

# **GAO's Use of DAMIR**

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US GAO**

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# GAO

- An independent, nonpartisan agency that works for Congress, employs 3,141 people with a budget of \$538 million.
  - GAO investigates how the federal government spends taxpayer dollars.
  - The head of GAO, the Comptroller General of the United States, is appointed to a 15-year term by the President from a slate of candidates Congress proposes.
  - Our work is done at the request of congressional committees or subcommittees or is mandated by public laws or committee reports. We also undertake research under the authority of the Comptroller General.
  - FY 2008 received 1,200 requests for studies, 304 testimonies
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# GAO's Structure

- **Acquisition & Sourcing**
- Defense Capabilities & Management
- International Affairs & Trade
- Information Technology
- Financial Management & Assurance
- Homeland Security & Justice
- Financial Markets & Community Investment
- Health Care
- Physical Infrastructure
- Natural Resources & Environment
- Education, Workforce, & Income Security
- Strategic Issues

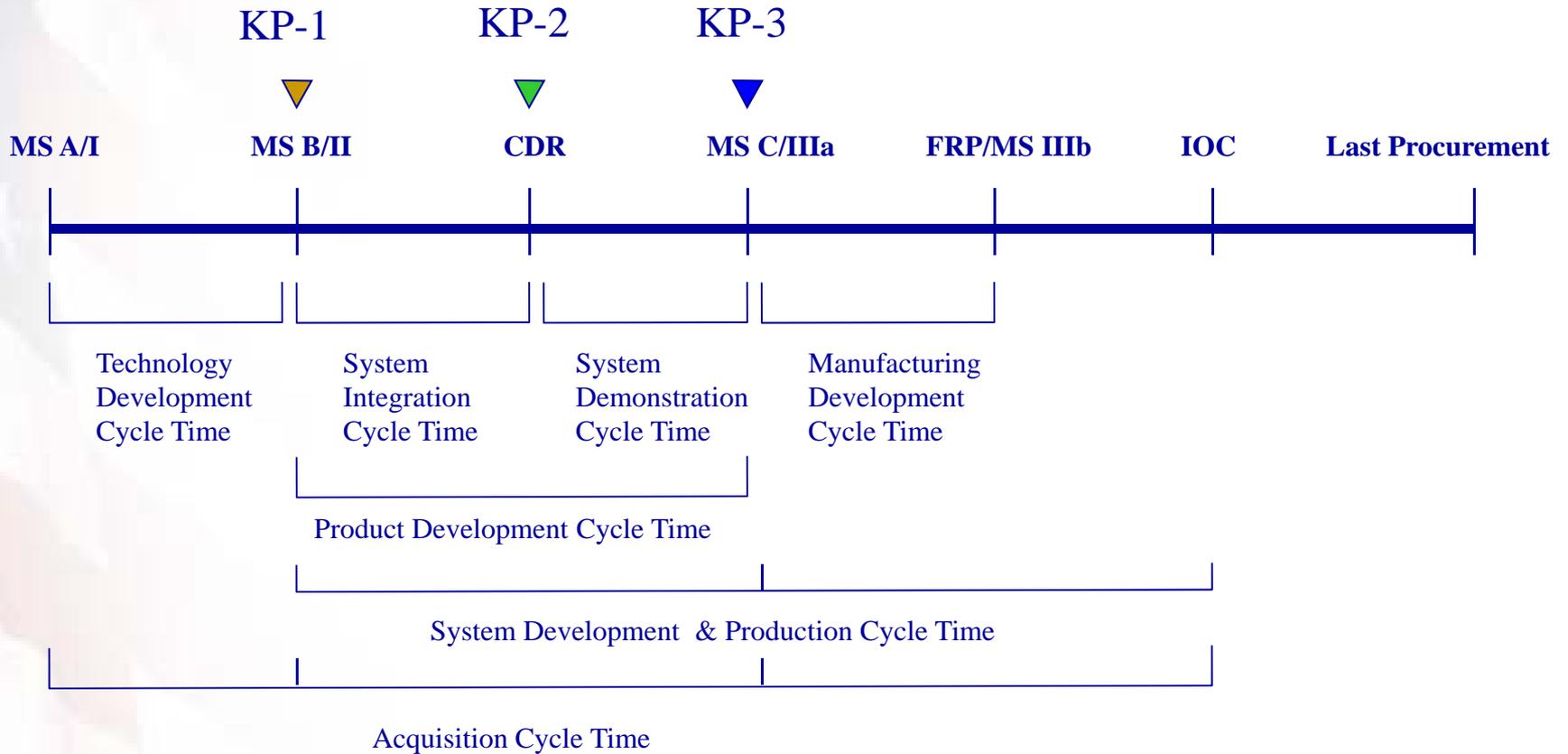
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## GAO Focuses on DAMIR Sections:

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- Executive Summary
- Breach & Rebaseline Data
- Cost, Schedule, Quantity Data
- Funding Stream

# Key Acquisition Cycle Times



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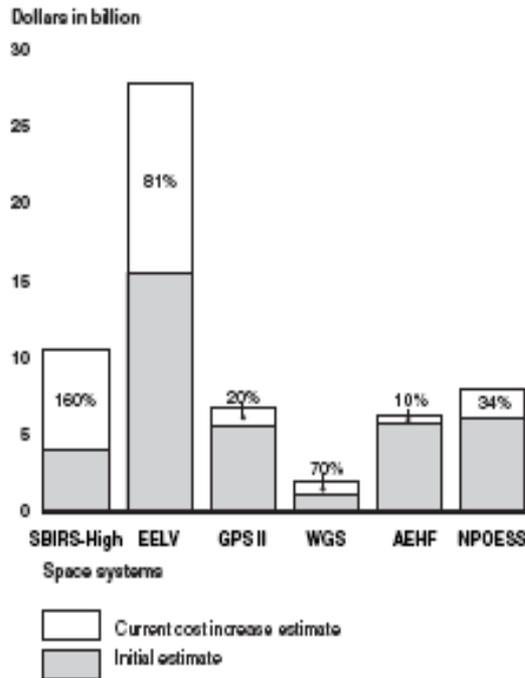
# How Does GAO Use DAMIR Data?

