OFFICE OF THE SECRETARY OF DEFENSE
COST ASSESSMENT AND PROGRAM EVALUATION

CLEARED
For Open Publication

Mar 24, 2021

Department of Defense
OFFICE OF PREPUBLICATION AND SECURITY REVIEW

2

SLIDES ONLY

NO SCRIPT PROVIDED

Cost IPT General Session

Feb 23, 2021

The overall classification of this briefing is:
UNCLASSIFIED

Agenda and Administration

OSD CAPE

- Agenda:

Time	Topic	Presenter
1200-1205	Admin	Bryan Coots
1205-1210	Welcome	Jennifer Bowles
1210-1245	COVID-19 Cost Reporting Metrics	Marc Stephenson
1245-1255	Resources for Navigating FlexFile/Quantity Data Reports	Marc Stephenson
1255-1310	Data Tools Tiger Team Update	Dan Germony
1310-1340	CAPE Study: Ground and Surface vs. Tactical Airborne Radar Cost Trends	Bret Salmons
1340-1350	Admin Break	Bryan Coots
1350-1435	OSD CAPE Policy Updates and 2021 NDAA Overview	Erica Walters
1435-1505	DoD's Software Acquisition Pathway - Digital Delivery at the Speed of Relevance	Sean Brady
1505-1510	Closing	Jennifer Bowles

- Administration:
    - Meeting is unclassified, do not discuss classified information
    - Meeting includes multiple contractors, do not discuss proprietary information
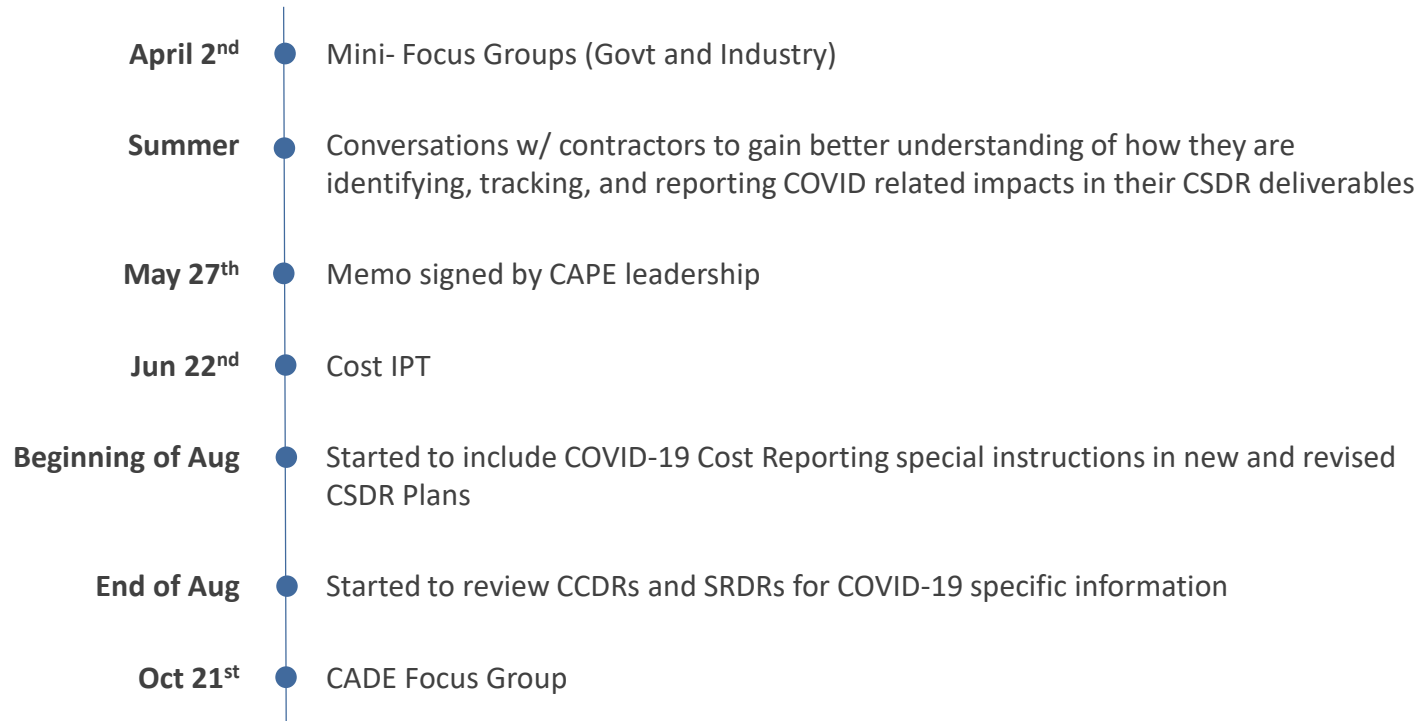
Welcome

Jennifer Bowles
Director, Land and Naval Warfare Cost Analysis
OSD CAPE

COVID-19 Cost Reporting Metrics

Marc Stephenson
Cost Data Support Group
OSD CAPE

Timeline of Events

April 2nd ● Mini- Focus Groups (Govt and Industry)

Summer ● Conversations w/ contractors to gain better understanding of how they are identifying, tracking, and reporting COVID related impacts in their CSDR deliverables

May 27th ● Memo signed by CAPE leadership

Jun 22nd ● Cost IPT

Beginning of Aug ● Started to include COVID-19 Cost Reporting special instructions in new and revised CSDR Plans

End of Aug ● Started to review CCDRs and SRDRs for COVID-19 specific information

Oct 21st ● CADE Focus Group

22% of Contracts That Responded Have Some Impact (as of Feb. 12, 2020)

Accepted Submissions* from ~ EOM Aug. through Feb. 12

Status	Army		Air Force		Navy		DoD	
	Submissions	Contracts	Submissions	Contracts	Submissions	Contracts	Submissions	Contracts
Impacts**	2	2	8	7	16	11	0	0
No Impacts	18	12	24	13	48	28	1	1
No Response***	10	8	6	6	13	11	1	1

* Only submissions with As Of Dates from the ~ Mar. 2020 timeframe and later.

**Impacts range from quantifying the EAC impact to more qualitative explanations.

***Submissions were already being finalized when DCARC started tracking metrics related to COVID-19. Many of these submissions still have CSDR requirements due.

Distribution of Accepted Submissions* from ~ EOM August

Majority of submissions are early on in CSDR reporting schedule. DCARC will continue to follow-up on subsequent submissions.
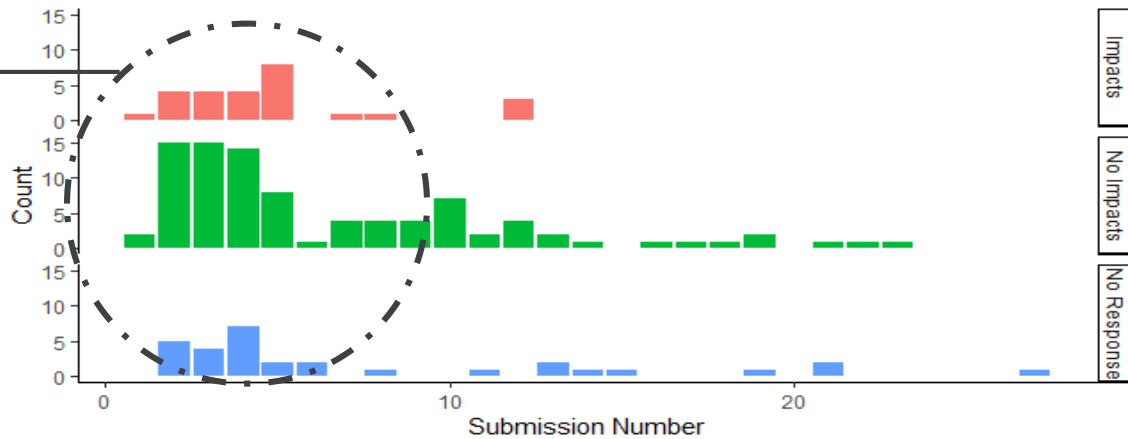
Takeaways

- Types of impacts vary (*expected*):

  - Scheduled events impacted
  - Deliveries delayed
  - Travel reduced
  - Quarantine specific charges required

- The way impacts are reported vary (*also expected*):

  - Qualitative descriptions
  - Actual quantification of events (how much, how long, etc.)
  - Of those reporting FlexFiles, some are utilizing the DID data elements, such as Account

- Some contractors have indicated they are still trying to summarize the impact

Discussion

- Is industry in a better position to identify and report impacts now (early 2021) than they were a few months ago (~Fall/Winter 2020)?

