

The Inferred Causes and Symptoms of Cost Overruns and Schedule Delays on Large-Scale Federal Defense and Intelligence Acquisition Programs

Steven R. Meier, Ph.D., PMP

SRM Consulting, LLC

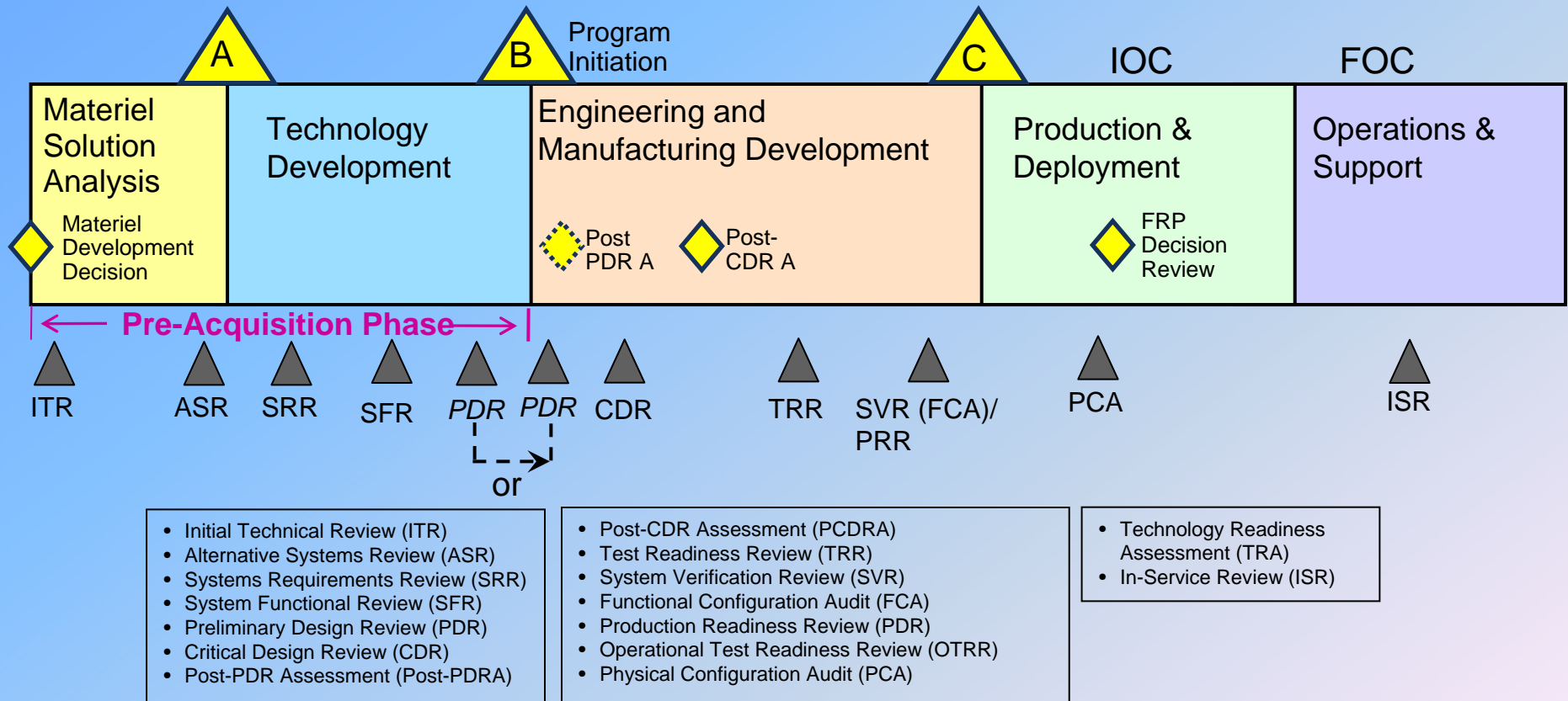
smeier@srmconsultingllc.com



1. The bottom line upfront
2. Results from two Project Management Journal papers
 - *Best PM and SE Practices in the Preacquisition Phase for Federal Intelligence and Defense Agencies*
 - *The Inferred Causes of Cost Overruns and Schedule Delays on Large-Scale Federal Defense and Intelligence Acquisition Programs*
3. Summary
4. Next webinar