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- Individual Weapon System Reviews
  - Annual 2-page Assessments of MDAPs Using Knowledge-based Risk Assessment
  - Macro Analysis of Major Acquisition Trends
  - Internal Strategic Planning
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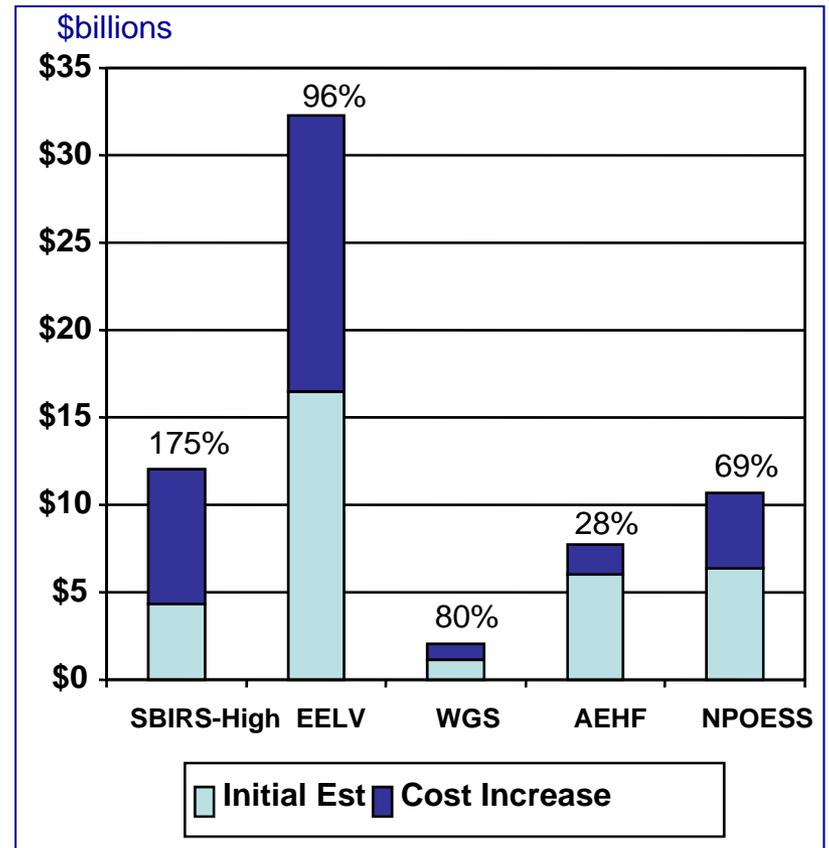
# Assessing Progress: Updated Space Program Cost Growth

Figure 2: Cost Growth in Selected Current Space Programs in Base Year Dollars

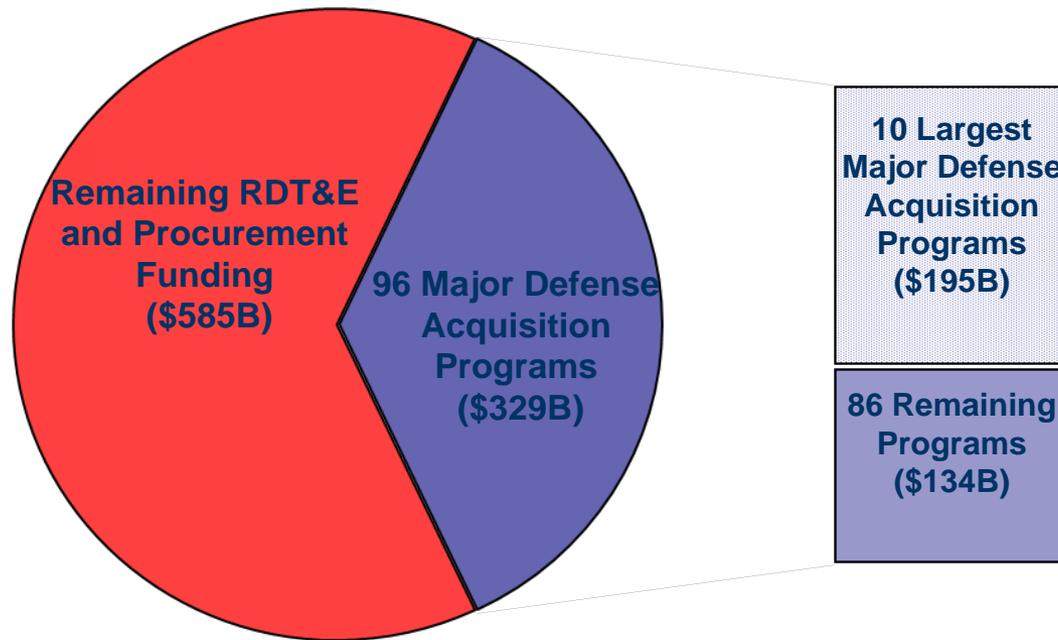


Source: GAO analysis of DOD data.

Notes: Original AEHF cost was for five satellites; the latest estimate for AEHF is for three satellites. SBIRS High data is through the latest Selected Acquisition Report, dated September 2005.



