  - CONT LEARNING CENTER
  - GET COLLEGE CREDIT
- ONLINE RESOURCES
  - ACQ RESEARCH JOURNAL
  - COMMUNITIES
  - DEFENSE AT&L MAGAZINE
  - LIBRARY
  - TOOLS
  - VIDEOS
- NEED HELP AT WORK
- POLICY BROWSER
- LOCATIONS
- NEWS
- EVENTS
- FAQS
- ABOUT DAU



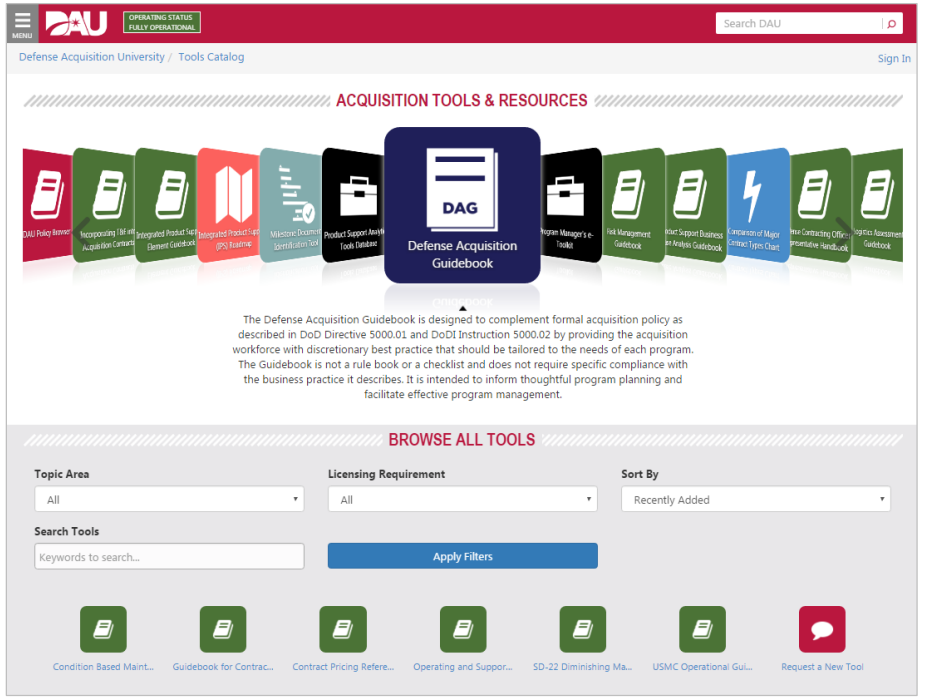
DAU's iCatalog: Your Course Resource



- Most current resource for information about DAU courses and the Certification & Core Plus Development Guides
- Accessible from the DAU home page (http://www.dau.mil) or directly at http://icatalog.dau.mil/

Online Tools Help You Excel on the Job

- **Tools & Resources –** hundreds of assets at your fingertips with intuitive search
- **Web-enabled guidebooks –** take your notes and bookmarks with you. Download and view guidebooks, such as the DAG, on your computer or mobile device
- **Connect with experts and peers –** 50+ communities of practice
- **Interactivity** – provide feedback and ratings



AAP

ACQuipedia

Communities

Glossary

Defense Acquisition Guidebook

IPS Roadmap

Knowledge Repository

Online Video Tour

We Keep You Current on Acquisition

Professional Development Events

Hot Topic Forums

Lunch and Learns

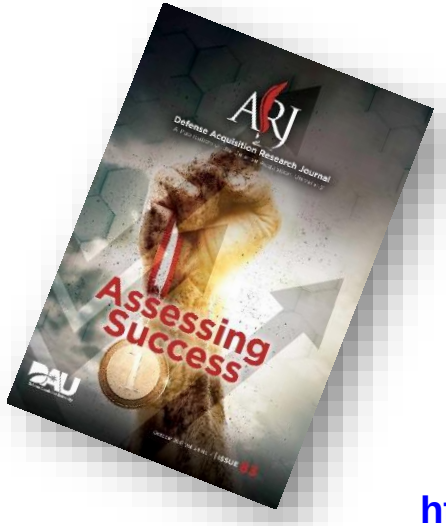
DAU Training Symposiums

Publications

Defense AT&L

Award-winning publication features experiences & observations of the acquisition community

https://www.dau.mil/library/defense-atl/



Defense Acquisition Research Journal

Peer-reviewed, scholarly journal features acquisition research, lessons learned, & best practices

https://www.dau.mil/library/arj/

Professional Development Opportunities

The DAU Alumni Association provides a means for continuing professional growth within the defense acquisition community and helps workforce members meet their continuous learning requirements.