Bottom Line: Early Pre-Acquisition Activities Reduce Program Risk

Early pre-acquisition phase activities – those activities prior to program initiation (shown as milestone B below) – can significantly reduce the risk of cost overruns and schedule delays on large-scale acquisition programs



Ref. DoD Instruction 5000.02, Defense Acquisition Management System (2008)

Paper Sources

- Data covered large-scale federal programs that included tanks, aircraft, satellites, missiles, and information systems
- The data sources for the papers included:
 - 6 Requests for Information (RFIs) from industry
 - 30 Reports, documents, and studies
 - 42 Interviews with federal and industry executives
 - 3 National laboratories
 - 2 Think tanks
- These papers added to the existing knowledge base of best acquisition practices – the data confirmed other studies' results and provided new information on common causes of cost and schedule growth

Paper 1: S.R. Meier, “Best Project Management and System Engineering Practices in the Preacquisition Phase for Federal Defense and Intelligence Agencies, Project Management Journal, Vol. 39, No. 1, 59-71 (2008)

Results: Why Do Many Large-Scale Federal Defense and Intelligence Programs Suffer Cost Overruns and Schedule Delays?

1. Overzealous Advocacy
2. Immature Technology
3. Lack of Corporate Roadmaps
4. Requirements Instability
5. Ineffective Acquisition Strategy and Contractual Practices
6. Unrealistic Program Baselines
7. Inadequate Systems Engineering
8. Inexperienced Workforce and High Turnover

Ref. S.R. Meier, "Best Project Management and System Engineering Practices in the Preacquisition Phase for Federal Defense and Intelligence Agencies, Project Management Journal, Vol. 39, No. 1, 59-71 (2008)"

1. Overzealous Advocacy

- **What is it?**
 - Unquestioned, overly enthusiastic support of a program that over promises capabilities and leads to optimistic program estimates
- **Why does it occur?**
 - Frequent senior management turnover
 - An agency's desire to gain positive political light by taking the lead
 - Group think (drinking the corporate Kool-Aid)
 - Personal promotion (either GS or military rank)
 - Consolidation of aerospace industry → low bids by industry
- **Study Comments**
 - The program suffered from “excess optimism”
 - Frequent turnover makes it “hard to establish accountability”
 - Decision makers need to “re-examine decisions as new information is disclosed”
 - The “prime contractor should not fear retribution for bearing bad news”

Overzealous Advocacy (cont.)

- **Impacts**
 - Overly optimistic program baselines
 - No risk management plan
 - In the worst scenarios, suppression of bad news
- **Recommendations**
 - Conduct rigorous internal and external panels prior to Milestone B acquisition milestone and other key milestones
 - Develop a detailed end-to-end risk management plan prior to Milestone B
 - Develop a robust, timely communication plan
 - Empower a corporate “devil’s inquisitor” who questions the program’s assumptions
 - Ensure all Milestone B entrance and exit criteria are adhered to

2. Immature Technology

- **What is it?**
 - Beginning a program without adequate verification that the program technologies have reached the proper maturity level prior to entering the execution phase
- **Why does it occur?**
 - The desire to incorporate state-of-the-art technology to improve system performance
 - A cutting-edge technology program is more appealing to stakeholders
 - The pressure to adhere to a short, demanding program schedules
 - The belief that system and technology development can be accomplished in parallel
- **Study Comments**
 - There is a “huge economic multiplier in making the up-front investment to ensure that the technology is mature prior to acquisition”
 - That the “government pushes the state of the art in technology, operates with unstable requirements, and doesn’t adequately develop technology before using it”
 - Cost growth occurred because we “counted on technology that had not been adequately developed prior to ATP”
 - Examples: JSF, NPOESS, FCS

Immature Technology Impacts (cont.)