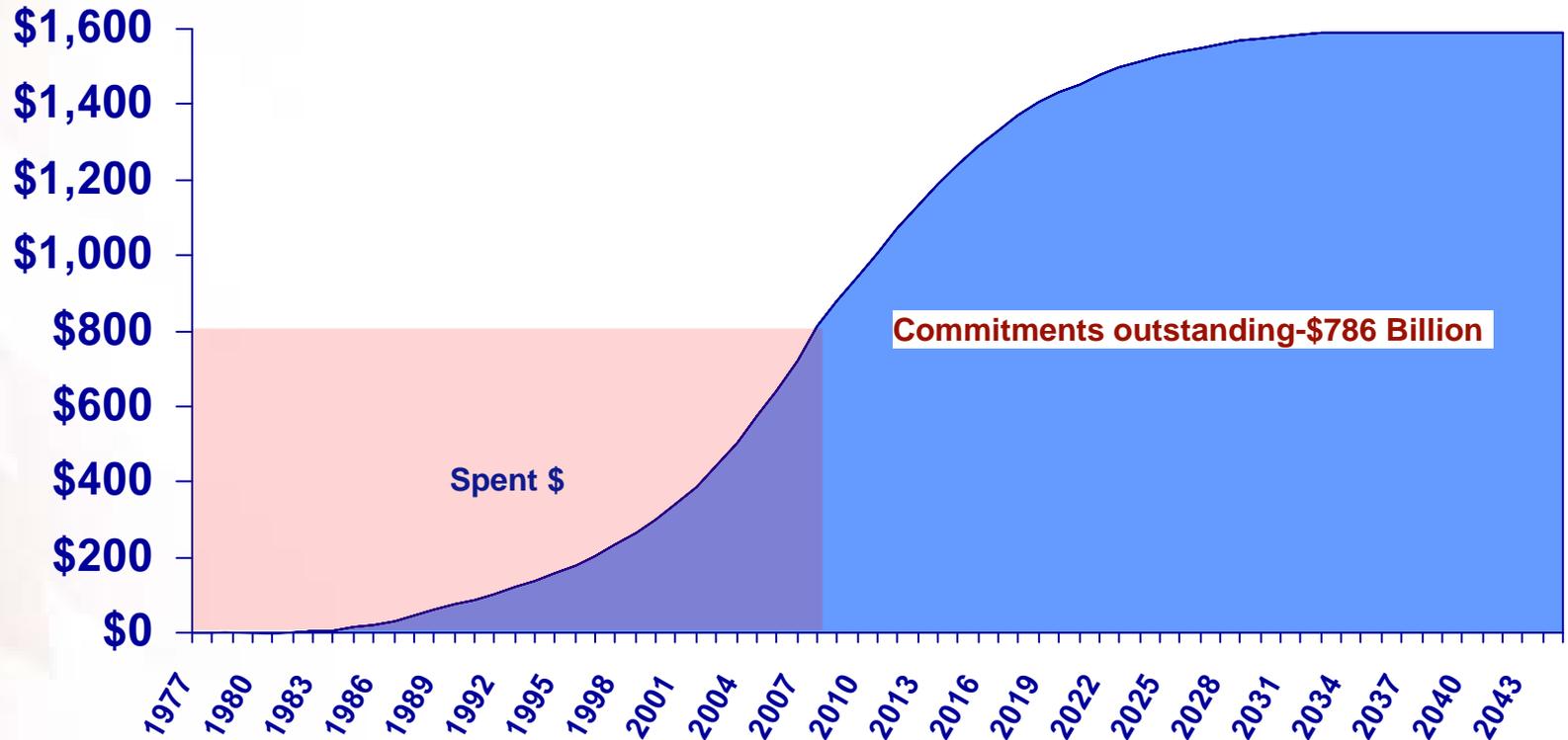
# Major Defense Acquisition Programs Consume a Large Portion of DOD's Investment Dollars



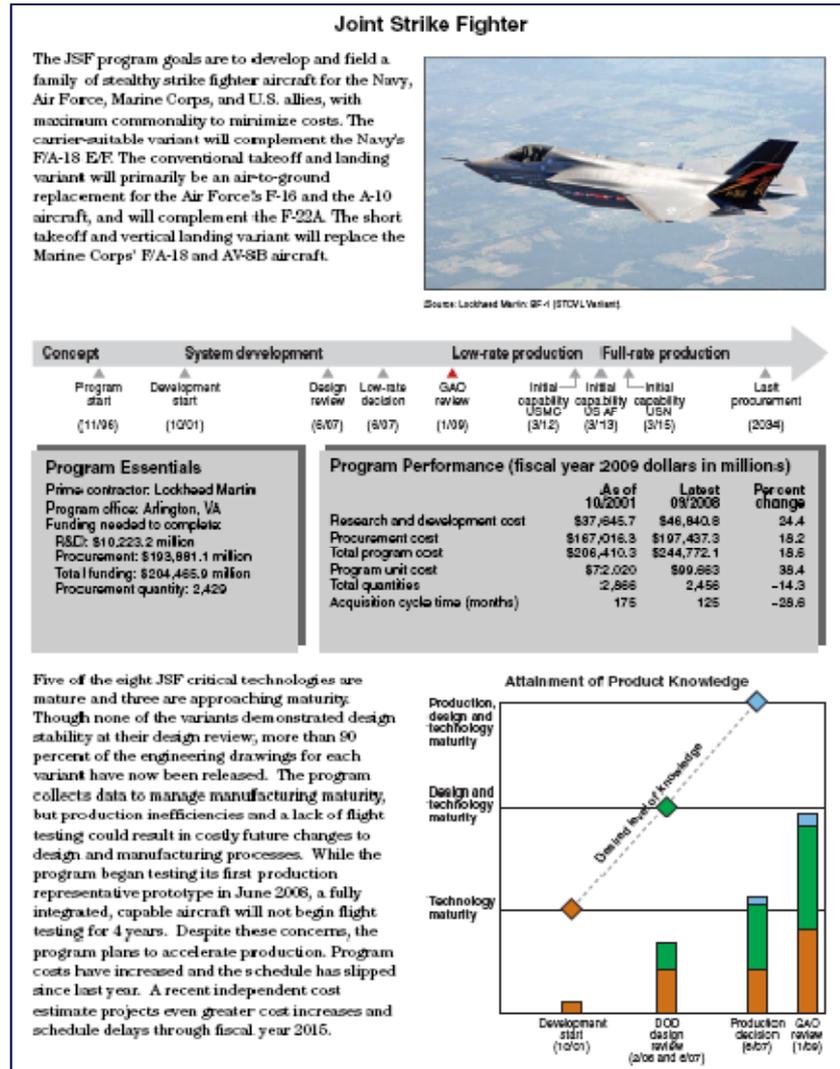
**RDT&E and Procurement Funding 2009-2013  
(FY09 Dollars)**

