

**adapt,
evolve &
transform.**

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— at all times ready

Cost Management in the DoD

Richard P. Burke

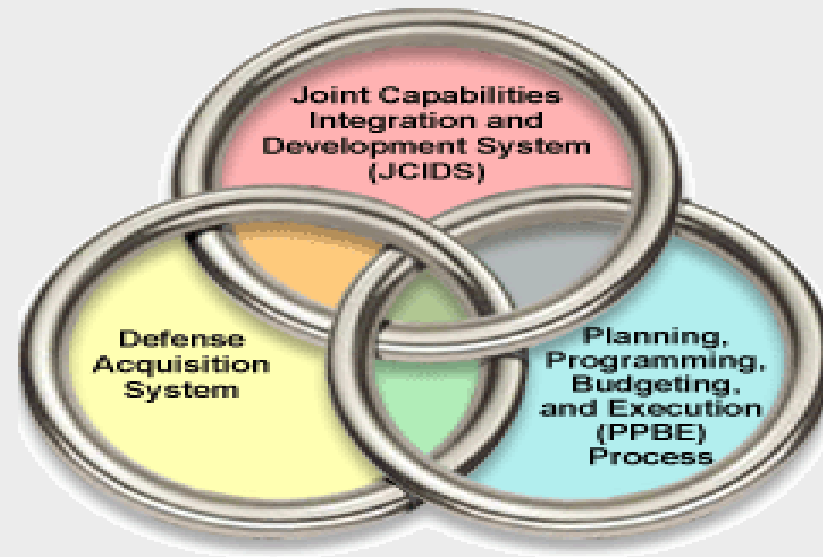
OSD Cost Assessment and Program Evaluation

Cost Management in Three Principal DoD Processes

- Requirements
- PPBES
- Acquisition



Integration of Processes



Requirements Process



Joint Capabilities Integration and Development

Joint Capabilities Integration and Development System (JCIDS) replaced the Requirements Generation System and is intended to provide:

- An enhanced methodology using joint concepts that will:
 - 1) Identify and describe existing or future shortcomings
 - 2) Identify and describe redundancies in warfighting capabilities
 - 3) Describe the attributes of effective solutions
 - 4) Identify the most effective approach or combination of approaches
- A broader view of materiel capability proposals independent of Acquisition Category (ACAT)
- Better linkage to the acquisition process
- Prioritization of joint warfighting capability gaps
- Improved prioritization of validated joint warfighting capability proposals
- Better definition of the DOTMLPF implications resulting from the development and fielding of a new capability
- Improved coordination with other USG departments or national agencies

JCIDS, the Defense Acquisition System, and the Planning, Programming, and Budgeting System (PPBS) form DoD's three principal DOD decision support processes for transforming the military forces according to the future DoD vision.



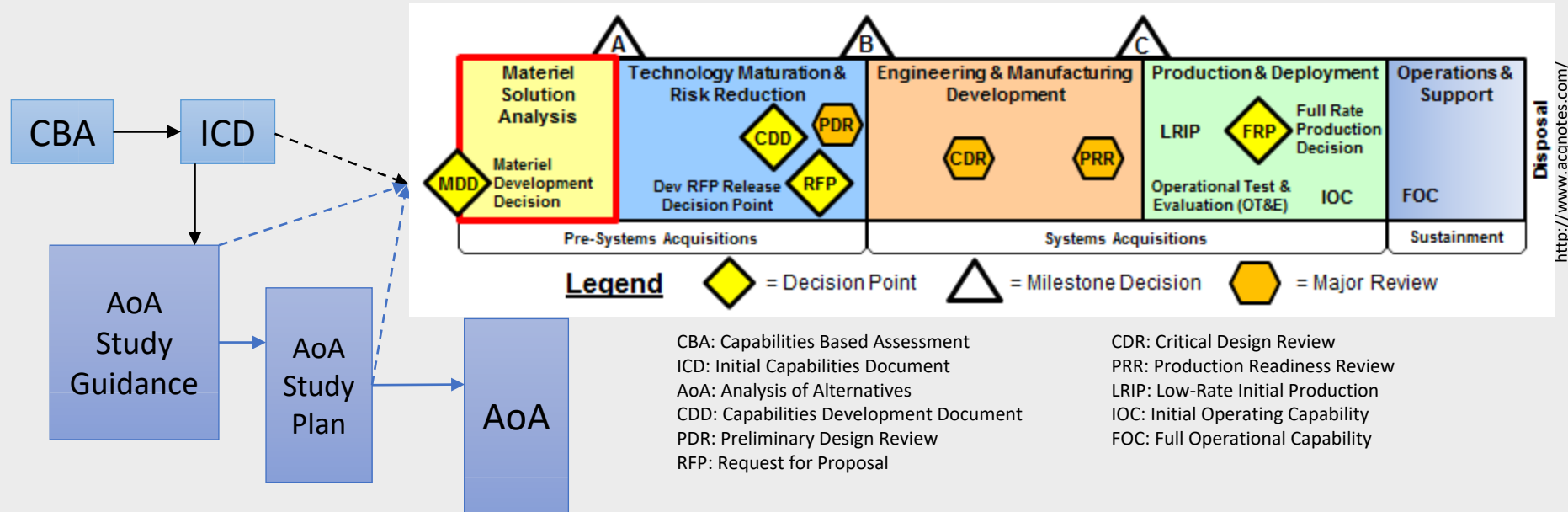
Analysis of Alternatives (AoA)

- Definition of AoA
 - Evaluation of the operational effectiveness, operational suitability, and estimated costs of alternative systems to meet a mission capability.
 - Assesses the advantages and disadvantages of alternatives, including ... sensitivity to possible changes in key assumptions or variables.
- AoA is a central document in the Requirements and Acquisition Process and is part of JCIDS
- An AoA is required for all major defense acquisition programs



AoA Role in Acquisition Process

As Input to MDD



The Materiel Development Decision is based on a validated initial requirements document (an ICD or equivalent requirements document) and the completion of the Analysis of Alternatives (AoA) Study Guidance and AoA Study Plan



Recent Guidance for AoAs

- DoDI 5000.84, *Analysis of Alternatives* (August 4, 2020)
- CAPE responsibilities:
 - Develops and issues study guidance
 - Approves study plans
 - Evaluates the adequacy of each AoA for MDAPs
- Section 832 (*AoAs Pursuant to Materiel Development Decisions*) of FY 2020 NDAA
 - Requires that AoAs for MDAPs be completed within 9 months
 - CAPE study guidance must be scoped to provide for completion within 9 months
 - Waivers must be approved by the Secretary of Defense



Planning, Programming, Budgeting, & Execution System



What is PPBES?

PPBES is the Department of Defense's resource management system

- PPBES is
 - The primary means for the Secretary of Defense to control allocation of resources
 - Aimed at achieving the best mix of forces, manpower, materiel equipment, and support
 - The process by which the Secretary of Defense reviews Service inputs during every major budget exercise



Decoding the Acronym P-P-B-E

PLANNING - Determining what we need

- Lay out future needs and anticipated resources

PROGRAMMING - Determining what we can afford

- prioritize needs and decide where to accept risk

BUDGETING - Allocating and refining

- Detailed pricing of things you put resources against

EXECUTION - Making it happen

- Actual outlay of resources

A Continuous Process



Guiding Principles - The Origin of PPBS¹

“You cannot make decisions simply by asking yourself whether something might be nice to have. You have to make a judgment on how much is enough.”

Robert S. McNamara
April 20, 1963

Six Fundamental Ideas:

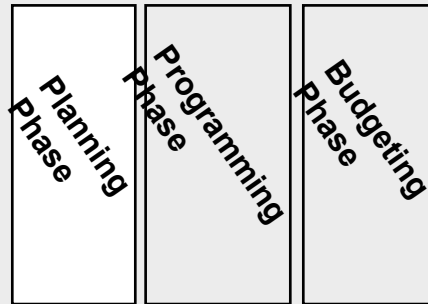
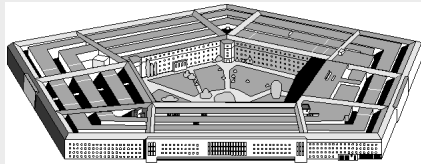
1. Decisions should be based on explicit criteria of national interest, not on compromises among institutional forces.
2. Needs and costs should be considered simultaneously.
3. Major decisions should be made by choices among explicit, balanced, feasible alternatives.
4. The Secretary of Defense should have an active analytic staff to provide him with relevant data and unbiased perspectives.
5. A multiyear force and financial plan should project the consequences of present decisions into the future.
6. Open and explicit analysis, available to all parties, should form the basis for major decisions.