- Is there a better mechanism to collect impacts than the CSDR reports and forms? Is there separate information that can be uploaded as a supplemental file along with the CSDR submissions?

- Does industry require more guidance on how to report impacts?

Resources for Navigating FlexFile/Quantity Data Reports

Marc Stephenson
Cost Data Support Group
OSD CAPE

9

FlexFile Guidance and Training

In addition to reaching out to the DCARC, the following material is also available:

cade.osd.mil/policy/flexfile-quantity

- Data Item Descriptions (DIDs)
- FlexFile and Quantity Data Report Implementation Guidance
- Format Specifications and Guidance (FFS, DEI, Excel Templates, etc.)
- Other policy memos and briefs (Implementation Memo, 101 Training)

cade.osd.mil/tools/csdr-tools

- New version of **cPet** for FlexFile/Quantity Data Report conversion
- List of CADE specific validation checks
- Sample FlexFile and Quantity Data Report data

cade.osd.mil/support

- External link to CADE Learning Management System (LMS) (https://cade.bridgeapp.com/)
- Schedule of training events
- CSDR Submit-Review guidance and videos

> Look for updates to FlexFile and Quantity Data Report Implementation Guidance and other training material in 2021

Data Tools Tiger Team Update

Dan Germony
Land and Naval Warfare Cost Analysis Division
OSD CAPE

Cost Estimating and Analysis Data Tools Tiger Team

CIPT

23 Feb 2021

The overall classification of this briefing is: UNCLASSIFIED

Purpose/Agenda

OSD CAPE

Purpose of Today's Meeting:

- Provide the CIPT audience an update (or an introduction to) the Date Tool Tiger Team.

Agenda:

- Genesis of the Tiger Team

- What Does "Software Tools" Mean?

- Tiger Team Goals/Phases

- Work Completed To Date

- Next Steps

Genesis of the Tiger Team

OSD CAPE

Problem: Discussion and polling during the last CIPT's *"Data Analytics Panel Discussion"* (2020-10-21) identified several potential issues related to cost analysis software tools:

a. 54% of poll respondents were between "neutral" and "strongly disagreed" that they are receiving sufficient training on the data analysis tools they currently use. (n = 17)

b. 100% of poll respondents were interested in learning newer tools. (n = 20)

c. IT restrictions were cited as most frequent reason newer tools were not available. (n = 14)

d. Organizations are starting to experience hiring/retention issues since universities are training more modern tools than commonly used by DoD today.

Alt Problem*: Is this really a problem?*

(fictitious) How To Do Analysis: Figure 1

Photo credit:
https://twitter.com/CMastication/status/1347223699741618176

14
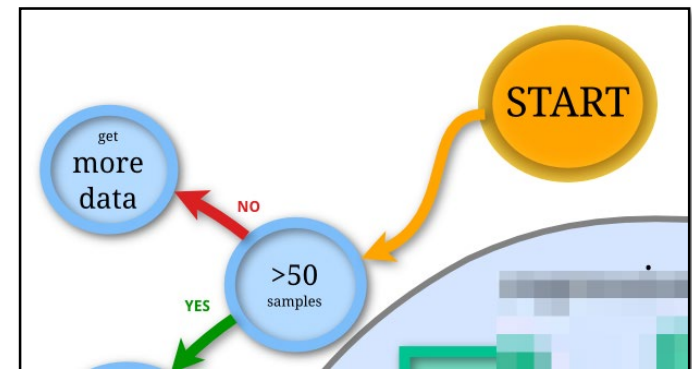
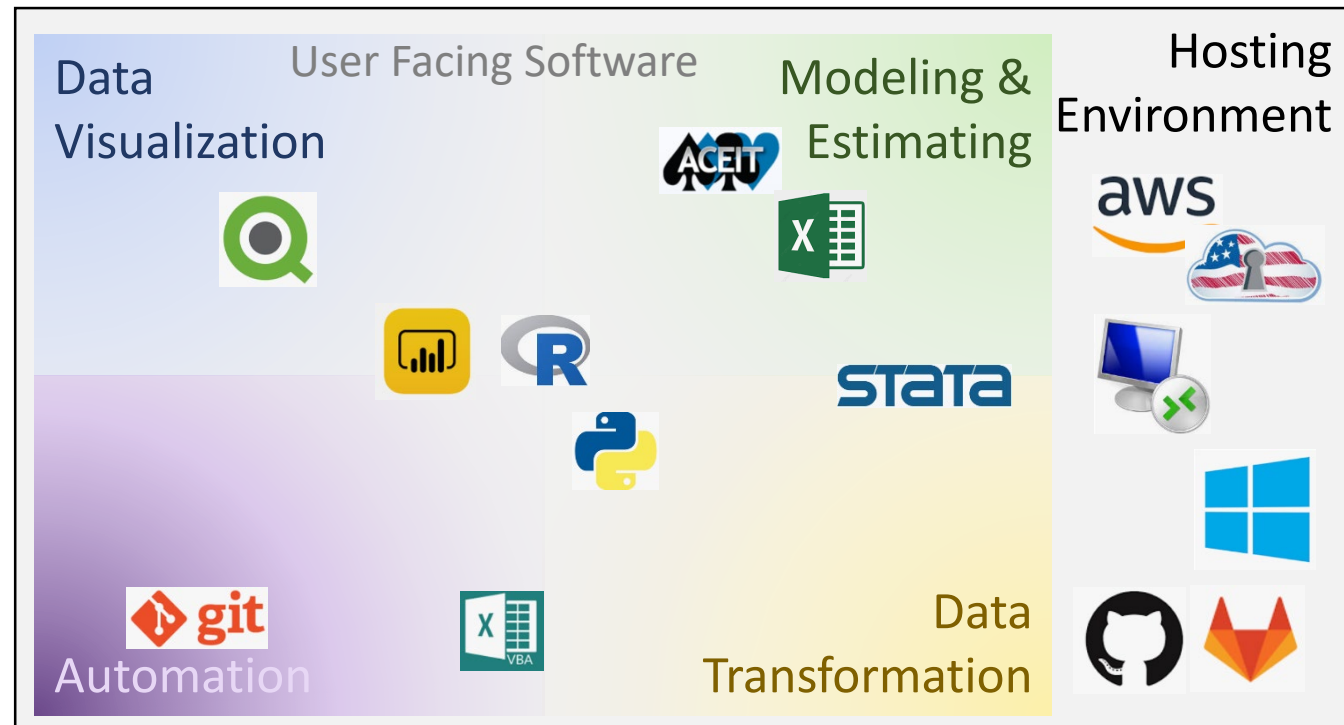# What are "Cost Estimating and Analysts Tools"