# Snapshot: Committed and Planned Spending on Current Portfolio of 96 Programs

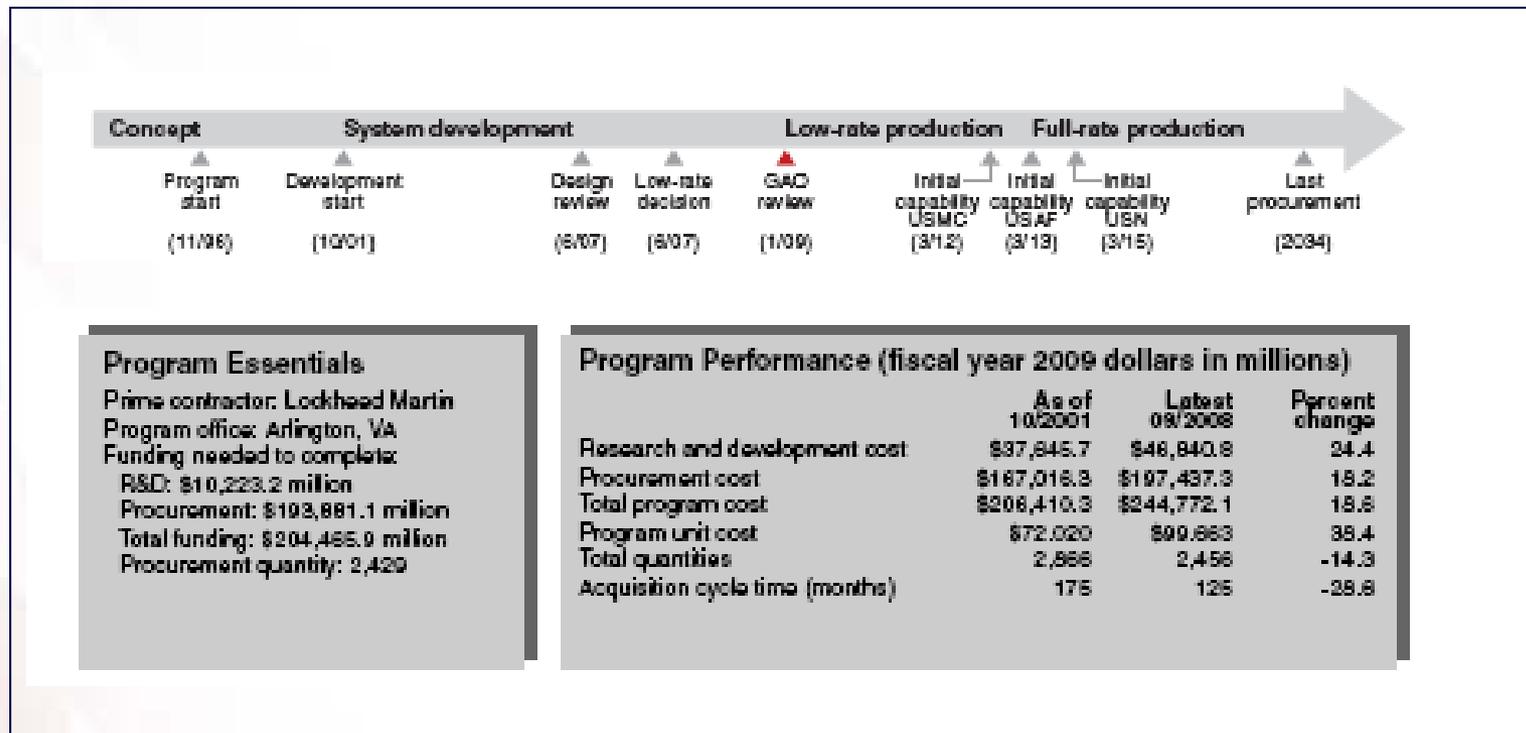
Billions of FY 2009 dollars



# Annual Assessment: JSF Program



## DAMIR Schedule, Cost, Quantity & Funding Stream



# Analysis of DOD Major Defense Acquisition Program Portfolios

**Table 1: Analysis of DOD Major Defense Acquisition Program Portfolios**

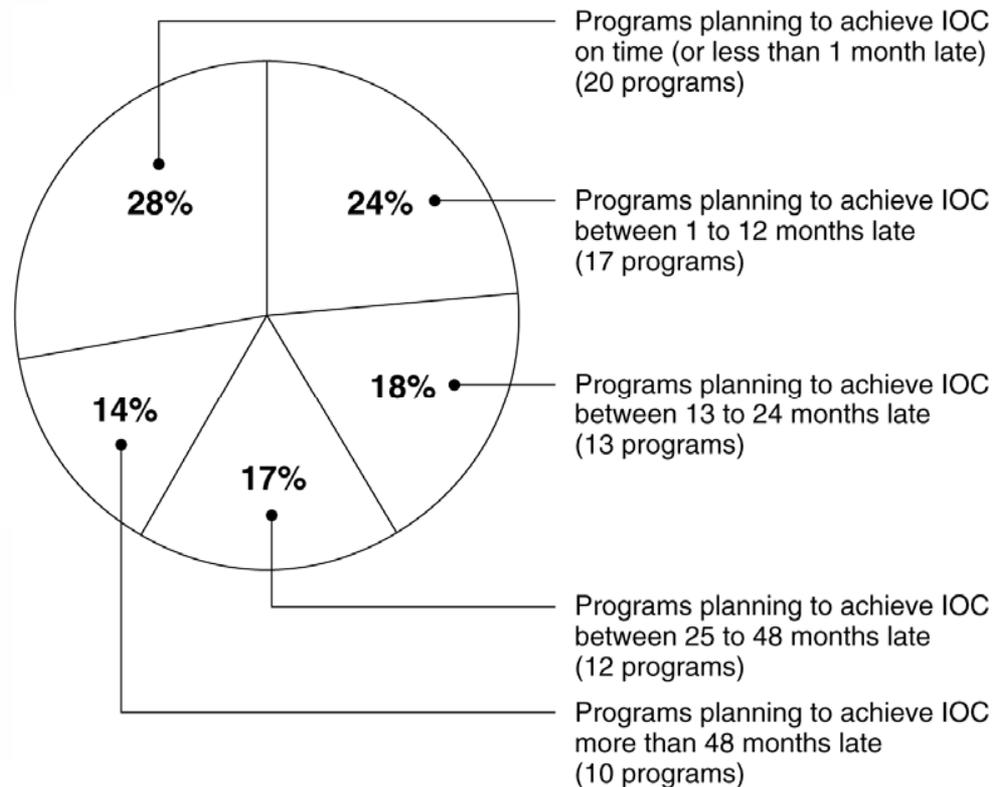
Fiscal year 2009 dollars

	Fiscal Year		
	2003	2007	2008
<b>Portfolio size</b>			
Number of programs	77	95	96
Total planned commitments	\$1.2 trillion	\$1.6 trillion	\$1.6 trillion
Commitments outstanding	\$724.2 billion	\$875.2 billion	\$786.3 billion
<b>Portfolio indicators</b>			
Change to total RDT&E costs from first estimate	37 percent	40 percent	42 percent
Change to total acquisition cost from first estimate	19 percent	26 percent	25 percent