¹Enthoven, Alain C. and K. Wayne Smith, How Much is Enough? Shaping the Defense Program, 1961-1969, (Santa Monica: The RAND Corporation, 2005)

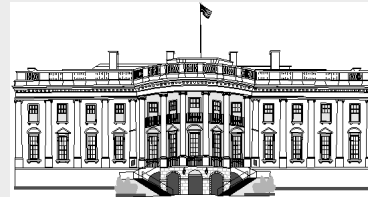


U.S. Budget Process

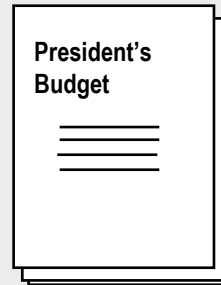
Defense Department prepares a budget



Secretary of Defense submits budget to the Office of Management and Budget



President submits budget to Congress



Budget Legislation
(Authorization & Appropriation)

The Defense Department uses the PPBE system to link defense strategy to defense resources



Purpose of PPBES

Provide Civilian Control and Strategic Direction

- Centralizes decision-making in the Office of the Secretary of Defense
- Manages allocation of resources to meet the Secretary's goals

Create a joint (DoD-wide) program

- Integrates individual components' inputs into a single defense program
- Ensures stakeholders have a voice; builds consensus

Provide financial “checks and balances”

- Promotes efficient and effective allocation of funds
- Ensures the cost of defense programs are realistic / affordable

Provide basis for justifying programs and budgets to the White House and Congress

PPBES is the principal tool used by the Secretary and the Deputy Secretary in managing the Department of Defense



What is PPBES Today?

An *executive management tool* which reflects:

- The Executive Branch's civilian control of the military
- The Secretary of Defense's management style

A *resource allocation process* for administering:

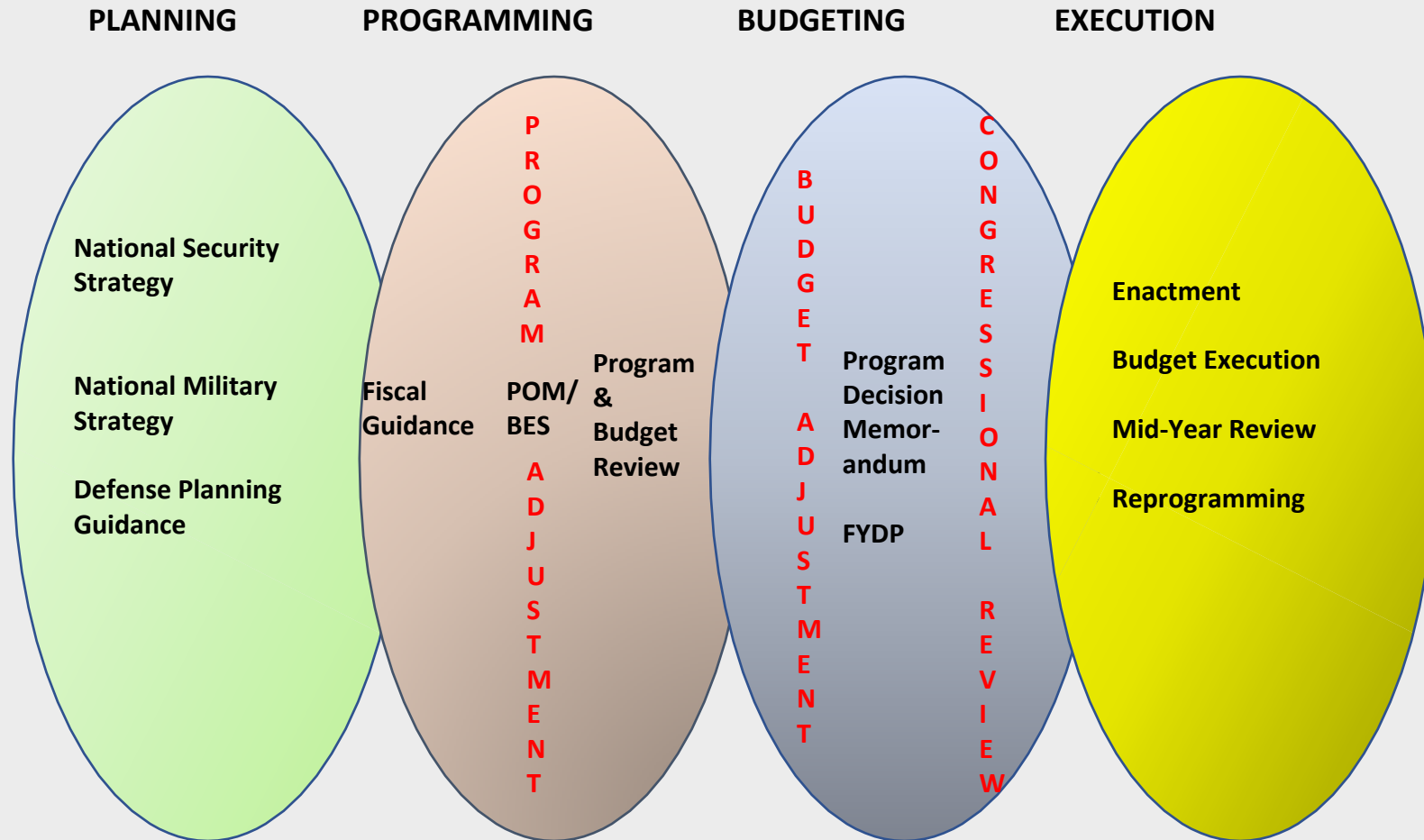
- An annual budget of more than \$700 billion
- More than 2 million active service members and civilians
- Capital assets exceeding \$1 trillion (facilities, equipment)

A *rational methodology* for balancing:

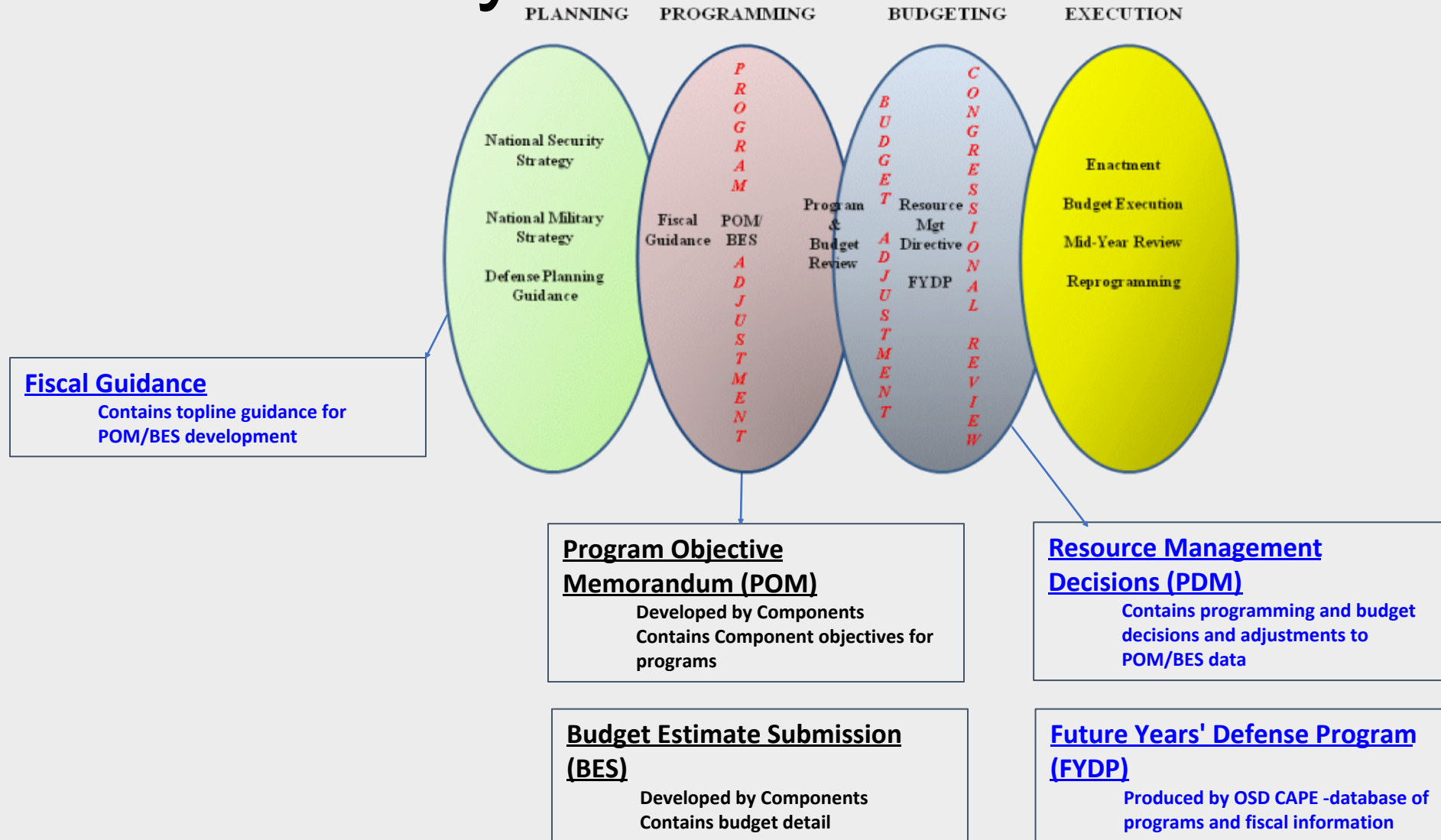
- Internal (*DoD-wide*) and External (*Administration and Congressional*) Priorities
- Central Planning vs. Delegated Management
- Change vs. Stability