OSD CAPE

For this Tiger Team, "Cost Estimating and Analysts Tools" consists of:

1. The user facing software analysts directly interact with to transform, visualize, model, and automate their analysis

2. The backend software environment used to host the user facing software

No single tool will meet all needs, each tool has pros/cons when compared to others

- Paid vs. open-source

- Ease-of-use vs. functionality

- Installed locally vs. hosted centrally

- Ability to share/ generalize results

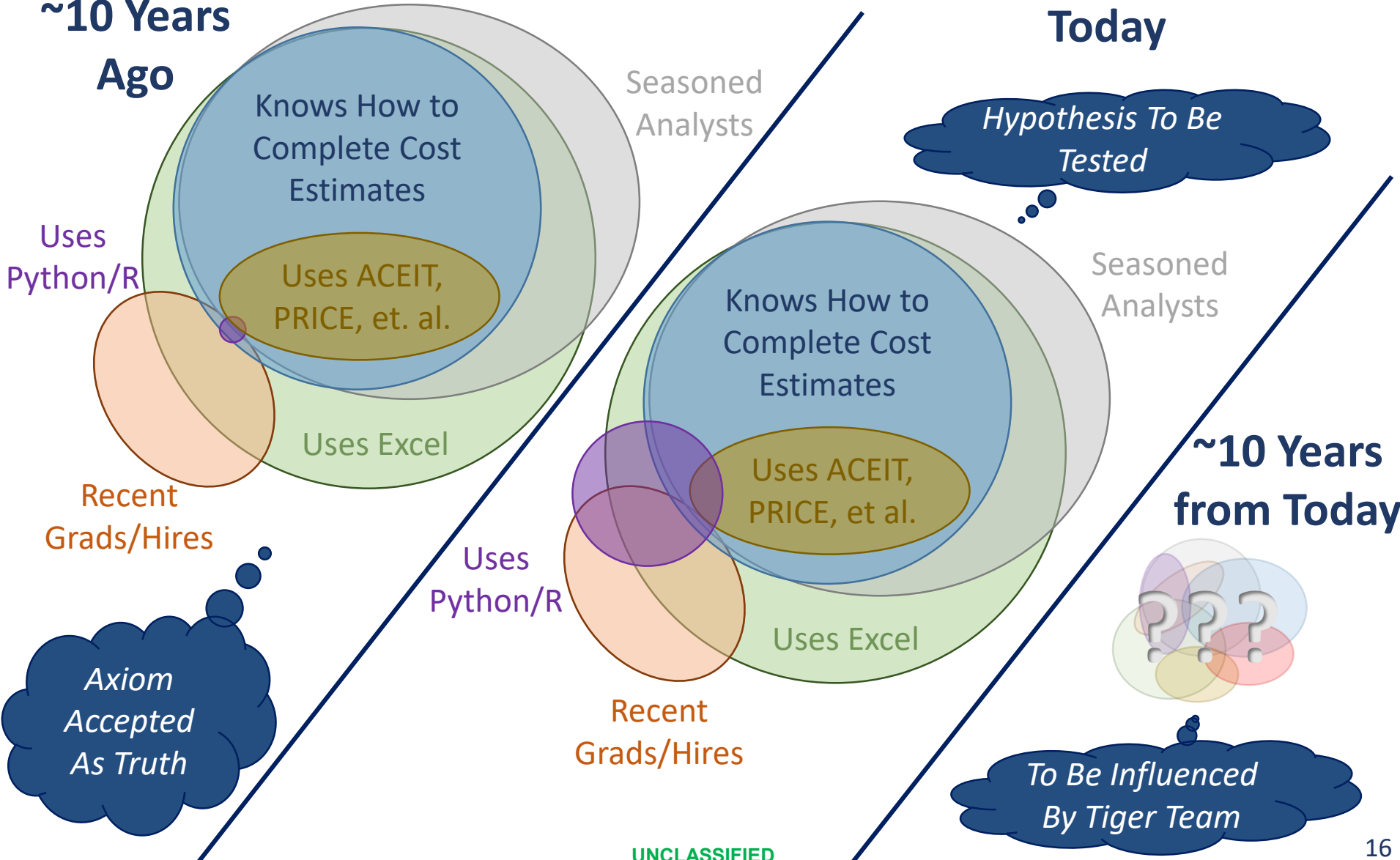*(Partial List, Notional Positions)*

Data Visualization — User Facing Software — Modeling & Estimating — Hosting Environment — Automation — Data Transformation

Cost Estimating & Analysis Workforce vs. Software Tool Use

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~10 Years Ago

Seasoned Analysts

Knows How to Complete Cost Estimates

Uses ACEIT, PRICE, et. al.

Uses Python/R

Uses Excel

Recent Grads/Hires

Axiom Accepted As Truth

Today

Hypothesis To Be Tested

Seasoned Analysts

Knows How to Complete Cost Estimates

Uses ACEIT, PRICE, et al.

Uses Python/R

Uses Excel

Recent Grads/Hires

~10 Years from Today

???

To Be Influenced By Tiger Team

16

Tiger Team Goals/Purpose

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Overall Tiger Team

Purpose: Assess software tool use, identify potential revisions to policy, training, or software infrastructure, which:

- Enhance the communities ability to provide data driven decision support to DoD leadership.

- Promotes adoption of data analysis best practices.

- Increases community preparedness for emerging data governance, protection, and transparency requirements.

Phase I

Purpose: Identify if initial panel discussion issue are *actual* issues.

Develop and release a survey to identify:

- What software tools are currently in use?

- Is there a demand for alternative tools/what is limiting their adoption?

- Are their retention or recruitment issues related to software tools?

Identify what CDOs or others in the DoD doing in this space already.

Phase II (and/or III?)

Purpose: Identify potential interventions for leadership consideration.

- Interview IT SMEs to identify ways to increase approval of software tools.

- Explore potential enterprise level solutions (e.g., AWS GovGloud).

- Review/rate software tools for use by the cost community.

Work Completed to Date

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- **Over 20 Team Members from ~17 Organizations**

- **Held Three Working Group Meetings**

  - Reviewed and clarified Tiger Team goals and purpose by phase

  - Identified initial list of software tools to consider (see backup, still being revised)

  - Decomposed "Cost Estimate & Analysis Process" into major categories to allow for fine grained ratings/rankings (see below and next slide for summary, see backup for details)