Total acquisition cost growth	\$183 billion	\$301.3 billion <sup>a</sup>	\$296.4 billion
Share of programs with 25 percent increase in program acquisition unit cost growth	41 percent	44 percent	42 percent
Average schedule delay in delivering initial capabilities	18 months	21 months	22 months

Source: GAO-09-326SP

# Promised Capabilities Continue to Be Delivered Later Than Planned

## Schedule Delays for DOD's 2008 Program Portfolio



Source: GAO-09-326SP

# A Knowledge-Based Approach is Key to Successful Program Outcomes

In the context of DOD, level of knowledge attained at key junctures



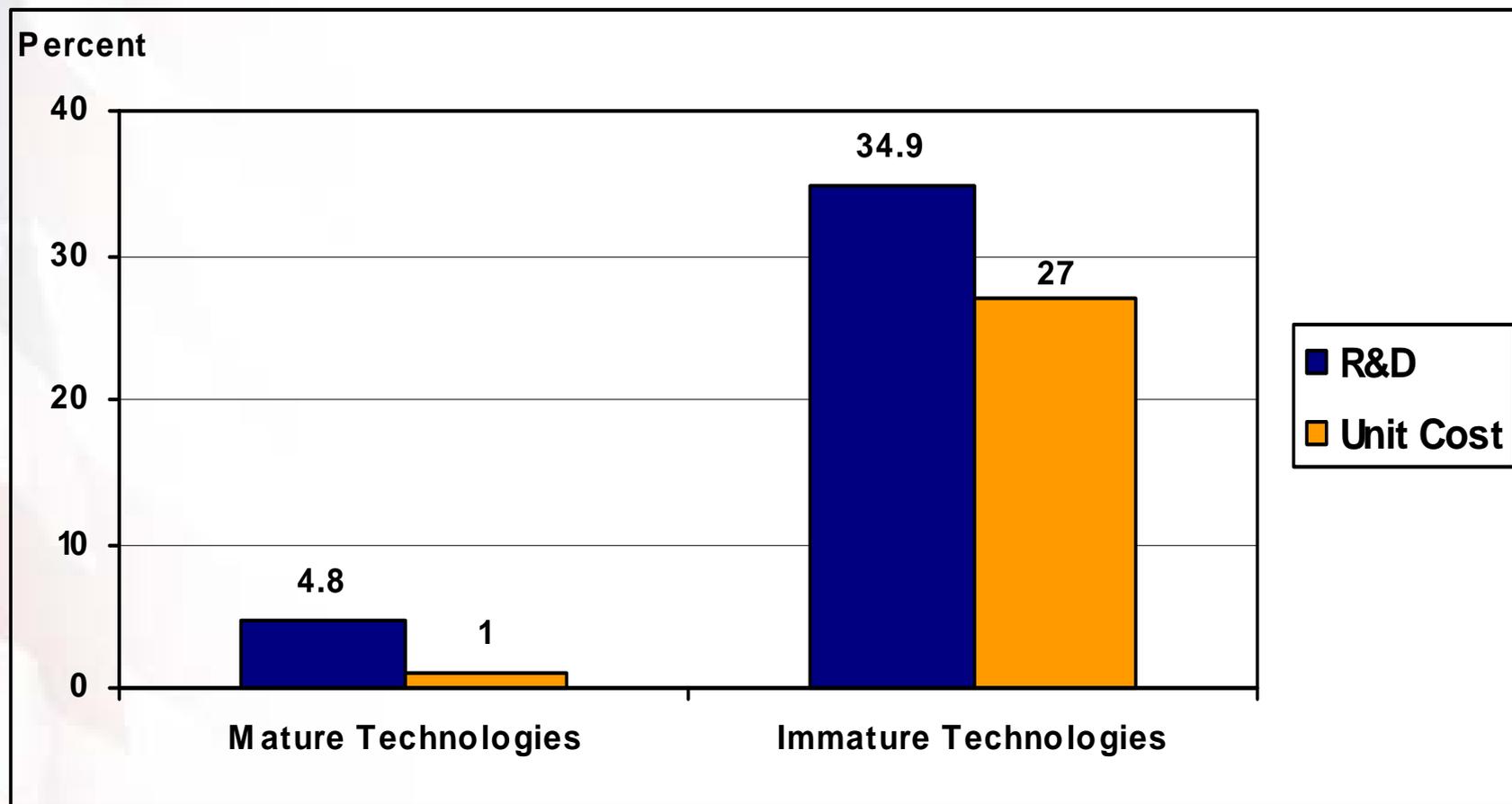
**Knowledge Point 1:** At milestone B, a match is achieved between the user's needs and the developer's resources. Technology maturity is demonstrated and preliminary design is achieved.