The Association hosts the annual Acquisition Community Symposium and a number of Hot Topic Forums.

www.dauaa.org

Connect with Us…Anywhere, Any Time

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www.dau.mil/

AFIT Graduate Program in Cost Analysis

- Master of Science
- 20 month in residence program (e.g., Aug 2019 to March 2021)
- 10-14 students/year -- open to military (officers and enlisted) and civilians
- Content:
  - Cost analysis methods and issues (5 course sequence)
  - Statistics (3 course sequence)
  - Business, political, and institutional economics
  - Risk
  - Systems Engineering
  - Maintenance and Production
  - Decision Support

QUARTER	COURSE	PROGRAM ELEMENT	CREDITS
1st (Fall)	LOGM 569	Maint and Production Mgmt	4
	ECON 520	Managerial Economics	3*
	STAT 525	Applied Stats for Managers I	4*
	COST 510	Principles of Cost Estimating	3*
2nd (Winter)	STAT 535	Applied Stats for Managers II	4*
	COST 543	Decision Analysis	4
	RSCH 630	Research Methods	4
	COST 520	Adv Concepts in Cost Estimating	3*
3rd (Spring)	SENG 610	Project Management	4*
	ECON 580	Fundamentals of Math Economics	4
	ECON 640	Econometrics	3
	COST 610	Risk and Uncertainty Analysis	3*
4th (Summer)	EMGT 550	Engr Economic Decision Analysis	3*
	ECON 610	Comparative Economic Analysis	3
	COST 799	Thesis Research	4*
5th (Fall)	COST 625	O&S Cost Estimating	3
	COST 799	Thesis Research	5*
6th (Winter)	COST 630	Defense Cost Economics	3*
	COST 674	Seminar in Cost Analysis	4*
	COST 799	Thesis Research	4*

AFIT/LS --School of Systems and Logistics

The AFIT of Today is the Air Force of Tomorrow.

- Distance Learning and On-site classroom offerings:
  - ~18K+ students, 120 courses, 325 offerings, 50+ bases/locations worldwide
    - Program/Project Management, Systems & Software Engineering, Test & Evaluation, Logistics Management, and Contracting
    - **Cost Estimating (QMT 290 Mid-level professional, QMT 490 – Advanced topics)**
    - **Data Analytics (new undertaking, sponsored by A1)**

- Consulting Service and Research

- Initial Skills Training (IST)
  - Fundamentals of Acquisition Management (20 offerings, 568 students)
    - **65X**, 63A, 62E, 61X, and 1101/346 civilians

- https://www.afit.edu/LS/courseList.cfm

https://www.afit.edu/LS/

Master of Cost Estimating and Analysis (MCEA)

CADE Brief, July 2019

Karen Ann Richey, Senior Lecturer, NPS

What We Are Doing: Overview

- Two year program: 7 cohorts (157 students) have graduated so far!
  - 2 classes per quarter
  - 4 quarters per year
- Delivery modes
  - Asynchronous (computer based; no face-to-face instructional time, one class each quarter)
  - Synchronous (class with an instructor: one class each quarter)
    - VTC / Collaborate
    - Eighth cohort: Classes meet Thursdays, 1400-1700 (EST), same time slot for two years
    - Ninth cohort: Classes meet Wednesdays, 1400-1700 (EST) same time slot for two years

Master's Curriculum Overview

- Foundational courses
  - Probability and Statistics (2 Courses)
  - Operations Research for Cost Analysts
  - Acquisition of Defense Systems
  - Defense Financial Management and Budgeting
    (2 Courses: one on policy, one on practice)
  - Systems Engineering (2 Courses)
- Cost Estimating courses
  - Cost Estimating I, II, and III: Methods and Techniques, Advanced Concepts, Risk and Uncertainty
  - Cost Estimating IV: Applied Cost Analysis/Case Studies
  - Cost Estimating V: Cost / Engineering Economics
  - Cost Estimating VI: Decision Analysis
- Capstone Project (final two quarters)

Benefits

- All graduates will earn a Master of Cost Estimating and Analysis Degree upon completion.
- Intent is for Master's Program to always fulfill the Educational Requirements for DAWIA Level I, II, and III Certification (BUS-CE) for all services. Six years of experience still needed for completion.
  - Each service has granted its approval for all cohorts
  - Annual updates required to ensure currency

Certificate Program Available, as well

- A four course sequence leading to a Certificate in Cost Estimating and Analysis.
- You take one class per quarter for four consecutive quarters.
- Newest class commenced early July 2019.

The Four Courses Include:

- Operations Research Methods for Cost Analysts
- Cost I: Methods and Techniques
- Cost II: Advanced Concepts in Cost Estimating
- Cost III: Risk and Uncertainty Analysis

Advertising

- Tri-folds available

- Website URL
  http://www.nps.edu/Academics/DL/DLPrograms/Programs/degProgs_MCEA.html

- MCEA Video on website
  http://www.nps.edu/video/portal/Video.aspx?enc=JkJoOpnrBNc8itOw2LqZ4p8wswvm0Vlv

Cost Estimation I: Subject Areas

- Introduction to Cost Estimating
- Cost Processes
- Data Collection and Sources
  (CSDR/CPR/SAR/SRDR's, etc…….)
- Data Bases Used (VAMOSC, CADE Flex Files, DAMIR, etc…….)
- Introduction to Earned Value Management
- Data Normalization
- Statistics for Cost Estimators
- Methodologies (Analogy, Parametric, …….)