Phases of PPBES



Some Key Products of PPBES



Fiscal Guidance

Contains topline guidance for POM/BES development

Program Objective Memorandum (POM)

Developed by Components
Contains Component objectives for programs

Budget Estimate Submission (BES)

Developed by Components
Contains budget detail

Resource Management Decisions (PDM)

Contains programming and budget decisions and adjustments to POM/BES data

Future Years' Defense Program (FYDP)

Produced by OSD CAPE -database of programs and fiscal information



PPBES Summary

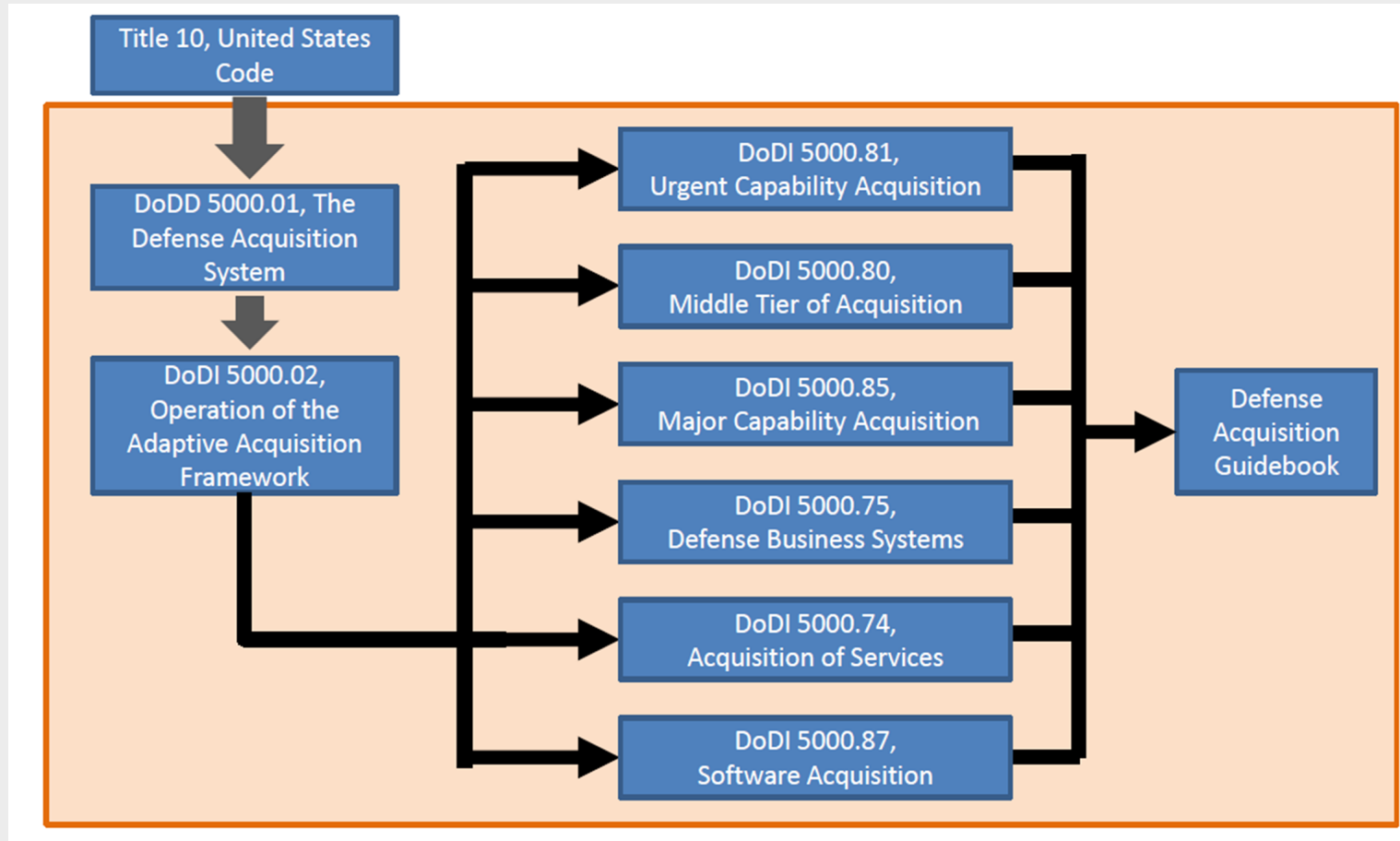
- PPBES is
 - The primary means for the Secretary of Defense to control allocation of resources
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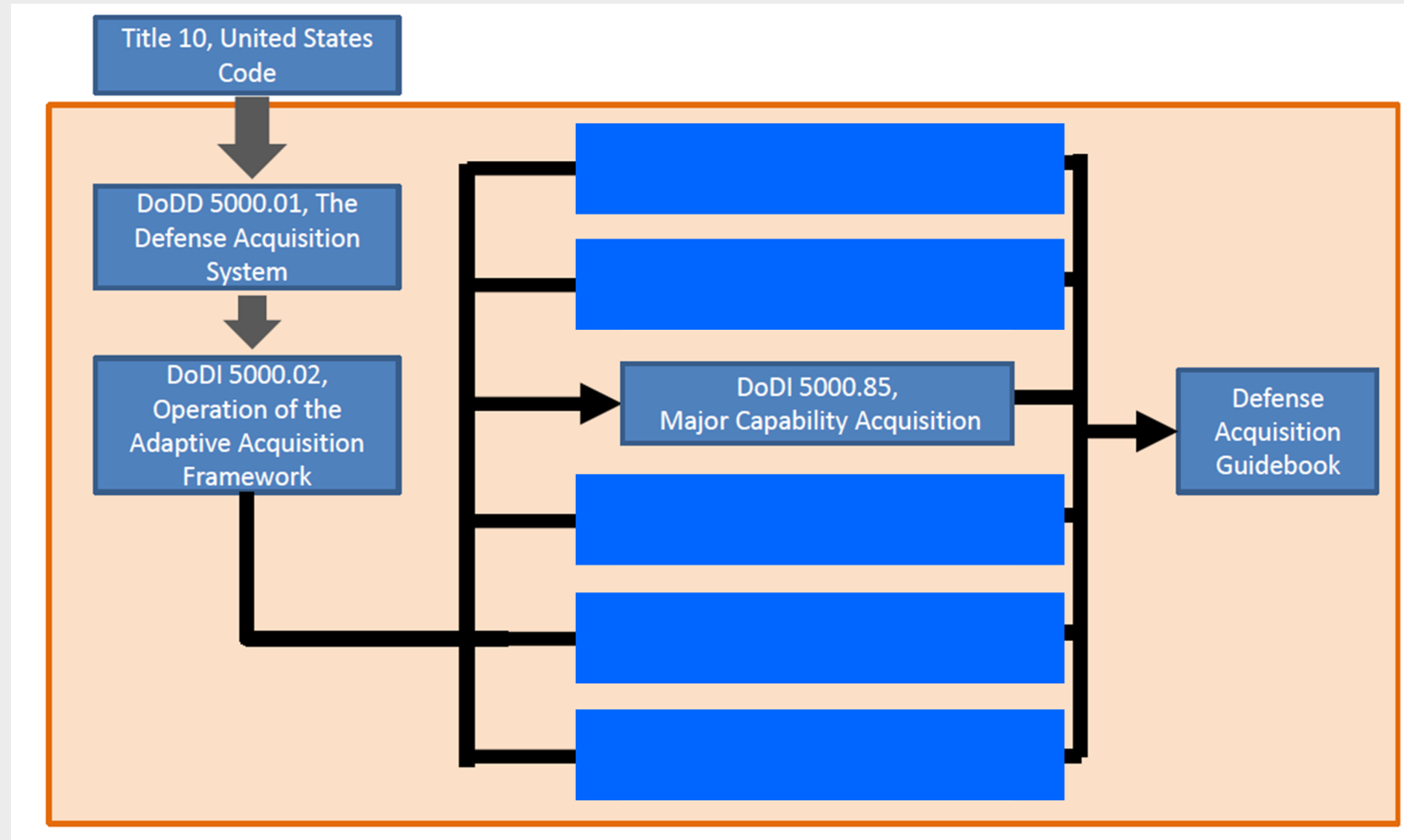
Acquisition Process