**Knowledge Point 2:** At critical design review, the product design demonstrates its ability to meet user needs and is stable. Prototype demonstration that design will meet requirements.

**Knowledge Point 3:** At milestone C, it is demonstrated that the product can be produced within cost, schedule, and quality targets. Full-up, integrated product tested in relevant environment.

# Macro: Consequences of Carrying Immature Technologies Into System Development

## Average RDT&E and Unit Cost Growth From First Full Estimate



Source: *Defense Acquisitions: Assessments of Selected Major Weapon Programs*.  
GAO-06-391. Washington, DC.: March 2006.

- Since 2004, total costs for a common set<sup>4</sup> of 64 major weapon systems under development have grown in real terms by 4.9 percent per year— costing \$165 billion (constant 2007 dollars) more in 2007 than planned for in 2004.
- Over this same period, the funding needed to complete these programs has increased despite the significant investment that has already been made.
- <sup>4</sup>This common set refers to all programs that were reported as major defense acquisition programs in both the 2002 and 2005 SARs.

The cost and schedule outcomes being achieved by development programs initiated since DOD first issued its revised policy have not improved over those achieved by programs managed under prior versions of the policy.

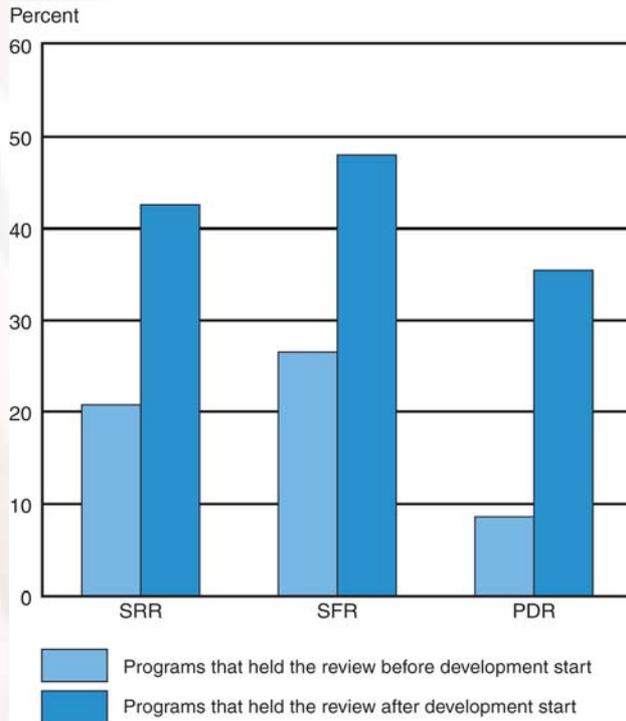
**Table 2: Cost and Schedule Outcomes for 6 of the 10 Largest Development Programs Sorted by Percent of System Development Remaining**

Programs	Percent development cost growth	Delay in delivery of initial capability in months	Percent of development remaining
Aerial Common Sensor	45%	24	85%
Future Combat System	48%	48	78%
Joint Strike Fighter	30%	23	60%
Expeditionary Fighting Vehicle	61%	48	49%
C-130 Avionics Modernization Program	122%	Delays anticipated due to program restructure	Undetermined due to program restructure
Global Hawk (RQ-4B)	166%	Delays anticipated due to program restructure	Undetermined due to program restructure

Sources: DOD (data); GAO (analysis and presentation).