Cost Estimation I: Subject Areas (cont.)

- Linear Regression Analysis (Single, Multivariable, Nonlinear)
- Learning Curves (Unit Theory, Cum Average Theory, Production Breaks, Step Down Functions)
- Cost Factors
- Wrap Rates
- Analogy Technique
- Introduction to Software Cost Estimating
- Introduction to Risk and Uncertainty Analysis
- Unified Facilities Criteria (UFC's)

Cost Estimation II: Subject Areas

- Software Cost Estimating
  - Waterfall and adaptive paradigms like Agile
  - Software sizing, function points and cost estimating relationships
- Scheduling
  - Best practices for creating reliable schedules
  - Logic Relationships
  - Critical path method
  - Schedule Risk Analysis
  - Updating and Baselining a schedule

Cost Estimation II: Subject Areas (cont.)

- Earned Value Management
  - System Description and 32 ANSI Guidelines
  - Performance Measurement Baseline
  - Resource loaded Schedules
  - Cost and Schedule Variance analysis
  - EVM Techniques and Methods
    - Development of Metrics for Estimating Costs at Completion
  - The Role of DCMA including 14 Point Assessments, EVM Analysis and Surveillance

Cost Estimation III: Subject Areas

- *Introduction to Cost and Schedule Risk and Uncertainty*

- Review of Probability for Cost Analysts
- Monte Carlo Simulation with @Risk
- Understanding the Nature of CER and Cost Driver Uncertainty
- The Impact of Correlation
- Schedule Risk Analysis
- Phasing the Cost Estimate
- Putting It All Together: Project Preparation: Examining the technical and programmatic description of an acquisition program, then develop appropriate WBS's for cost estimating
- Course Project

Cost Estimation IV: Subject Areas

- Cost Estimating in the “Post-WSARA” Era
- Technology Readiness Assessment Best Practices
- Data-Centric Cost Estimating: CADE Flex Files
- Integrated Cost and Schedule Risk Analysis
- Case Studies of Major Defense Acquisition Programs

Cost Estimation V: Subject Areas

- Engineering Economics
  - Time Value of Money
  - Equivalence of Cash Flows
- Analyzing a Project
  - Present Worth
  - Equivalent Annual Worth
  - Return on Investment (ROI)
- Comparing Alternatives and Projects
  - Mutually Exclusive Investments
  - Replacement Analysis
- Case Studies

Cost Estimation VI: Subject Areas

Week 1: Probability

Week 2: Decision Making Uncertainty and Risk

Week 3: Utility Theory

Week 4: Decision Trees

Week 5: Influence Diagrams

Week 6: Value of Information

Week 7: Subjective Probabilities

Week 8: Multiple Objective Preference Models

Week 9: GAO Cost Guide Best Practices Case Study Overview

Week 10: Comprehensive, Well-Documented Best Practices

Week 11: Accurate, Credible Best Practices

ICEAA

New ICEAA Board Elected For 2019-2021

New President Rick Collins Has Established Three Key Goals:

1. **Create a Community of Technical Excellence**
2. **Create a Community of Collaboration**
3. **Create a Community of Relevance**

Five Key Priorities to Achieve These Goals (Listed on the Right)

Central Focus on Professional Development

Vision: To be a vital, respected, indispensable and growing community of practice composed of ICEAA certified professionals recognized as best-in-class

PRIORITIES

1. **IMPROVE CEBoK and CERTIFICATION EXAM**
2. **DEVELOP SOFTWARE CEBoK and SOFTWARE COST CERTIFICATION EXAM**
3. **INCREASE GOVERNMENT ENGAGEMENT – *SPECIAL EMPHASIS ON DoD***
4. **DELIVER GREATER VALUE TO THE INTERNATIONAL COMMUNITY**
5. **INCREASE LEVEL OF INDUSTRY ENGAGEMENT**

ICEAA PROFESSIONAL DEVELOPMENT

Evolutionary and Revolutionary Changes Are Coming

01

Upgrade Cost Estimating Body of Knowledge (CEBoK)

Improve and update content and update delivery mechanism

02

Change Exam Format

Update question bank and move to electronic delivery

03

Emphasis on DoD

Current content on data is generic – CEBoK upgrade will include CSDR and FlexFile material

04

Provide More Value to Experienced Estimators

Provide more continuing education opportunities

05

Update Conference Training

Incorporate machine learning, advanced tools, and data topics

06

Software CEBoK

Develop separate software-focused CEBoK and provide certification program