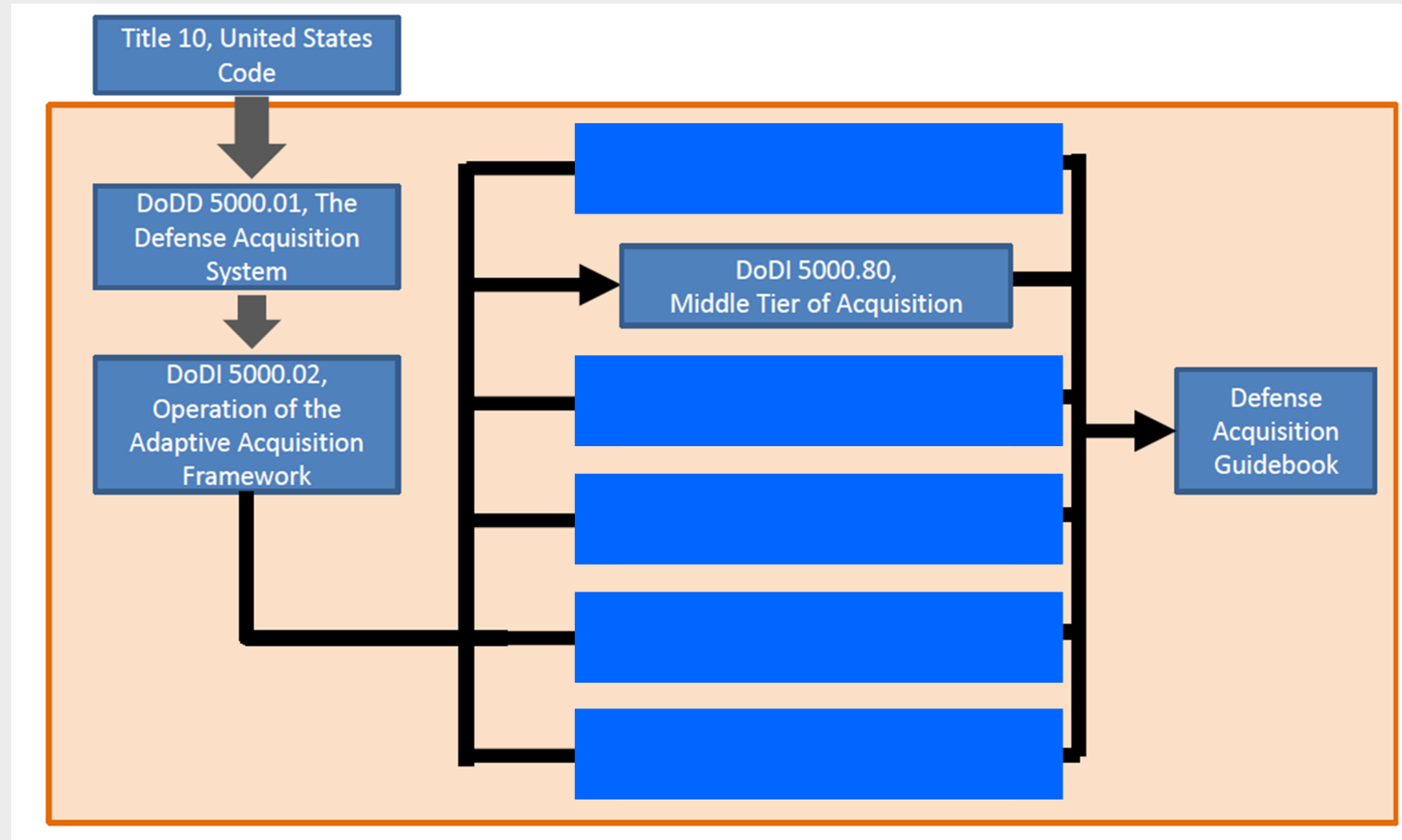
Defense Acquisition Pathways



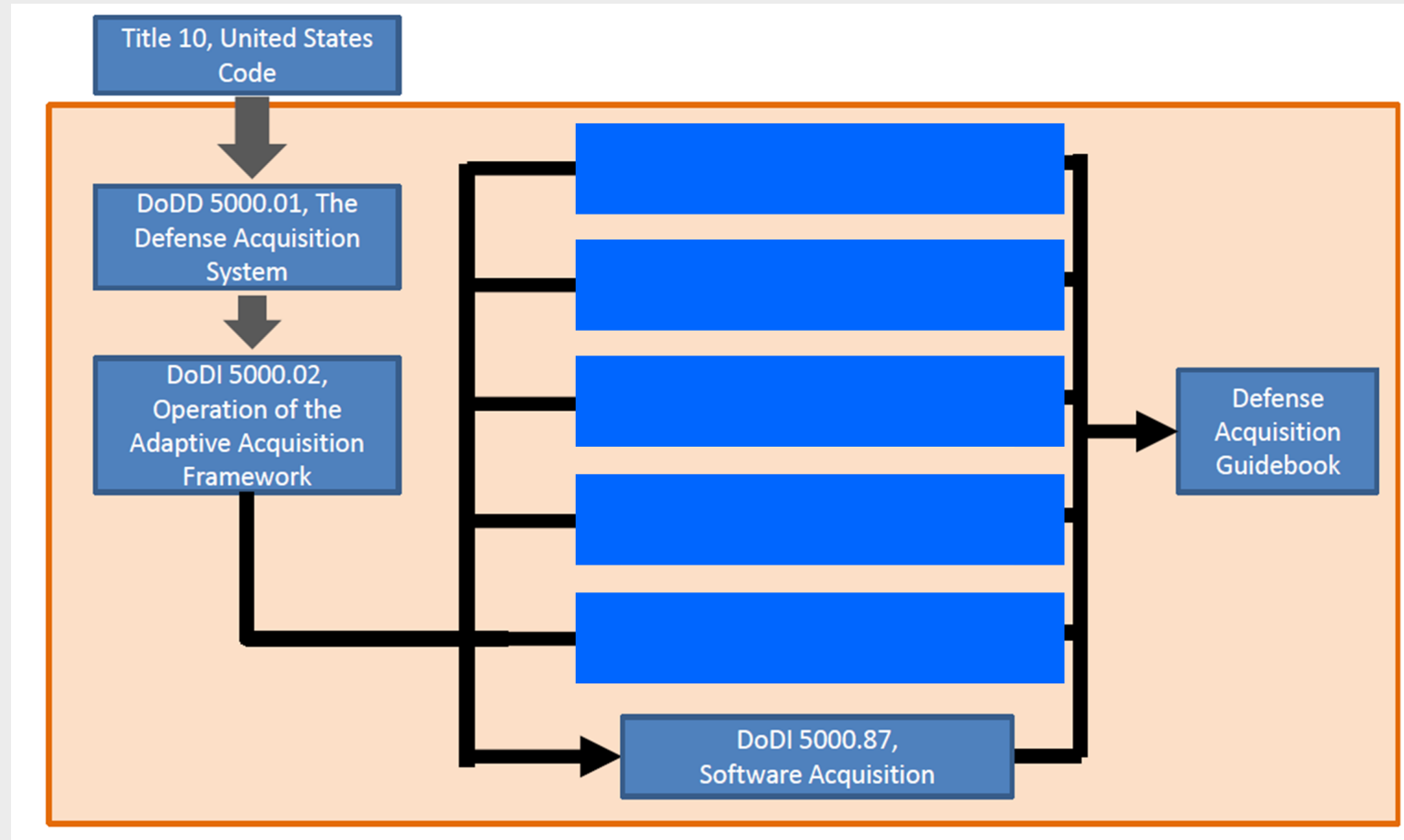
Defense Acquisition Pathways



Defense Acquisition Pathways



Defense Acquisition Pathways



Recent Shift in MDAP Milestone Decision Authority

- Section 825 (*Designation of Milestone Decision Authority*) of FY 2016 NDAA
 - For programs reaching Milestone A after October 2016, the MDA for an MDAP will normally be the Service Acquisition Executive (SAE) except under a few limited circumstances
- DoD has chosen to move MDA authority for the many of the older programs to the Services
 - As of January 2021, for the 92 pre-MDAPs and MDAPS:
 - USD(A&S) is the MDA for 13 programs
 - The SAEs are the MDAs for 79 programs



Key Cost Analysis Products for DAB or SAE Review

- Comparison of Life-Cycle Cost Estimates (CCP, ICE)
- Comparison of FYDP Funding and Resources Required by Fiscal Year and Appropriation
- Summary of key risks, observations



GCV Milestone A Cost Estimates

Example from 2011

GCV Program Cost Estimates

FY11 \$B	Army Cost Position	CAPE ICE	Difference
RDT&E	6.7	8.9	34%
Procurement	24.5	32.3	32%
O&S	33.6	38.4	14%

Affordability Goals

FY11 \$	Army Goal	Army Cost Position	CAPE ICE
APUC	\$11M - 13M	\$13M	\$17M
O&S \$/Mile**	\$200	\$453	\$507

Both Army and CAPE estimates indicate requirements at MS A are not affordable when evaluated against affordability goals