- **Qualtrics Survey Design and Question/Answer Preparation is Underway!**

Cost Estimating & Analysis Process
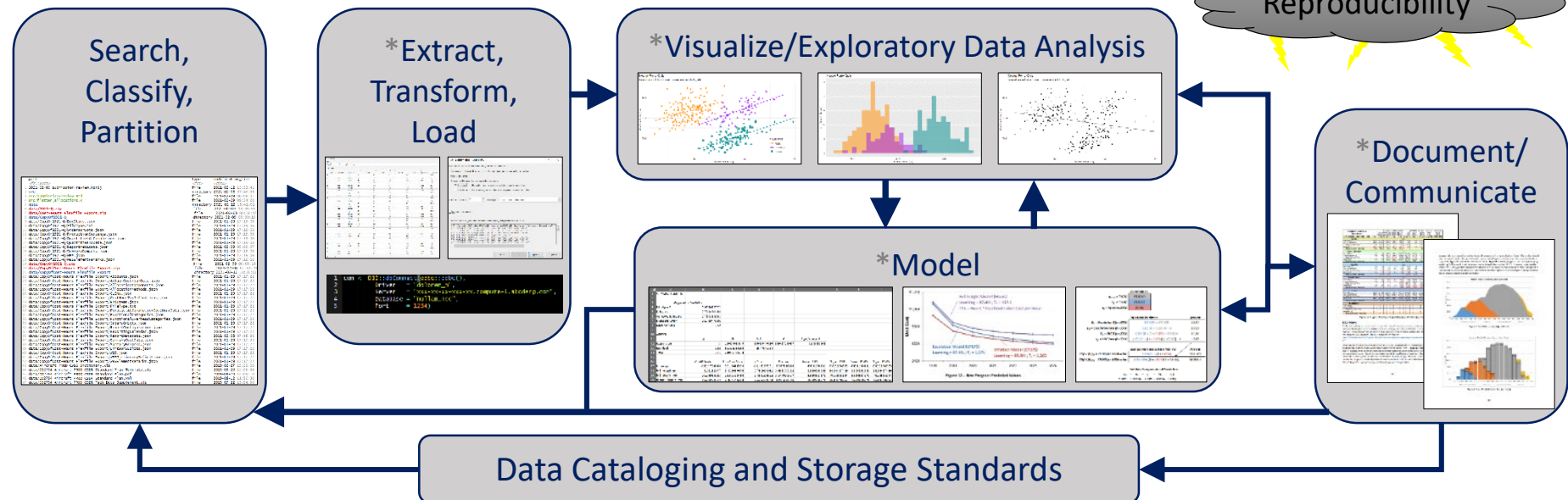
*Will be the focus of the community survey

Estimating / Analysis Process Breakdown

OSD CAPE

Tools will be considered based on their ability to assist different aspects of the estimating/analysis process.

Cost Estimating/Analysis Process: (see backup for full definitions)

- **Search, Classify, Partition (SCP):** Searching file systems, databases, drives, and other data sources for raw or process data, classifying found data and partitioning to only data applicable to the current estimate/analysis.

- ***Extract, Transform, Load (ETL):** Copying, importing, or ingesting data from one or more sources into a destination system (i.e., analysis tool).

- ***Visualize/Exploratory Data Analysis (EDA):** E.g., graphs/plots, summary tables, simple statistics of a dataset to gain a feeling for high-level insights and prima facie relationships.

- ***Model:** Development of statistically robust inferences or predictions from the data available and/or the formal review of hypotheses initially identified in the Visualize/EDA step (or as identified by the decision maker).

- ***Document/Communicate:** Development of documentation to convince others (including yourself in the future) to believe the results of the analysis, summarize what was or was not learned, and identify how the analysis was performed.

Additional Data Analysis Best Practices

- ***Reproducibility**: The degree to which an analysis/estimate can be duplicated – either by the same or another analyst – if given the same tools and initial data.

- ***Data Cataloging and Storage Standards**: The development and use of standard file/folder structures, naming conventions, use of metadata, and documentation to enable efficient SCP and ETL processes between and within teams.

*Will be the focus of the community survey

Interested In Participating in the Tiger Team?

OSD CAPE

Next Steps: The Cost Estimating and Analysis Data Tools Tiger Team is actively developing survey(s) and is interested in your organization's perspective!

If you and/or your organization would like to be involved with the Tiger Team, contact the following POC:

Daniel R. Germony
Operations Research Analyst
OSD CAPE
Land & Naval Warfare Cost Analysis Division (LNWCAD)
NIPR: Daniel.R.Germony.civ@mail.mil
Cell: (703) 901-8678

Surveys will be widely distributed to the cost estimating / analysis community. Please encourage folks to take the survey and do not forget to complete it yourself!

Ground and Surface vs. Tactical Airborne Radar Cost Trends

Bret Salmons
Air Warfare Cost Analysis Division
OSD CAPE

Ground and Surface vs. Tactical Airborne Radar Cost Trends

OSD CAPE Study

23 February 2021

Overview

- Purpose

- Scope and Limitations

- Selection of Questions

- Next Steps

Why study this now?

- Existing radar cost research has been primarily focused within a single domain

- Several active programs in both ground/surface and airborne domains with data available

- Within fielded systems, anecdotal evidence indicates that some technological advances are more prevalent in the ground / surface domain

Study Scope

- Survey technical cost drivers of selected ground, surface, and airborne radar systems

- Collect and normalize cost data for the selected systems

- Analyze cost and technical trends for the data set

- Examine similarity and applicability of technical trends across domains

- Limitations:

  – Constrained to airborne fire control radars

  – Active programs or those with data available

Study Limitations

- Airborne domain constrained to fire control systems
- Active programs or those with data readily available
- Survey a max of 10 systems
- Timeline approximately 12 months

Selection of Study Questions

- Number of elements
- Active / passive array
- Operating frequency, gain, lattice structure, cooling technology, etc.
- Operating environment and environmental requirements
- Level of digital channelization
- Number of modes
- Transmitter and receiver type
- T/R module technology level, processor technology level
- EMI requirements
- Ruggedization requirements
- Quantity produced over time
- System unit cost
- Array unit cost
- Per-channel cost

What's next?

- Set up 1:1 Q&A meetings with vendors following CIPT

  – Full list of questions and systems under consideration were sent with CIPT slides

  – Potential for follow-up sessions to fill in data gaps

- Establish POCs with government program offices as necessary

- Determine any classification requirements and constraints

Questions?