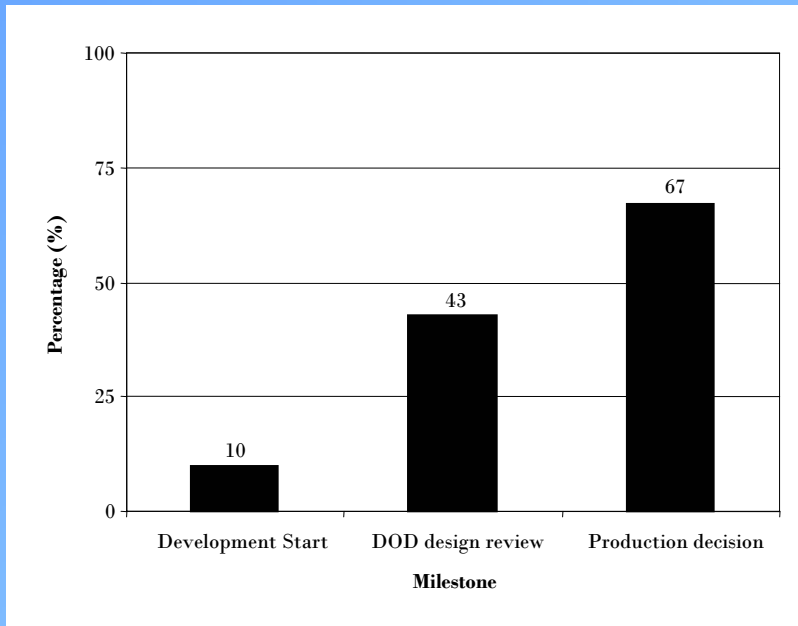


Fig. 2. Percentage of programs that achieved critical technology maturity levels at key milestones from GAO-06-391 (2006).

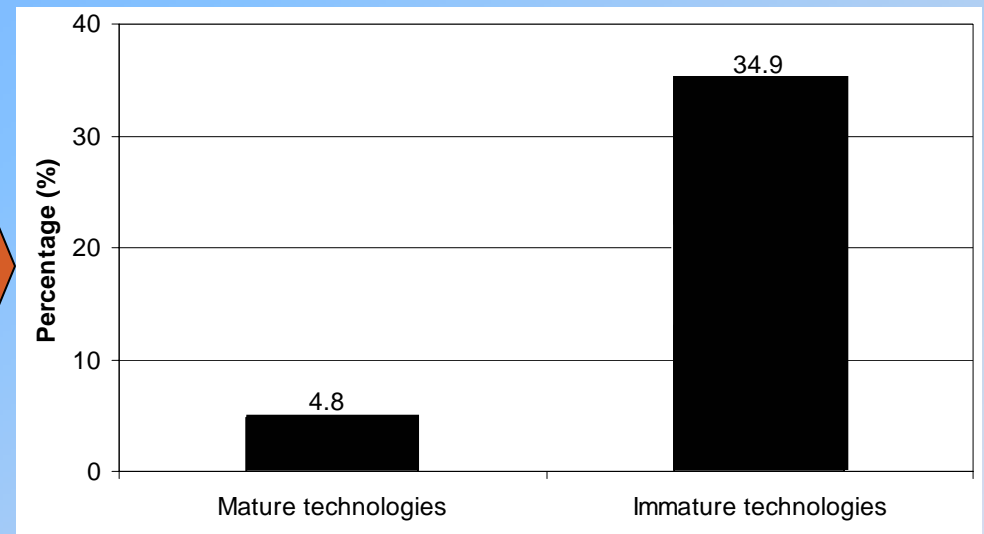


Fig. 3. Average program research, development, test, and evaluation cost growth from first full estimate from GAO-06-391 (2006).

Developing and maturing dependent technologies in parallel with system development post-Milestone B leads to cost growth

- * Development Start is roughly equivalent to Milestone B
- * DOD design review is roughly equivalent to Preliminary Design Review (PDR)
- * Production Decision is roughly equivalent to Critical Design Review (CDR)

Immature Technology (cont.)