# Early Systems Engineering is Beneficial

RDT&E Cost Growth Since 1<sup>st</sup> Full Estimate  
By Timing of Key SE Events

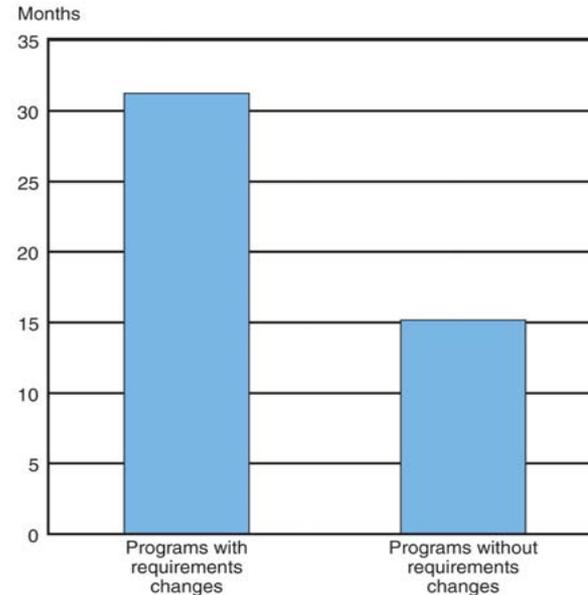
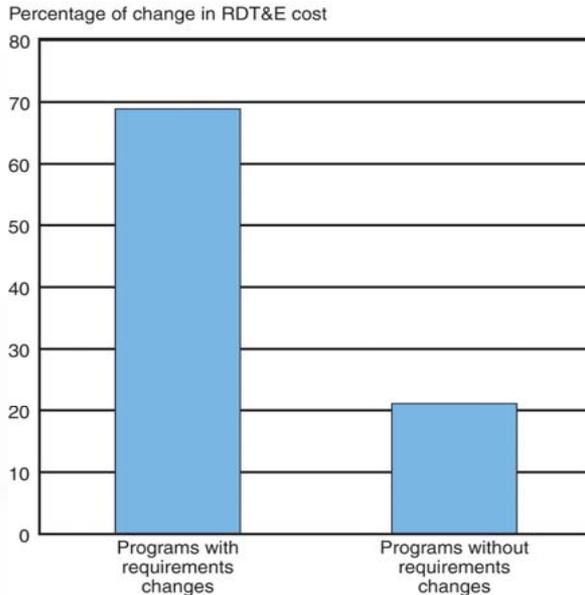


Source: GAO analysis of DOD data.

- Early SE is critical to ensuring the requirements are achievable, and designable given likely resources.
- Programs that held SE events before development start have experience (to date):
  - over 20% less cost growth
  - 8 to 9 months less in IOC delays

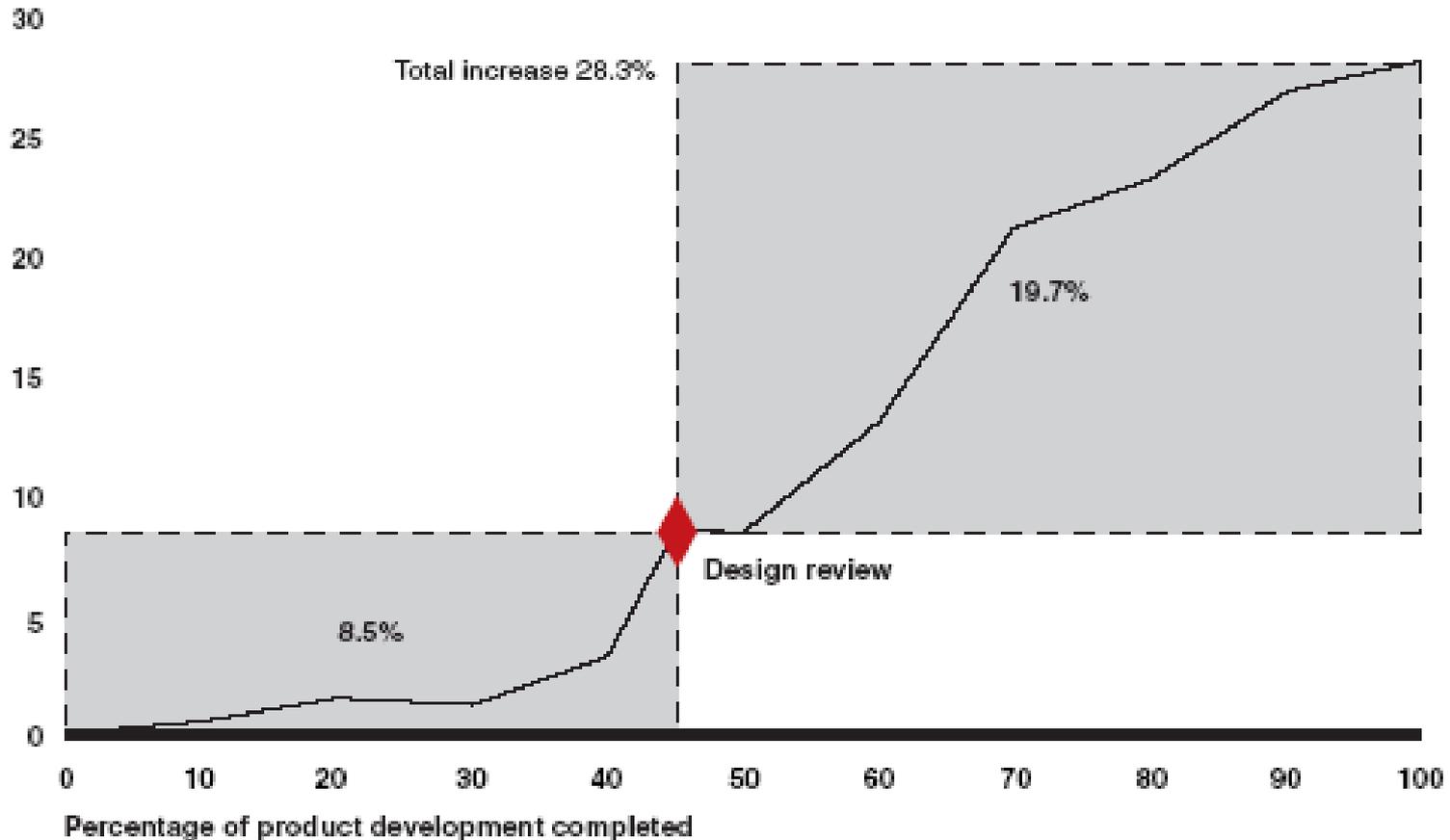
# Programs that Changed Key Requirements Experienced Added Instability

- For programs that had at least one requirements change, the average RDT&E cost was more than three times higher and the average schedule delay was twice as long as programs without these changes.