Admin Break: 10 mins

OSD CAPE Policy Updates and 2021 NDAA Overview

Erica Walters
Land and Naval Warfare Cost Analysis Division
OSD CAPE

OSD CAPE Policy Update

February 23, 2021

Erica Walters
Land and Naval Warfare Cost Analysis Division

The overall classification of this briefing is:
Unclassified

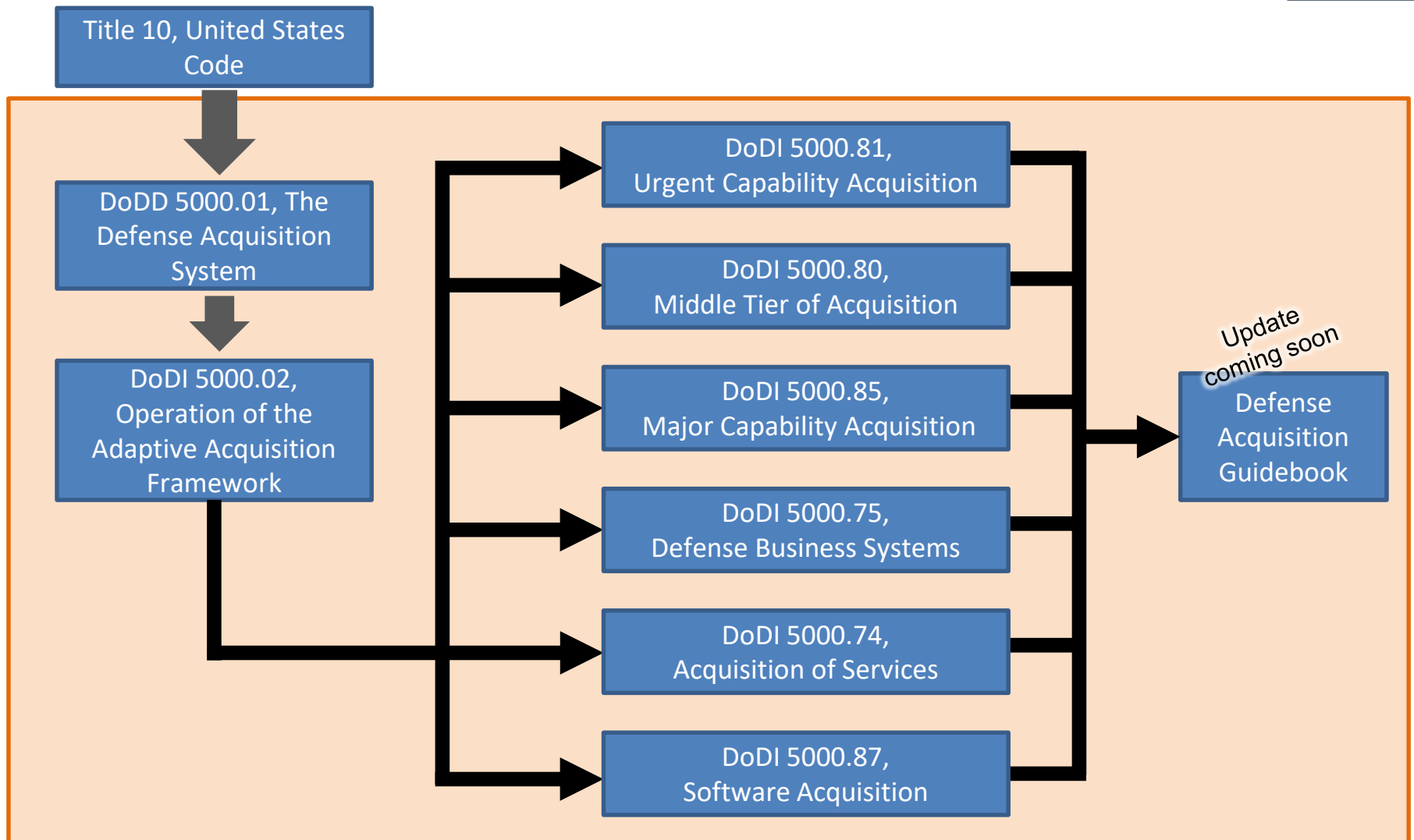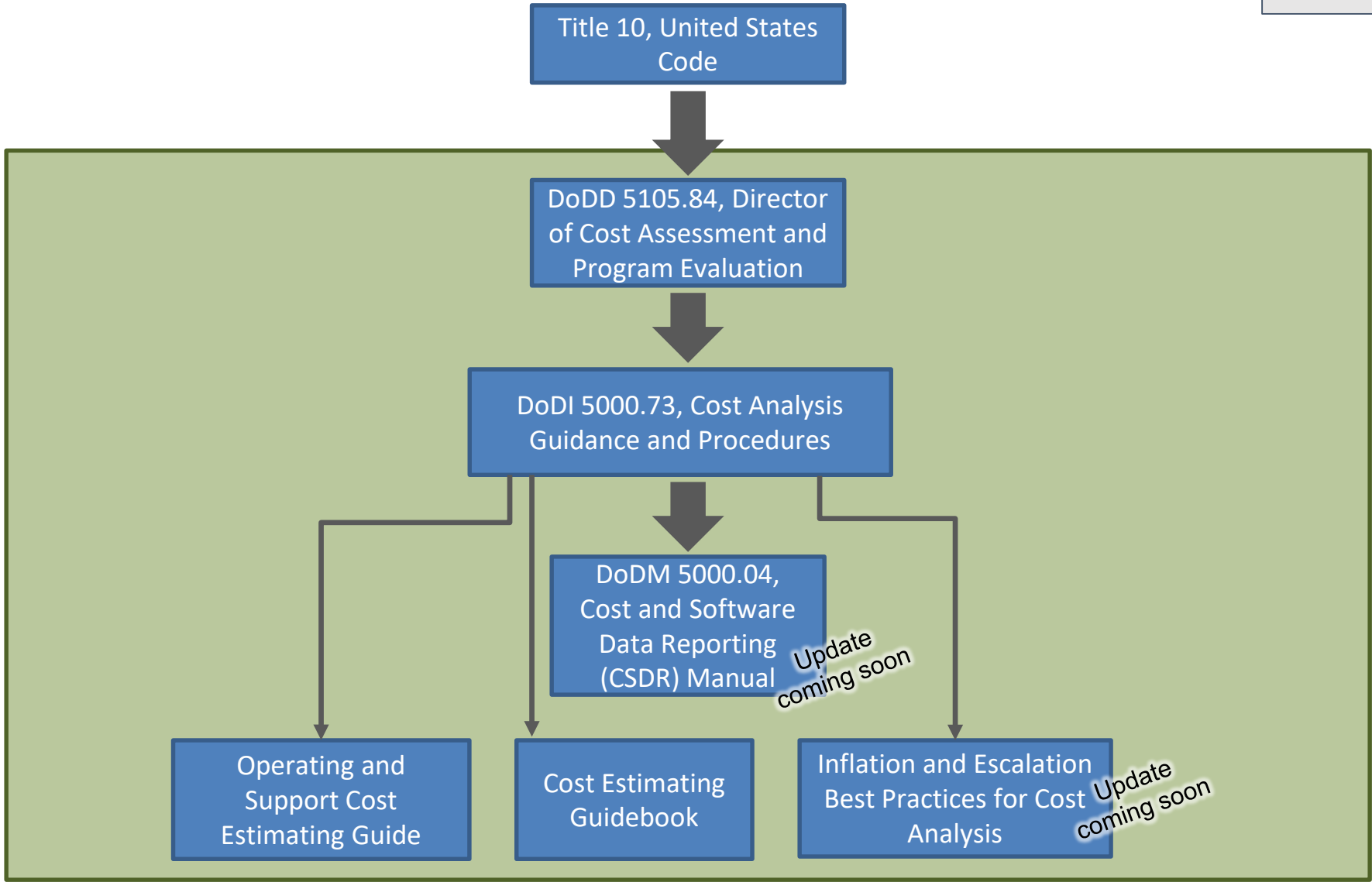# Acquisition Authority and Guidance

OSD CAPE

Title 10, United States Code

See FY 2021 NDAA Updates

Section 1303 of Title 41, United States Code

DoDD 5000.01, The Defense Acquisition System

DoDD 5105.84, Director of Cost Assessment and Program Evaluation

Federal Acquisition Regulation

DoDI 5000.02, Operation of the Adaptive Acquisition Framework

DoDI 5000.73, Cost Analysis Guidance and Procedures

Defense Federal Acquisition Regulation Supplement Section 234.7100 *Update coming soon*

Defense Acquisition Guidebook *Update coming soon*

DoDM 5000.04, Cost and Software Data Reporting (CSDR) Manual *Update coming soon*

CSDR

CDRL

Cost Estimating Guide

Inflation and Escalation Best Practices for Cost Analysis *Update coming soon*

Operations and Support Cost Estimating Guide

DoD Issuances:

https://www.esd.whs.mil/Directives/issuances/dodi/

42

Adaptive Acquisition Framework Pathways

Title 10, United States Code

DoDD 5000.01, The Defense Acquisition System

DoDI 5000.02, Operation of the Adaptive Acquisition Framework

DoDI 5000.81, Urgent Capability Acquisition

DoDI 5000.80, Middle Tier of Acquisition

DoDI 5000.85, Major Capability Acquisition

DoDI 5000.75, Defense Business Systems

DoDI 5000.74, Acquisition of Services

DoDI 5000.87, Software Acquisition

Update coming soon

Defense Acquisition Guidebook

43

Cost Authority & Policies

Status of Recent and Upcoming Policy/Guide Updates

- **DoDI 5000.73, Cost Analysis Guidance and Procedures:** released March 2020

- **O&S Cost Estimating Guide:** released September 2020

- **DoD Cost Estimating Guide:** released December 2020

- **DoDM 5000.04, Cost and Software Reporting:** undergoing final legal and security reviews prior to publication

- **Inflation and Escalation Best Practices Handbook:** received comments, processing final edits