- **Impacts**

- Can lead to requirements changes

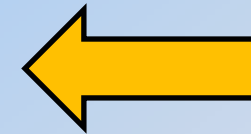
- **Recommendations**

- Conduct internal and external technology assessments prior to Milestone B
- Mature all technologies to a Technology Readiness Level (TRL) 6 (*system/subsystem model or prototype demonstration in a relevant environment*) prior to Milestone B
- Review the industrial base to support the program and mature all manufacturing processes to a Manufacturing Readiness Level (MRL) 6 (*system, component or item in prototype demonstration beyond bread board, brass board development*) prior to Milestone B

Technology Readiness Levels (TRL)

Hardware and Software Descriptions [3, Appendix 6]:

TRL 1	Lowest level of technology readiness. Research begins to be translated into applied research and development. Examples might include paper studies of a technology's basic properties.
TRL 2	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.
TRL 3	Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.
TRL 4	Basic technological components are integrated to establish that they will work together. This is relatively "low fidelity" compared to the eventual system. Examples include integration of "ad hoc" hardware in the laboratory.
TRL 5	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment. Examples include "high fidelity" laboratory integration of components.
TRL 6	Representative model or prototype system, which is well beyond that of TRL5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a high fidelity laboratory environment or in simulated operational environment.
TRL 7	Prototype near or at planned operational system. Represents a major step up from TRL6, requiring demonstration of an actual system prototype in an operational environment, such as in aircraft, vehicle, or space. Examples include testing the prototype in a test bed aircraft.
TRL 8	Technology proven to work in its final form and under expected conditions. In most cases, this TRL represents the end of true system development. Examples include developmental test and evaluation of the system in its intended weapon system to determine if it meets specifications.
TRL 9	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation. Examples include using the system under operational mission conditions.



Technologies should be at a TRL 6 at Milestone B

Ref. DoD Interim Defense Acquisition Guidebook, (formerly DoD 5000.2-R dated April 5, 2002), Oct. 30, 2002.

3. Lack of Corporate Roadmaps

- **What is it?**
 - Many organizations have no clear corporate investment strategy that links research and development (R&D) to operational systems
- **Why does it occur?**
 - DoD starts many more programs than they can afford (GAO-06-110)
 - A lack of empowered and insightful personnel to develop roadmaps and clearly identify the technical risk areas
 - A lack of corporate support for internally funded planning activities
- **Study Comments**
 - The DoD and IC need “an evolutionary plan to evolve capabilities with future technologies commensurate with risk”
 - That “establishing the program baseline discipline is not easy as it requires a comprehensive strategic business plan vetted through senior leadership”
 - Industry and government need to “fund technology development through qualification prior to incorporation into an operational development program”

Lack of Corporate Roadmaps (cont.)

- **Impacts**

- Technology development extends into the execution phase
- No prioritization of an agency's program portfolio which slows decision making
- Total system performance can be affected

- **Recommendations**

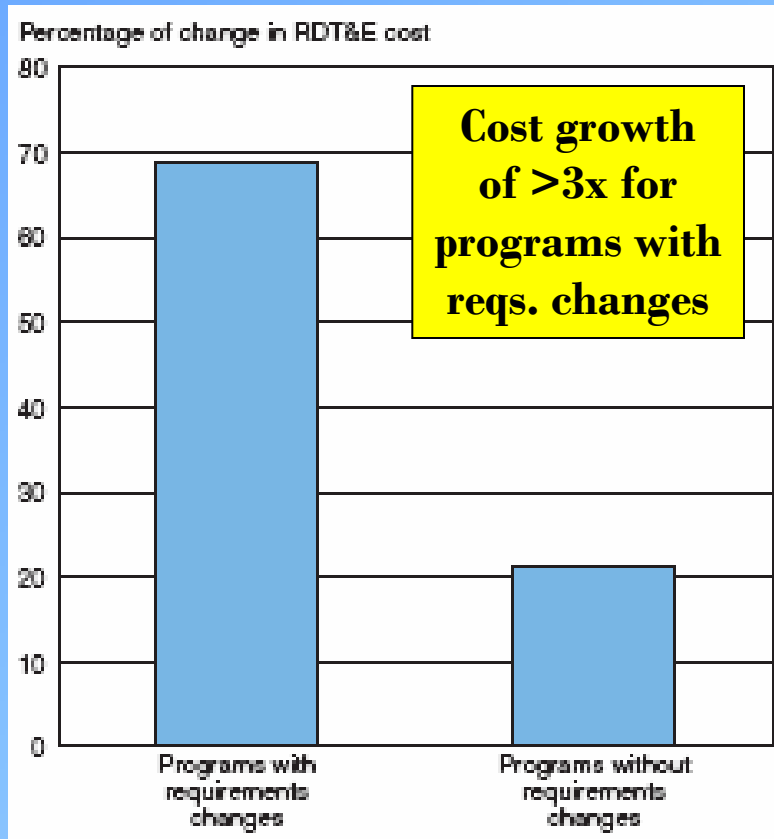
- Federal agencies – in coordination with industry – need to develop corporate technology roadmaps with well-defined technology maturation and insertion dates
- Regular reviews of industrial base and government laboratories technology developments and capabilities