Example – Resourcing Slide for DAB Review



Cost Community Products

Examples of Key Risks, Observations

- MS A: APUC or O&S costs exceed affordability caps
- Pre-RFP: Twin-engine helicopter solutions too costly
- MS B: KTR schedule proposal is too short (~15 mo.)
- MS C: Supplier profit rates require management
- FRP: Organic vs. Contractor Logistics Support costs
- Post IOC: Cost per flight hour comparisons

Cost Analysis Community Delivers Decision Support
Products Throughout the Entire Process



Industry/Government Cost Data Reporting

- CAPE collects actual costs of hardware and software for development, acquisition, and sustainment phases of MDAPs
 - Information provided by primes, subcontractors, and govt. entities
 - Data protected in web-based system, available to DoD 24/7, worldwide
 - Used by DoD to estimate costs of ongoing and future programs
 - CAPE manages policies, training, interfaces with weapon contractors
- Cost data reporting has been extended to other acquisition pathways and programs below MDAP dollar thresholds
- USD(A&S) collects EVMS data for DoD use
- Data on actual costs is essential for:
 - Accurate cost estimates
 - Business case analyses and active management of costs
 - Improving productivity of analytic workforce



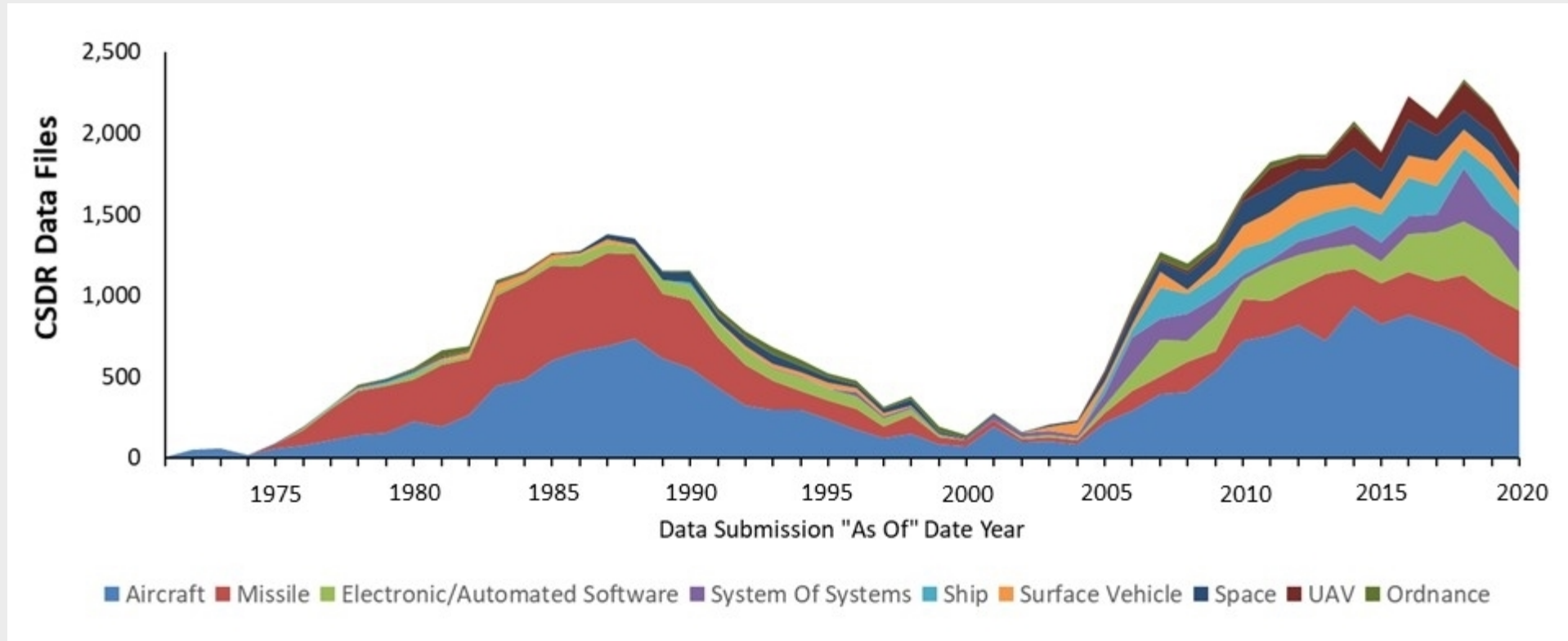
What is CADE?

The Cost Assessment Data Enterprise (CADE) team collects the *proprietary* data required to enable the cost estimating community to perform quality estimates while at the same time minimizing the cost and effort in doing so to enable accelerated acquisition timelines.

- ❖ 421 Active & 248 Legacy Weapon System Programs
- ❖ 4,505 Prime Contracts 1,836 Subcontracts
- ❖ 36,179 Cost & Software Data Reports
- ❖ 2,987 Government & Industry Users
- ❖ 360+ GIG Database



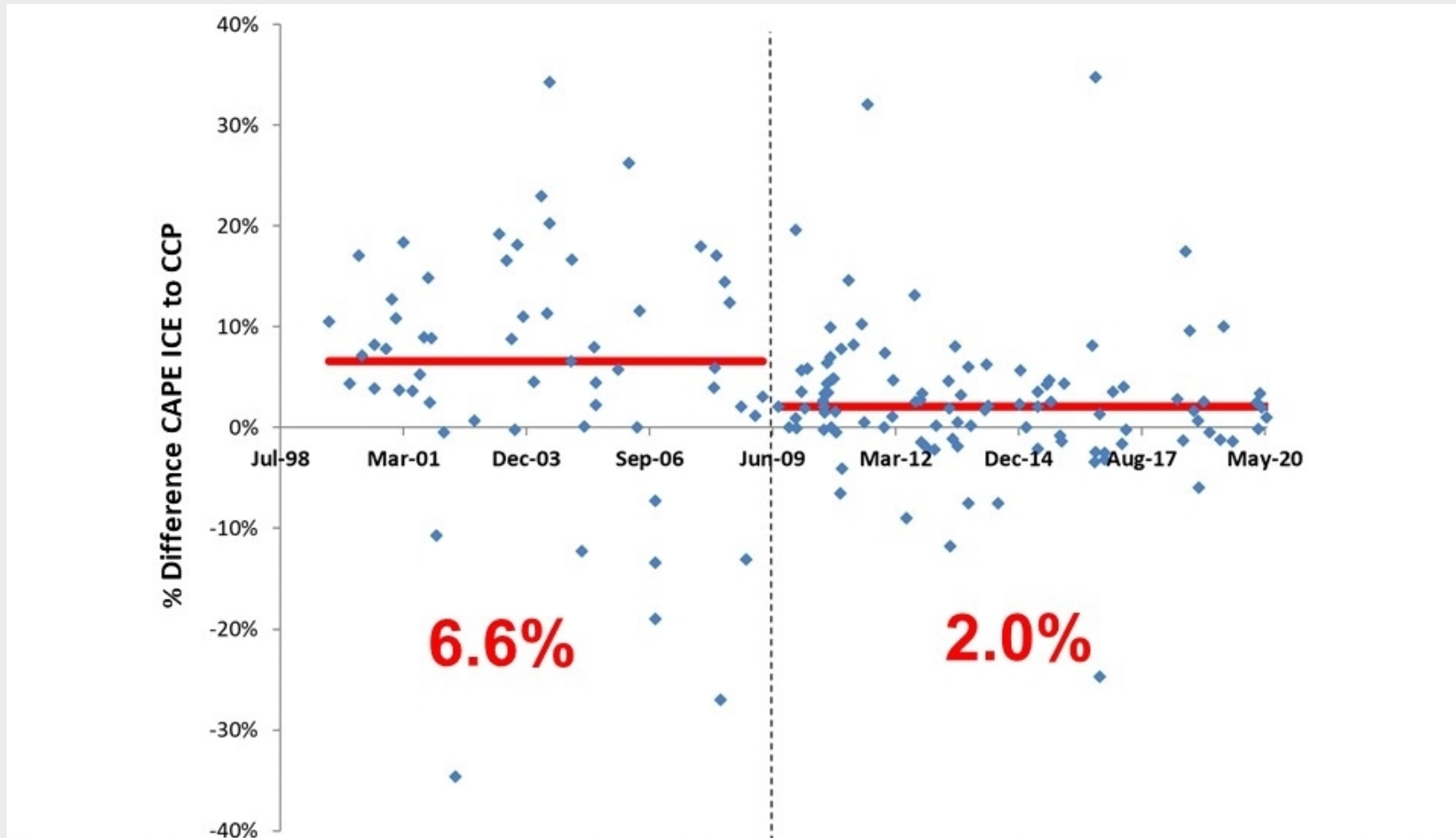
CSDR Data Collection Over Time



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



Percent Difference Between SCP and ICE



Median difference between estimates has decreased since WSARA



What is EVAMOSC?