- **MIL-STD-881F:** draft to be released for comment soon—changes are limited to making O&S a formal appendix, but comments on other sections are welcome for future updates

https://www.cape.osd.mil/#CAPEPublicReports

Cost Reporting Statutory Authority

- **10 U.S.C. § 139a.** Director CAPE
- **10 U.S.C. § 221.** FYDP: submission to Congress; consistency in budgeting
- **10 U.S.C. § ~~2306b(i)~~ 3507.** conduct cost analysis for certification of MYP savings
- **10 U.S.C. § ~~2334~~ 3221-3227.**
  - **§ 3221(b)(1).** policies and procedures for the conduct of cost estimation and analysis
  - **§ 3221(b)(4).** issue guidance relating to life-cycle management and sustainability costs in MDAPs
  - **§ 3221(b)(5).** review all cost estimates and cost analyses conducted in connection with MDAPs
  - **§ 3221(b)(6).** conduct ICEs for MDAPs and major subprograms at MS A, MS B, LRIP, FRP, and at any other time deemed appropriate by DCAPE
  - **§ 3227.** develop policies, procedures, guidance, and a collection method for collection of cost data for acquisition programs over $100 million
- **10 U.S.C. § ~~2366a~~ 4251.** Determination required for MDAPs before Milestone A approval that Analysis of Alternatives has been completed and a cost estimate for the program has been submitted and concurred by DCAPE
- **10 U.S.C. § ~~2366b~~ 4252.** Certification required for MDAPs before Milestone B approval that cost and schedule estimates are reasonable and concurred by DCAPE
- **10 U.S.C. § ~~2366c~~ 4253.** Provide independent estimated cost and schedule for MDAPs within 15 days of Milestone C
- **10 U.S.C. § ~~2337a(c)~~ 4325.** Develop and maintain a database on operating and support estimates, supporting documentation, and actual operating and support costs for major weapon systems
- **10 U.S.C. § ~~2433a~~ 4328.** Conduct cost assessment for critical Nunn-McCurdy breach as part of reassessment of program and certification to Congress
- **10 U.S.C. § ~~2441~~ 4323.** Include sustainment reviews in ICEs for MDAPs within 5 years of IOC and every 5 years thereafter
- **10 U.S.C. § ~~2446b(b)~~ 4402.** Include consideration of modular open system approach in AoA study guidance
- **Weapon Systems Acquisition Reform Act of 2009 (Public Law Public Law 111-23)**

- **Section 151** – Requires certification of full funding for covered aircraft programs with submission of PB

- **Section 159** – DCAPE to conduct ICE for F-35 block 4 capability requirements

- **Section 221** – DCAPE to consult with SECAF on Advanced Battle Management System cost estimate

- **Section 281** – DCAPE to review Next Gen Air Dominance initiatives of AF and Navy

- **Section 802** – Requires sustainment reviews (including an ICE) for all programs every 5 years, institutes thresholds for reporting O&S cost growth

- **Section 807** – SECDEF to create new space acquisition pathway within Adaptive Acquisition Framework

- **Section 834** – DCAPE to continuously monitor pilot program for consumption-based solutions to address software-intensive warfighting capability

- **Section 836** – DCAPE to serve as steering committee member for A&S-created acquisition data system; report to Congress to include cost assessment/savings information

- **Section 1645** – DCAPE and USD(C) to annually certify full funding for hypersonic and ballistic tracking space sensor (HBTSS)

- **Section 1647** – DCAPE to conduct ICE for Next Generation Interceptor program

- **Section 1648** – DCAPE to consult with MDA on layered homeland missile defense AoA

- **Section 1671** – DCAPE to conduct ICEs on Army long-range hypersonic weapon program and Navy's conventional prompt strike program

- **Section 1809** – Changes to Title 10 language for budgeting and appropriations

- **Section 1812** – Changes to Title 10 language for cost estimating and analysis (10 U.S.C. §2334)

- **Section 1856** – Changes to Title 10 language for services acquisition

- **Section 5111** – DCAPE to assess Army's plans for medium-heavy lift helicopters

2021 Consolidated Appropriations Act: CAPE-Related Sections

- **Independent Cost Estimates and Other Program Information** – DCAPE to provide ICEs for all major defense acquisition programs and major subprograms included in the President's budget request and accompanying FYDP

- **F-35 Economic Order Quantity** – DCAPE to estimate cost savings materialized for lot 15-17 aircraft resulting from FY20-21 EOQ appropriated

- **Missile Defense Agency Budget Request, Priorities, and Unfunded Requirements** – DCAPE to work with MDA toward greater programmatic and fiscal alignment

- **Funding for the Department of Defense Acquisition Workforce** – DCAPE to continue to include appropriate funding requests for DoD Acquisition Workforce Development Account (DAWDA)

- **F/A-18E/F Super Hornet Production** – DCAPE to provide report on life-cycle cost assessment of aircraft inducted through Service Life Modification (SLM) and new aircraft, including procurement, personnel, and cost-per-flight hour comparisons

- **Constellation Class Frigate** – No funds may be obligated for construction of second CCF until DCAPE provides updated cost assessment based on actual contract award and design changes since previous ICE

2021 Appropriations Bill (SAC-D Explanatory Statement): CAPE-Related Sections

- **CONSTELLATION Class Frigate** – No funds may be obligated for construction of second CCF until DCAPE provides updated cost assessment based on actual contract award and design changes since previous ICE

- **Mid-Tier Acquisition and Rapid Prototyping Programs** – Committee is concerned about use of middle tier of acquisition pathway, require list of rapid acquisition programs for PB22 along with acquisition strategy and test information, and certification of full funding (see next slide for details)

- **Conventional Prompt Strike** – Recommends reduction of funding in response to previous CAPE ICE, which noted lack of specificity in the acquisition strategy, technical baseline, and schedule programmatic decision

- **Next Generation Overhead Persistent Infrared** – DCAPE to provide latest analyses and cost estimates for program within 60 days

Mid-Tier Acquisition and Rapid Prototyping Programs
(from SAC-D Appropriations Bill Explanatory Statement)

- **Committee concerned about accelerated acquisition programs:**

  - Lack standard acquisition info (e.g., ICEs, TEMPs)—not required, only submitted upon request

  - Limited understanding of long-term program costs upfront

  - Early narrowing down of industrial base, potentially leading to reduced competition/innovation

  - Lack of transparency in costs with incremental RDT&E funding

- **Committee's direction:**

  - USD(A&S), USD(R&E), Service Acquisition Executives must provide list of accelerated programs (currently approved, or pending approval in FY22) with PB22, including:

    - Rationale for selected acquisition strategy

    - Cost estimate

    - Contracting strategy

  - USD(C) and Service comptrollers must certify full funding of above acquisition strategies

  - DOT&E must certify appropriateness of planned test strategies, to include a risk assessment

  - For any information on the above provided for PB21, explain variations for PB22

  - Service comptrollers must provide cost per prototype item in RDT&E budget exhibits and FYDP

Questions?

DoD's Software Acquisition Pathway - Digital Delivery at the Speed of Relevance

Sean Brady
DoD Senior Lead for SW Acquisition,
OUSD(A&S)/Acquisition Enablers

DoD's Software Acquisition Pathway

Digital Delivery at the Speed of Relevance

Cost Working Group Presentation

Sean Brady

DoD Senior Lead for SW Acq

USD(A&S)/Acq Enablers

https://aaf.dau.edu/aaf/software/

Air Force's XQ-58A Valkyrie Attritable Combat Drone

Army's Leader Follower Autonomous Vehicle Program

Navy's Medium Displacement Unmanned Surface Vehicle (MDUSV)

Army's Artificial Intelligence for Maneuver and Mobility, or AIMM

Navy's X-47B Unmanned Combat Air System

60

NDS
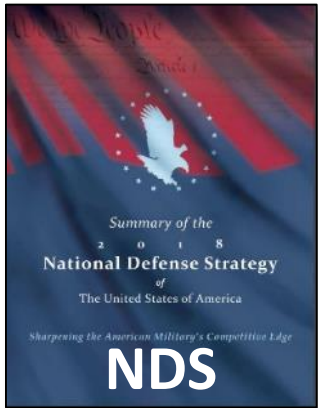
...prioritize speed of delivery, continuous adaptation, and frequent modular upgrades.