4. Requirements Instability

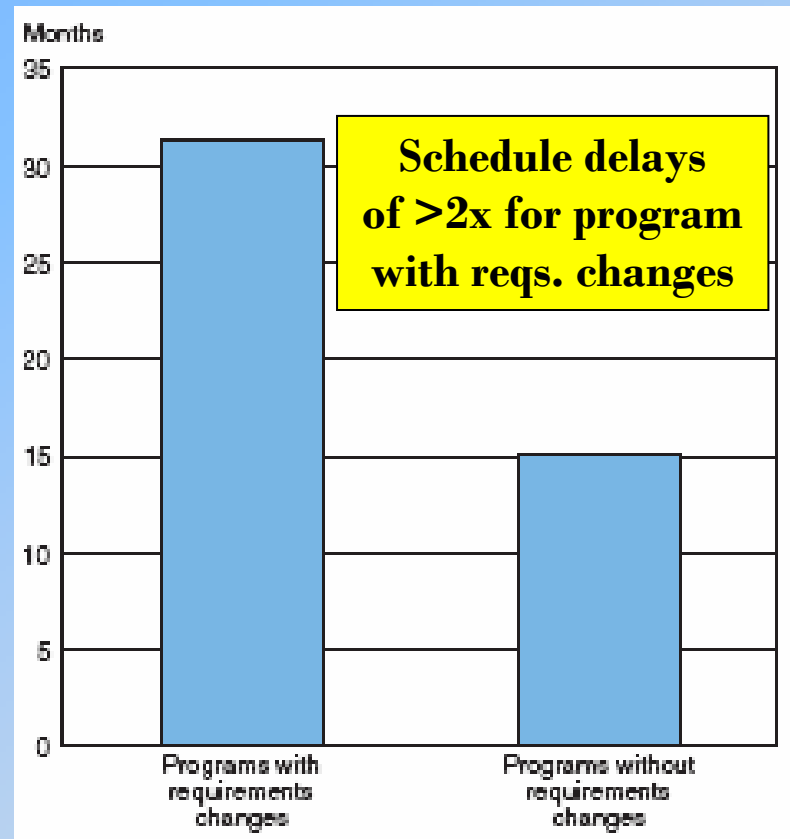
- **What is it?**
 - The addition, modification, or relief of system requirements during the acquisition lifecycle
- **Why does it occur?**
 - Too many stakeholders with divergent needs and wants
 - No approved program requirements baseline
 - Agencies routinely accept requirements changes post-Milestone B with no understanding of system impacts
 - Technology maturity activities initiated too late (post-Milestone B)
- **Study Comments**
 - The Navy and contractor “didn’t seem to on the same page in terms of what the requirements were and what exactly the contractor was required to deliver”
 - The “larger user community involvement in defining interfaces and requirements drive us to new technologies and use of large systems of systems”
 - One study states “4-5 Key Performance Parameters (KPPs)* are sufficient”

* KPPs are defined as those attributes or characteristics that are considered critical or essential to the development of an effective military capability

Impacts of Changing Requirements



Average cost growth for programs over initial estimates (GAO-09-326SP) from data on 52 programs.