- Enterprise Visibility and Management of Operating and Support Costs (EVAMOSC) is a data platform that collects and reports actual operating and support (O&S) cost data for all major weapon systems.
- OSD CAPE has a statutory requirement to develop an enterprise O&S cost database (EVAMOSC) that includes common:
 - Data repository for all sustainment-related data
 - Data definitions, structure, and business rules for sustainment cost data
 - Data taxonomy and data dictionary for all Service O&S cost data
 - Logon procedure to access all Service O&S cost data
- EVAMOSC cost data will be reported using the cost element structure described in the 2020 OSD CAPE O&S Cost Guide. Utilizing the O&S Cost Guide will ensure data definitions, business rules, and taxonomy are standardized across all Services and weapons systems.
- OSD CAPE is collaborating with the Services to ensure EVAMOSC data is accurate, consistent between the Services, clearly documented, and informative.
- The data in EVAMOSC will not only address capability gaps in the cost community, but will also be useful in program review, readiness planning, and the acquisition community.





FY 2020 Annual Report on Cost Assessment Activities



May 2021

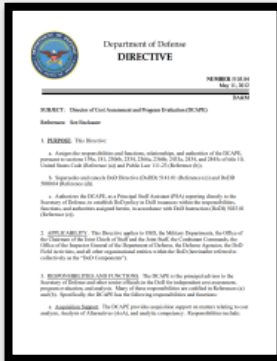
CAPE Annual Report on Cost Assessment Activities

www.cape.osd.mil

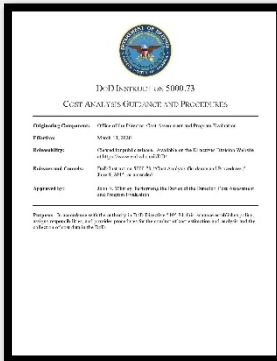
“Public Reports”



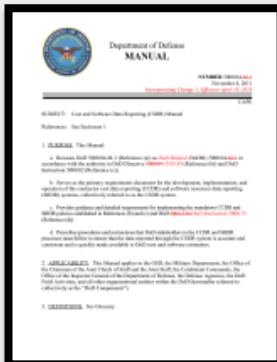
CAPE Cost Policies



DoD Directive (DoDD) 5105.84, “Director of Cost Assessment and Program Evaluation,” August 14, 2020



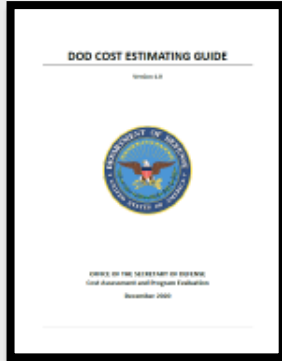
DoD Instruction (DoDI) 5000.73, “Cost Analysis Guidance and Procedures,” March 13, 2020



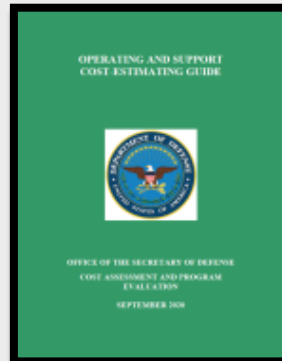
DoD Manual (DoDM) 5000.04, “Cost and Software Data Reporting Manual,” May 7, 2021



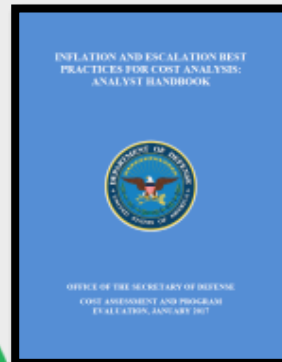
CAPE Cost Handbooks & Guides



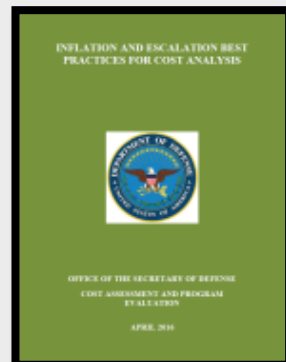
OSD CAPE, "DoD Cost Estimating Guide," December 2020



OSD CAPE, "Operating and Support Cost Estimating Guide," September 2020



OSD CAPE, "Inflation and Escalation Best Practices for Cost Analysis: Analyst Handbook," January 2017



OSD CAPE, "Inflation and Escalation Best Practices for Cost Analysis," April 2016

2021 update in work



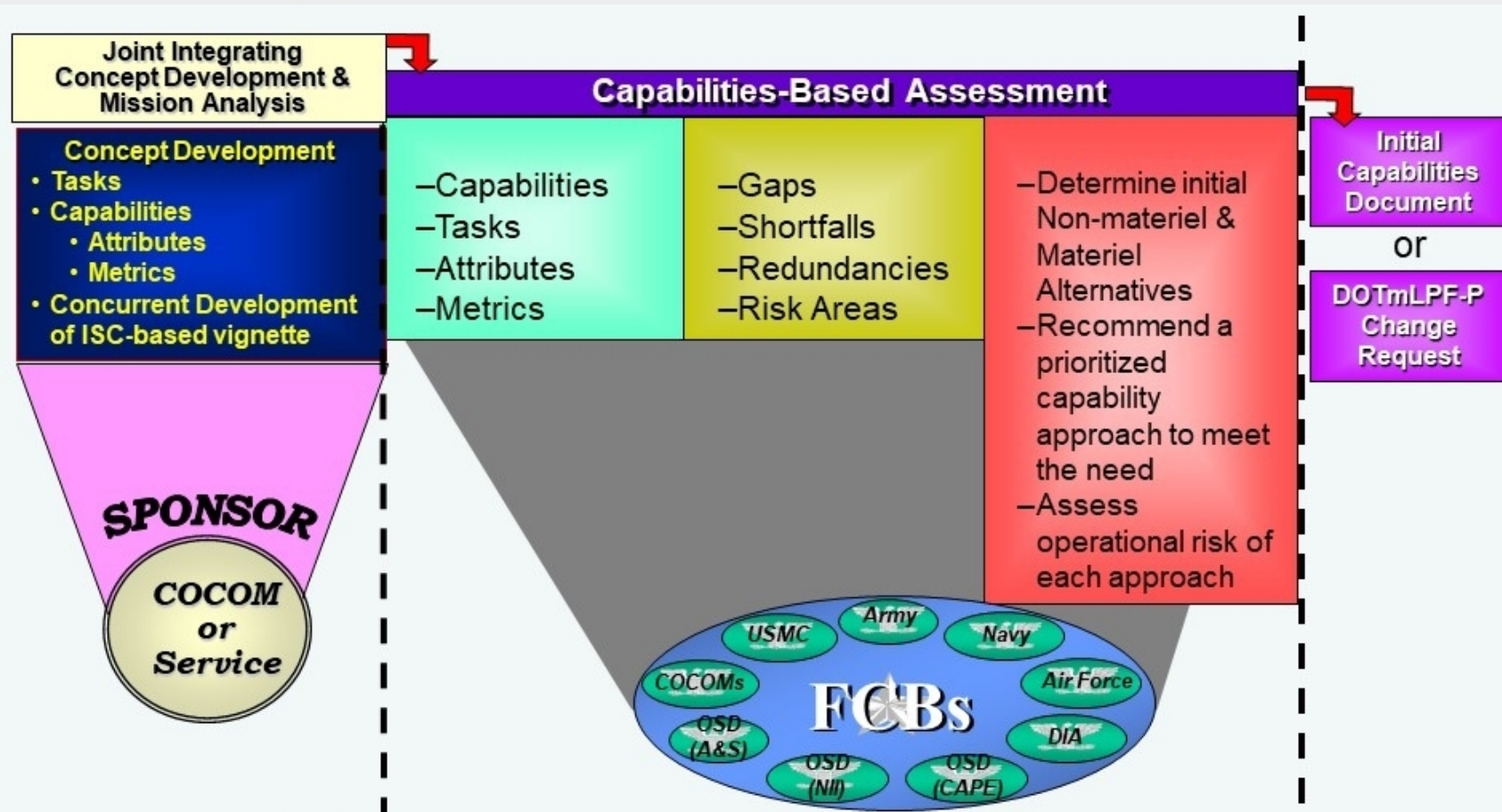
Next Presentation



Backup Slides



JCIDS Analysis



- CBA accomplished by the Components
- FCBs assess and provide recommendations for JCB/JROC