# Macro: New Risk Marker – Cost Growth by CDR

Percentage of RDT&E cost increase over development estimate



Source: GAO analysis of DOD data.

# Nunn-McCurdy: Full History of Changes to Cost Was Not Reported

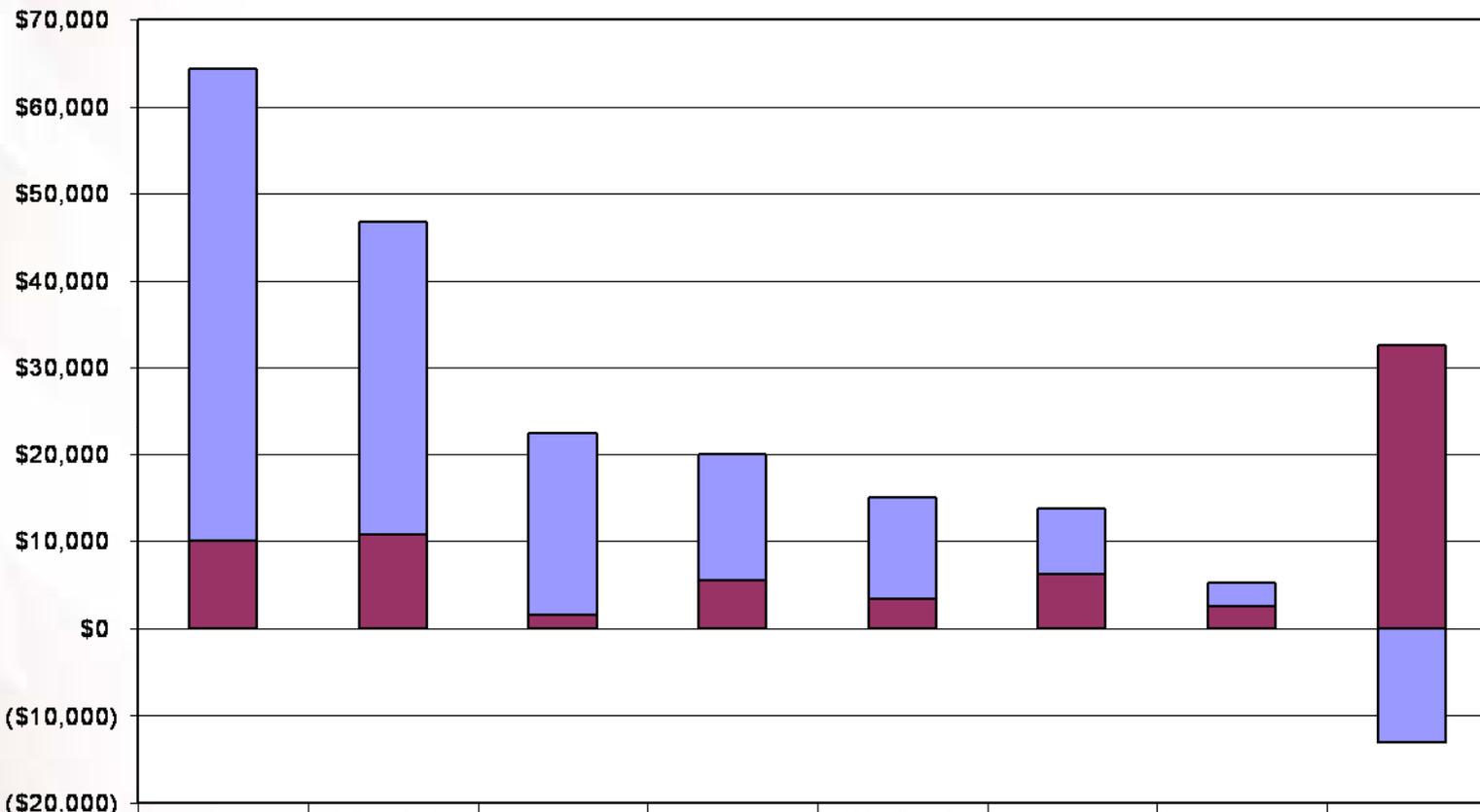
Programs*	Reported to Congress		Not Reported to Congress	
	% APUC change	time elapsed (in months)	% APUC change	time elapsed (in months)
ASDS	-.94	5	329.75	111
AAWS-M	4.14	34	207.87	174
FMTV	-(4.67)	7	154.52	177
USMC H-1 Upgrades	-.98	20	101.52	87
V-22 Vertical Lift Aircraft	6.00	20	132.46	212
F/A-22	-.33	-4	72.4	143

\*We selected acquisition category 1C and 1D programs with the largest APUC increase when comparing the current estimate with the initial acquisition program baseline.

# Internal Strategic Planning

R&D and Procurement Growth

\$'05 in millions



	Ships	Combat Vehicles	Submarines	Space	Missiles & Munitions	Helicopters	C3I	Aircraft
Procurement Growth	\$54,313.59	\$36,018.34	\$20,800.32	\$14,423.32	\$11,636.45	\$7,518.21	\$2,667.45	(\$12,962.41)
R&D Growth	\$10,033.79	\$10,787.04	\$1,583.81	\$5,485.15	\$3,329.47	\$6,216.27	\$2,578.34	\$32,602.43

Source: 2003 SARs vs First Full Estimate

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