DSB

The DoD must have the ability to update our systems rapidly.

DIB
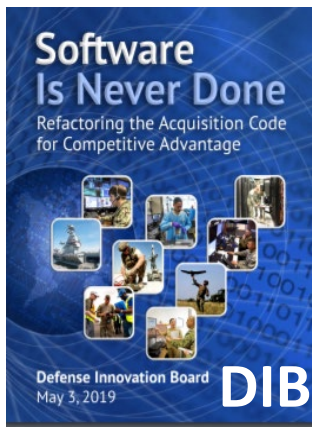
Speed & Cycle time matter.
Faster is more reliable, secure, and possible.

Establish a new software acquisition pathway

Congress and DoD Drive Software Reforms

Recent NDAAs

- **FY18 Sect 873/874 Agile Pilots**
- **FY20 Sec 800 Software Acquisition**
- **FY20 Sec 862 Software Training**
- **FY20 Sec 230 Digital Careers**

Leadership Direction

- **Gen Hyten: Insert speed, take risk**
- **Ms. Lord: Software runs through all our programs**
- **Dr. Roper: Change software daily**

Directed DoD to create two software acquisition pathways

Applications and

Embedded Systems

One Hundred Sixteenth Congress
of the
United States of America

AT THE FIRST SESSION

Begun and held at the City of Washington on Thursday,
the third day of January, two thousand and nineteen

An Act

...ear 2020 for military activities of the Department of Defense, for military c...
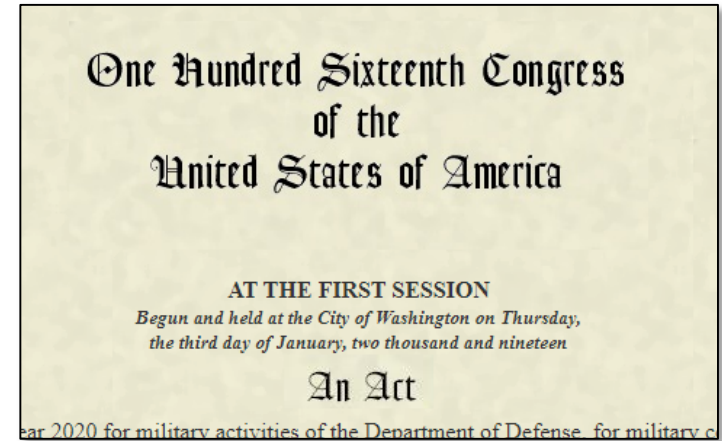
- Software programs shall <u>not</u> be treated as an MDAP

- <u>Exempt</u> from JCIDS (unless VCJCS, A&S, SAEs agree on new process)

- <u>Streamline</u> SW requirements, budget, acquisition processes

- Demonstrate viability and effectiveness of capabilities for operational use within <u>one year</u> after funds first obligated

https://www.congress.gov/bill/116th-congress/senate-bill/1790/text

Key Elements of SW Acquisition Pathway

- Modern SW development practices

- Human-centered design

- Active, committed user engagement

- Enterprise services/platforms

- Rapid and iterative deliveries

- Gov't-industry software teams

- Automated tools

Source: DODI 5000.02 Section 4.2

https://aaf.dau.edu/aaf/software/
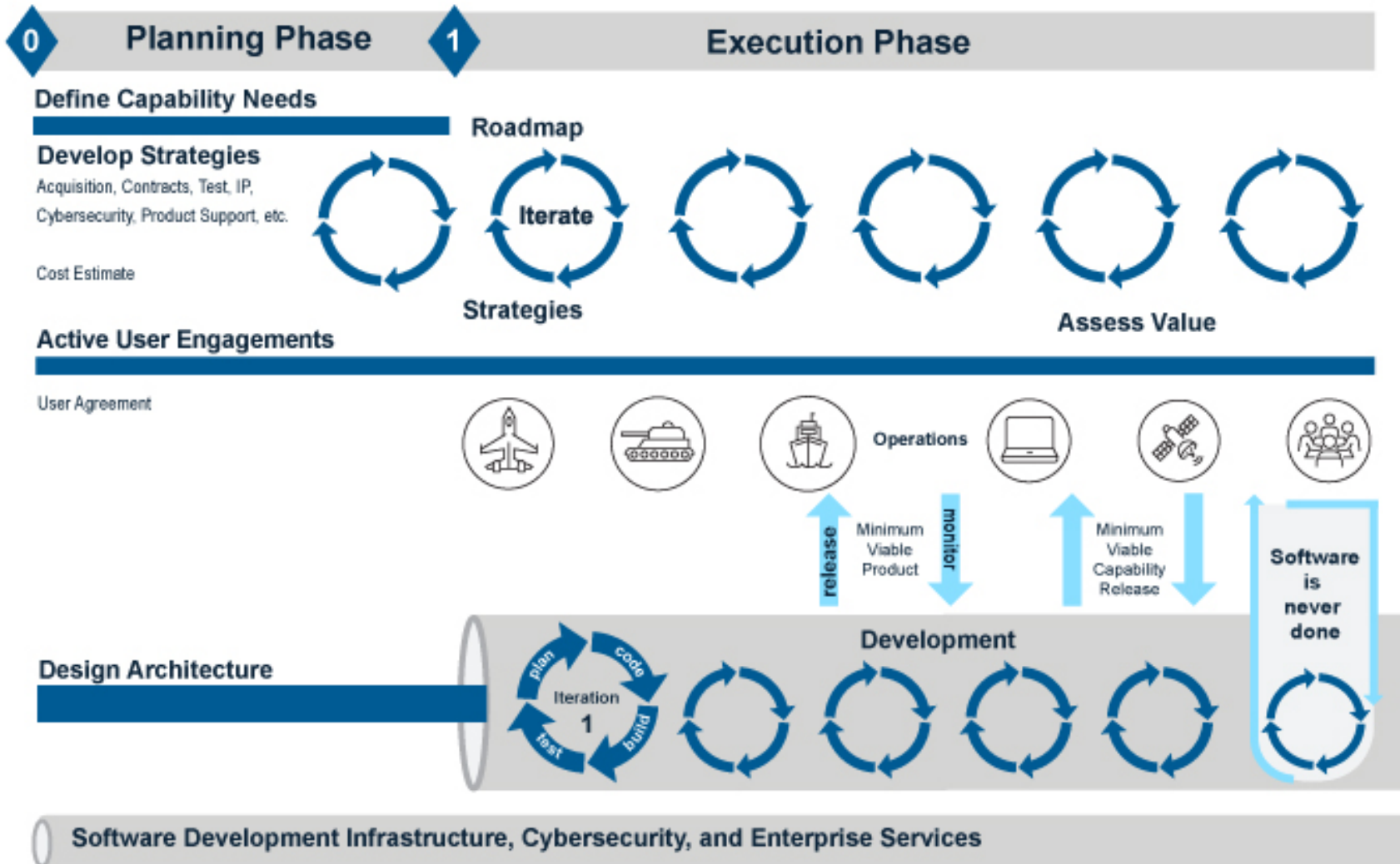
Evolving Software "Requirements"