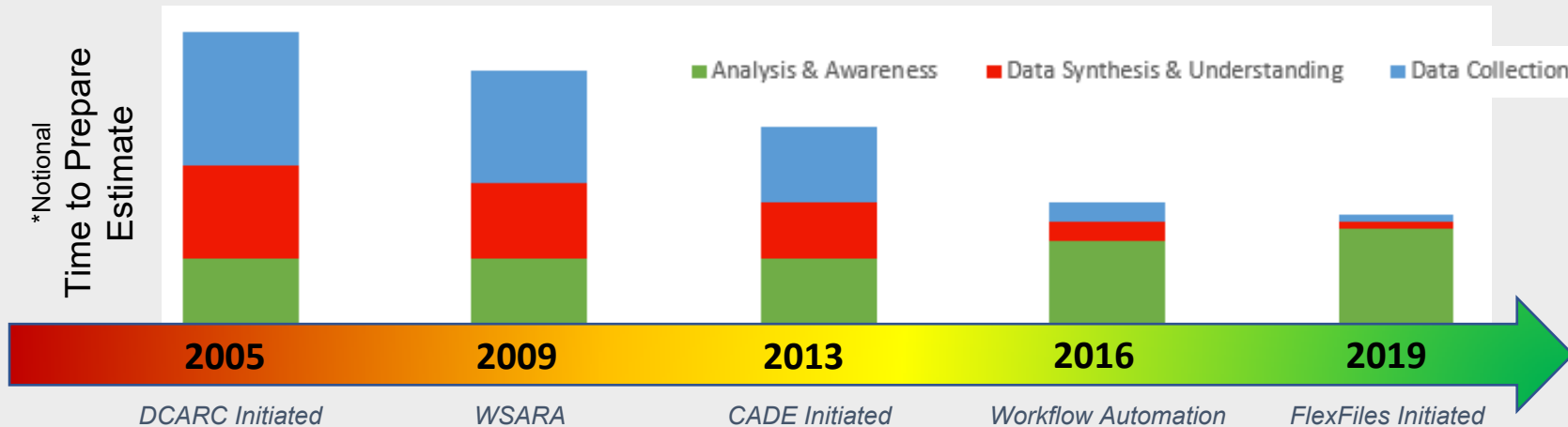


Cost Assessment & Program Evaluation (CAPE)'s Role in PPBES

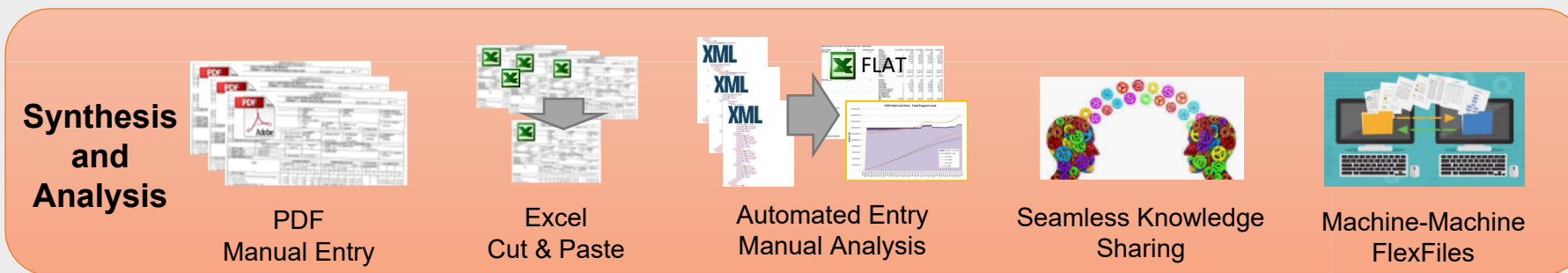
- CAPE provides independent analytic advice to the Secretary of Defense on all aspects of the Defense program, including alternative weapon systems and force structures, the development and evaluation of defense program alternatives, and the cost-effectiveness of defense systems.
- CAPE conducts analyses and offers advice in a number of areas, such as military medical care, school systems for military dependents, information technology, and defense economics.
- CAPE manages the programming system, including development of guidance and oversight of the program review portion of the annual Program and Budget Review.



DoD Historical Cost Data Collection



Year	2005	2009	2013	2016	2019
Data Sources	<ul style="list-style-type: none"> Program Office DACIMS SARs DAES Contractors Service O&S Data Libraries Colleagues Network 	<ul style="list-style-type: none"> EVM-CR DACIMS DAMIR Contractors Service O&S Data Libraries 	<ul style="list-style-type: none"> EVM Visual Display DCARC Bulk Download DAMIR Contractor Upload Data Libraries 	<ul style="list-style-type: none"> Cost Community Data Sharing Service O&S Automated Planning & Validation 	<ul style="list-style-type: none"> FlexFiles Cross-Program Search SAR Database Analysis-Ready Exports ACDB & JIAT Integration



CADE replaced stove-piped service data collection and management



**adapt,
evolve &
transform.**

PDI 2021



—— at all times ready

SAF/FMC: Our Role in the SPPBE Process

Mr. C. Grant McVicker III, SES
Deputy Assistant Secretary, Cost and Economics

SAF/FMC – Cost and Economics

Organizational Structure



**Deputy Assistant Secretary,
Cost and Economics**
Mr. C. Grant McVicker, SES

Executive
Director of

**Air Force Cost
Analysis Agency
(AFCAA)**

**Cost Integration
Division**



**Economics & Business
Mgmt Division**



**Aircraft & Weapons
Division**



**Space & Launch
Systems Division**



**Info Tech, Electronics,
& Advanced Systems**



**Operations &
Sustainment Division**



Strategy, Planning, Programming, Budgeting, & Execution (SPPBE) - Purpose

- SPPBE is the primary Resource Allocation Plan of the DAF
- Consists of five (5) distinct, but overlapping phases:
 - Strategy, Planning, Programming, Budgeting, and Execution
- The SPPBE process, guides alignment of resources to requirements, while responding to policy and fiscal constraints
- Dynamic process designed to produce a Defense budget consistent with national security objectives, policies, and strategies

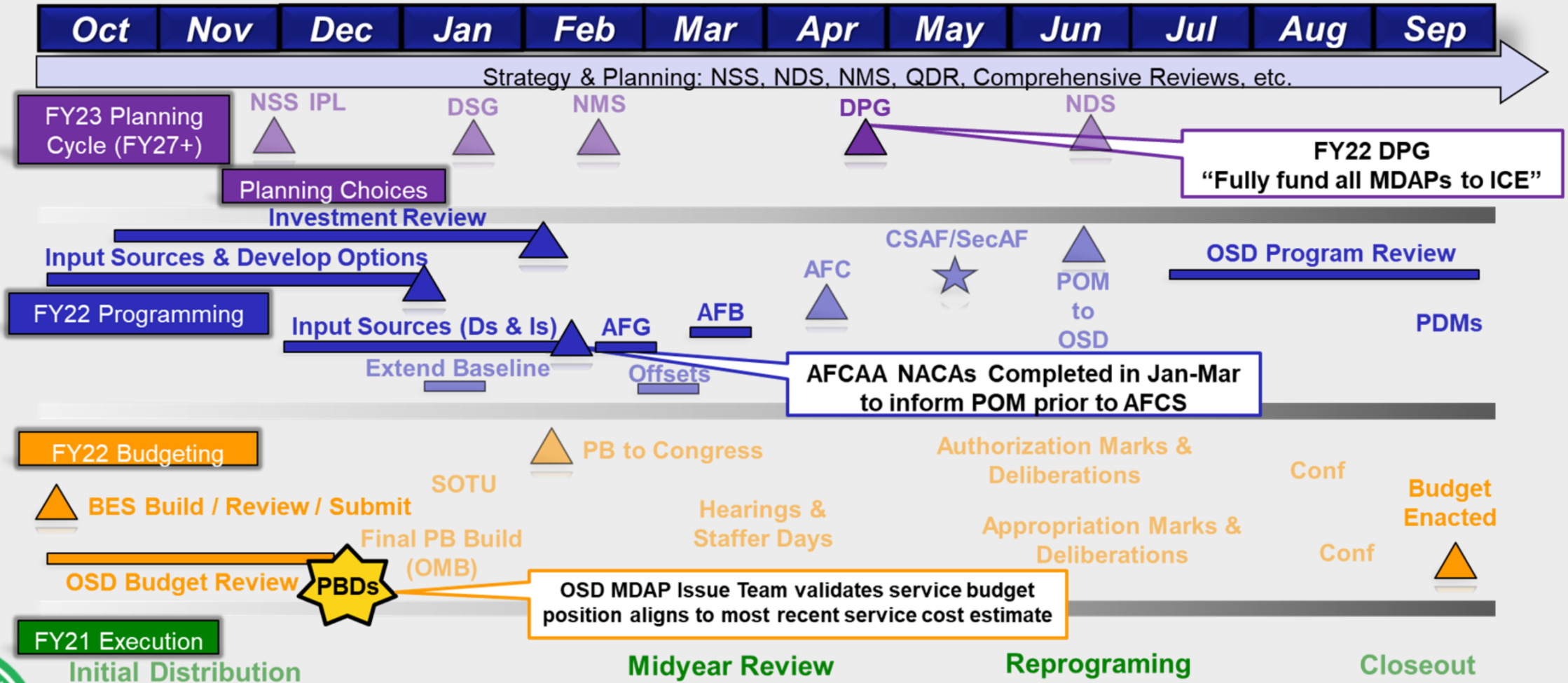


FMC Influence During SPPBE Phases

- Strategy & Planning (6 – 30 years)
 - Long term affordability assessments for weapon systems
 - Future force design support, analyses, and priority scoring
- Programing & Budgeting (1 – 5 years)
 - OSD PBR/PBD cycle – provide current estimates / monitor for CAPE adjustments
 - Validate MDAPs are fully funded
 - Support DAF narrative when strategic changes are implemented
- Execution
 - Three HQ Communities (Acquisition, Budget, Programmers) sync information to identify under-executing programs & develop remedial strategies
 - Cost estimates used to validate / provide funding profile & phasing recommendations



FMC Influence During SPPBE Phases

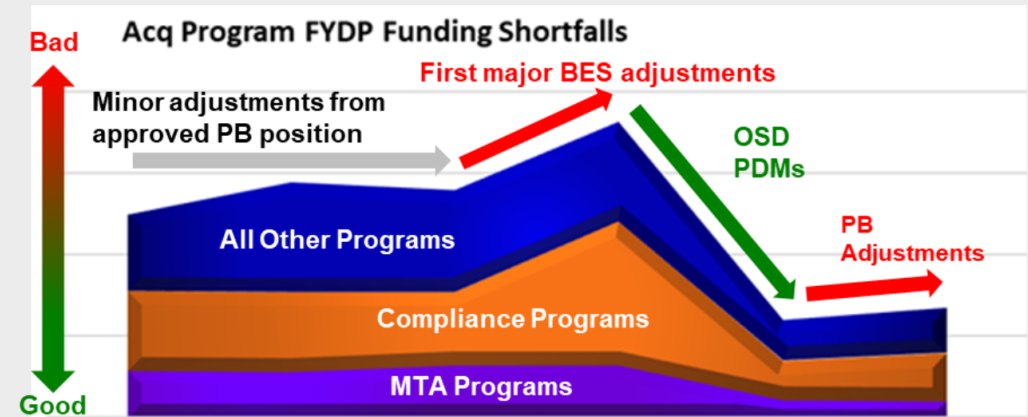


Phases running concurrently...NACAs influence Planning, Programming, & Budgeting



FMC Influence to Programming

- Programming is the first phase to apply fiscal constraints – translates guidance into action
 - Non-Advocate Cost Assessments (NACAs) completed to support every POM cycle
 - Provides support to Programmers for option building / development
 - FMC works throughout the budget process to drive down risk to acquisition programs
 - Monitors budget cycle for adjustments to acquisition programs, reports findings, & provides recommendations



AFCAA planned NACAs for:

- 22 POM cycle – 64 estimates
 - 40 NACAs for ACAT / BCAT Level I & II, and Special Interest programs
 - 14 NACAs Mid-Tier Acquisition programs
 - 10 SCPs
- 23 POM cycle – 65 estimates
 - 35 NACAs for ACAT / BCAT Level I & II, and Special Interest programs
 - 17 NACAs Mid-Tier Acquisition programs
 - 13 SCPs



Our Process - Example

Program	Estimate Info	Appropriation Totals	FY22	FY23	FY24	FY25	FY26	FYDP Total	Compliance	
Space Bird	POM NACA	RDT&E	92.1	43.8	38.3	34.5	12.3	221.0	ACAT IC ; ADM fund to SCP	
		Procurement	1,290.5	1,490.8	1,309.0	653.0	127.4	4,870.7		
		MILCON	14.9	4.4	23.6			42.9		
		POM NACA Total	1,397.5	1,539.0	1,370.9	687.5	139.7	5,134.6		
	Budget Position	RDT&E	67.3	21.8	25.8	30.3	2.1	147.3		
		Procurement	1,143.2	1,547.7	1,489.7	183.6	215.8	4,580.0		
		MILCON	0.0	7.0	0.0	0.0	0.0	7.0		
		Budget Position Total	1,210.5	1,576.5	1,515.5	213.9	217.9	4,734.3		
			Delta/Risk (\$)	(187.0)	37.5	144.6	(473.6)	78.2		(400.3)
			Delta/Risk (%)	-13%	2%	11%	-69%	56%		-8%

- Monitor budget adjustments throughout the cycle
- Report findings to Programming Community
- Explain impacts to reduced levels of funding

• Reduce funding disconnects with strategic intent:

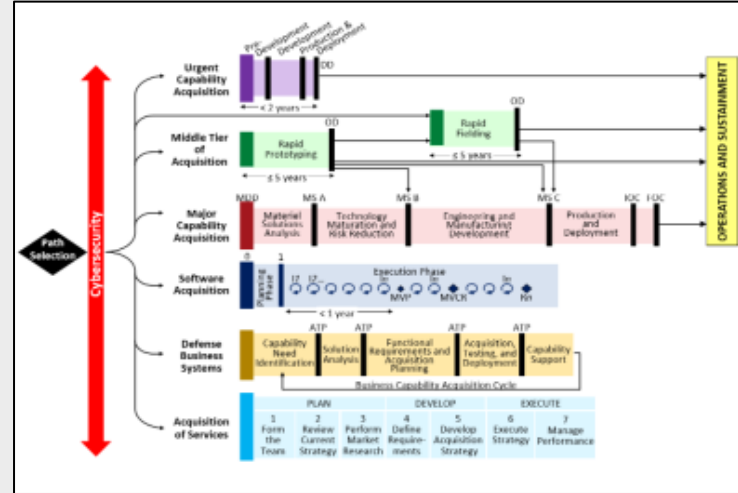
- Either match updated estimate, or
- Reduce disconnect to a more acceptable/informed level of risk

Program	Estimate Info	Appropriation Totals	FY22	FY23	FY24	FY25	FY26	FYDP Total	Compliance	
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		POM NACA Total	1,397.5	1,539.0	1,370.9	687.5	139.7	5,134.6		
	Updated Budget Position	RDT&E	90.0	44.0	38.3	34.5	12.0	218.8		
		Procurement	1,290.5	1,450.0	1,300.0	653.0	127.4	4,820.9		
		MILCON	14.9	4.4	23.6	0.0	0.0	42.9		
		Budget Position Total	1,395.4	1,498.4	1,361.9	687.5	139.4	5,082.6		
			Delta/Risk (\$)	(2.1)	(40.6)	(9.0)	0.0	(0.3)		(52.0)
			Delta/Risk (%)	-0%	-3%	-1%	0%	-0%		-1%

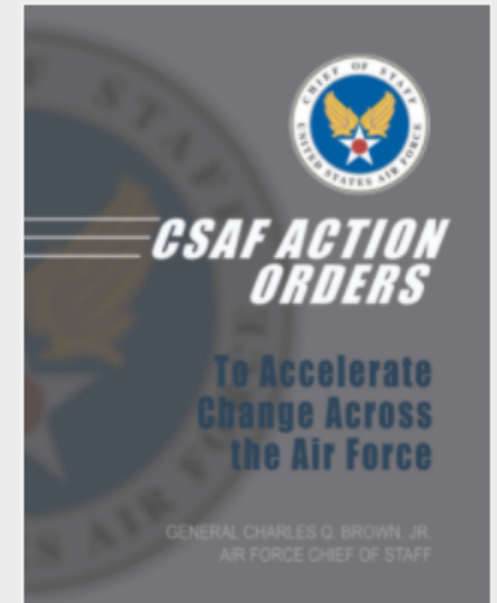
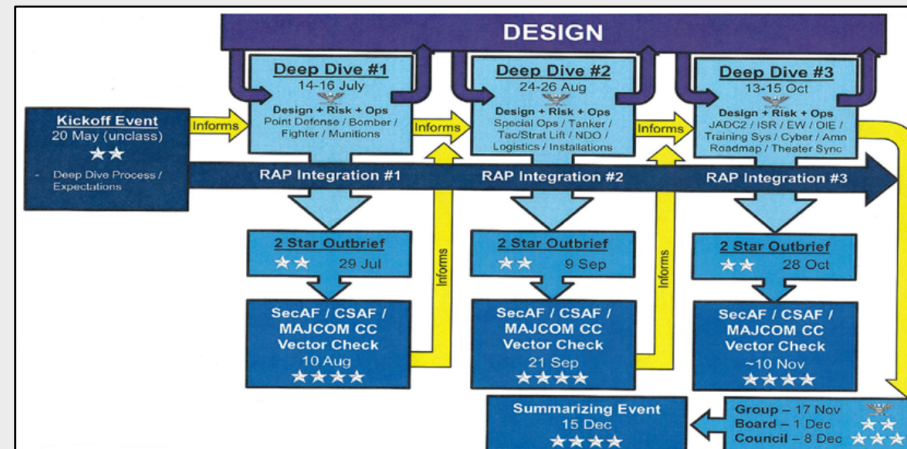


FMC Influence to Strategy/Planning

- New adaptive acquisition framework & Air Force iterative planning process embody importance of speed
 - Less likely formal AoAs with well-documented assumptions will initiate major acquisition efforts
- FMC working to integrate cost analyses early in new requirements & planning processes
 - Shifted one AFCAA branch to focus solely on these efforts



“Develop an affordable, analytically defensible, and congressionally supported force structure capable of winning the future high-end fight...”



Cost community must continue to ensure we can provide analyses at speed of relevance