Refine in Planning
Approve prior to Exe

Evolving Mission, Adoption, Performance, Threats, Priorities, Tech

Strategic

Operations

Draft

CNS

Periodic updates

Roadmap

Soldier

Active soldier engagements

Backlogs

MVP   MVCR   Release 2   Release n
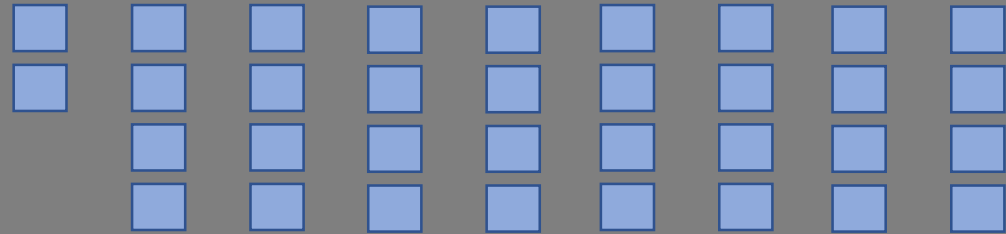
Dynamic processes with active feedback loop

- High-level visual summary that maps out the vision and direction of product offerings over time

- Describes the goals and features of each software iteration and increment

Ideal artifact to Inform SWP program progress over the next 18 months to 2 years and derive a 5-yr budget plan
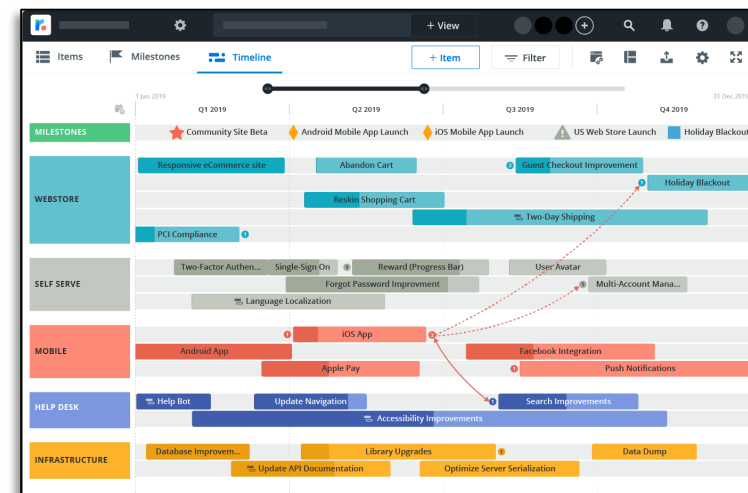
Product Roadmap
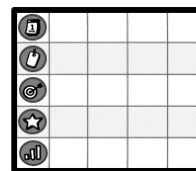
Strategic plan: describes how the product is likely to grow across several product releases.
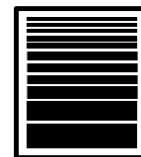
Product Backlog

Tactical tool: provides the details including epics and user stories that have to be implemented to create one or more releases.

https://www.romanpichler.com/blog/10-tips-creating-agile-product-roadmap/

- The initial cost estimate needs to be completed prior to entry into the execution phase and must be updated annually

- Cost estimates are tailored for unique aspects of software development

- CAPE ICE currently required for software programs over ACAT II threshold (based on DoDI 5000.73)

- Cost estimates consider the content of the CNS, strategies, and enterprise services in planning and integrate the roadmap, backlogs, and cost actuals throughout development phase

- Where applicable, cost and software data reporting, to include software resources data reports, must be submitted

Benefits of Software Acquisition Pathway

- Tailored acquisition processes for software development

- No formal milestones – Delegated decision authorities

- <u>Exempt</u> from JCIDS (unless VCJCS, A&S, SAEs agree on new process)

- Streamlined reviews and documentation – No MDAPs

- Leverages enterprise services and not "rebuilding the factory" for every program

- Program tailoring and flexibility for Services/Agencies

Software Acquisition Pathway and DevSecOps provide the framework that prioritizes speed and adaptability to win a future fight

- Tension between budget, oversight, and decision maker demands for cost estimates balanced with level of program knowledge expected with Agile practices and desired flexibility

- Agile development is not conducive to long range planning; team focus is on near term iterations

- Blurred life cycle phases and program level 'definition of done'

- No generally recognized standard unit of measure for effort

- Metrics for modern software development are heavily reliant on team expertise and experience

- Cost estimating policy optimized for SWP intent?

Partner with Services and Joint Staff to streamline and tailor <u>requirements</u> processes for software

Partner with Services and CAPE to streamline and iterate on software <u>cost estimation</u>

Partner with Services and DOT&E, DT&E to modernize, integrate, and automate software <u>T&E</u>

DoD Services/Agencies Empowered and Directed to Align and Streamline Processes

Cost Estimating Principles

Nature of Agile Development

- Eschew complete definition of work scope up front

- Promote adherence to cost and schedule, flexing scope

- Assume a relatively constant pace of development, based on team steady state output and the number of teams employed

- Short term deliveries provide continual performance feedback to inform future estimates in execution phase

- Consider complexity as well as past performance in iteratively refining cost estimates

Cost Estimate Adjustments

- Accept a higher level of abstraction and less detail

- Use an iterative, integrated, and collaborative approach

- Employ capacity driven estimating methods (versus process driven)

- Update regularly, reflecting a balance of known vs unknown

- Use for planning and providing insights on what capability can be accomplished over time

- Cost out in segments aligned to the Product Roadmap

Help Needed

- **Compressing SWP Cost Estimating Timelines**
    - Need to get SWP programs out of Planning and into Execution Phase ASAP.
    - 210 days for an ICE is a challenging planning factor for SWP programs.

- **Reconciling Lifecycle Estimates for SWP Programs when SW is Never Done**
    - New Way: deploy SW daily/hourly. Concept of "SW complete" anachronistic
    - Programs need to gain adequate insight to inform the FYDP budgeting window.

- **Streamlining Cost Estimating Artifacts (such as CARDs) for SWP**
    - Is our cost guidance optimized for modern software development or SWP?

- **Clarifying CAPE delegation of ACAT II-equivalent SWP programs**
    - Expectation is that most SWP program ICE's will be delegated but that is not clear for SWP programs.

- **Releasing Full Funding Requirement Constraints**
    - Steals inherent SWP flexibility to adapt to different resourcing levels; requirement is non-statutory.

- **Modernizing Cost Estimating Approaches to Support Agile SW Development**
    - Need help introducing and socializing common approaches for estimating SWP programs, particularly those operating in the Application path, that support agility.

Need A&S, CAPE and Services collaboration to solve these issues

Summary

Planning Phase	Execution Phase
Early estimation techniques with high level adjustments for Agile practices	Once development beings, a cadence is established, the estimate can be refined

- SWP uniquely different from other AAF pathways
    - needs supporting processes (requirements, T&E; cost estimating) that enable success
- **Need help** reorienting the workforce; can tailor cost estimating practices
    - reflect the unique and dynamic aspects of modern development practices
- **Need help** ensuring CE P&G supports SWP and modern SW development
- **Need a coalition among OSD and Services** to co-develop approaches for operating in this new paradigm

Acquisition Enablers ready to partner and align Cost Estimation to our DoD strategy to help ensure the US military dominates in digital product delivery.

Integrated policies, guidance, and resources

Welcome your inputs, feedback, and questions.

Adding FAQs and new guidance soon.

https://aaf.dau.edu/aaf/software/

Stay Engaged

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OSD's Software Acquisition Team is here to ENABLE your success.

Closing

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