Average delay in providing initial operating capability (GAO-09-326SP) from data on 52 programs.

Requirement changes can lead to cost growth and schedule delays

Requirements Instability (cont.)

- **Impacts**

- Can render current technology inadequate to meet new requirements
- Cannot achieve technical mission performance

- **Recommendations**

- Have a vetted, approved requirements baseline prior to Milestone B – “lock them down at the System Requirements Review (SRR)”
- Implement a “no change” requirements policy and stick to it – the program objectives were “clearly stated in the proposal and were not allowed to creep upward”
- Focus on what is most important – limit program KPPs to six
- Implement a government led change control board (CCB) and require a cost/benefit evaluation for any suggested change

5. Ineffective Acquisition Strategy and Contractual Practices

- **What is it?**
 - Flawed buying strategy coupled with contract practices that do not facilitate understanding or motivate contractors
- **Why does it occur?**
 - No government corporate roadmaps with investment strategy
 - Inexperienced government workforce
 - Ineffective award fee plans and criteria (objective vs. subjective)
 - Ambiguous statement of work (SOW) – the government doesn't know what it wants
- **Study Comments**
 - The government should consider block buys since this would “permit cost efficiencies” and “retain workforce”
 - Consider “shoulder-to-shoulder Alpha contracting” since “Alpha contracting saves time”
 - The Government should consider a “metrics-based award fee criteria”
 - The Government should “align incentive structures with program objectives” and use a “tailored mix of base, award, and incentive fees”

Ineffective Acquisition Strategy and Contractual Practices (cont.)

- **Impacts**

- Miscommunication between government and industry resulting in slow or bad decisions
- Loss of economies of scale and retention of workforce
- Ineffective incentives that do not motivate contractors

- **Recommendations**

- Consider block buy approaches
- Conduct face-to-face contract negotiations
- Develop metrics based award fees with a mix of incentives that align with the program objectives to motivate contractors
- Develop clear and concise statements of work

6. Unrealistic Program Baselines

- **What is it?**
 - Failure to adequately conduct early studies, trades, and analysis that leads to an inaccurate cost, schedule, and performance program baseline
- **Why does it occur?**
 - Overzealous advocacy that rejects realistic cost, schedule, and performance baselines
 - Contractors submit low bid proposals to win a proposal
 - Inexperienced workforce and high turnover lead to an inadequate review proposals and an inability to generate a credible program baseline
- **Study Comments**
 - That “unrealistic cost estimates lead to unrealistic budgets and unexecutable programs”
 - Early on “advocacy dominates the program formulation phase”
 - The government has a blind “reliance on contractor proposals”
 - There exists “inadequate technical, operational, and system understanding in the pre-acquisition phase”
 - *That “unrealistic cost and schedule expectations during proposal result in catastrophic consequences”*

Reduced Buying Power

Table 2: Changes in Costs and Quantities for 10 of the Highest-Cost Acquisition Programs

Program	Total cost (fiscal year 2009 dollars in millions)		Total quantity		Acquisition unit cost
	First full estimate	Current estimate	First full estimate	Current estimate	Percentage change
Joint Strike Fighter	206,410	244,772	2,866	2,456	88
Future Combat System	89,776	129,781	15	15	45
Virginia Class Submarine	58,978	81,556	30	30	40
F-22A Raptor	88,184	78,723	648	184	185
C-17 Globemaster III	51,733	73,571	210	190	57
V-22 Joint Services Advanced Vertical Lift Aircraft	98,726	55,544	913	458	196
F/A-18E/F Super Hornet	78,925	51,787	1,000	493	83
Trident II Missile	49,939	49,614	845	561	50
CVN 21 Nuclear Aircraft Class Carrier	94,960	29,914	3	3	-13
P-8A Poseidon Multi- mission Maritime Aircraft	29,974	29,622	115	113	1

Source: GAO analysis of DOD data.

Examples of DoD programs with reduced buying power (GAO-09-326SP)

Unrealistic program baselines inevitably lead to cost overruns and schedule delays

Unrealistic Program Baselines (cont.)

• Impacts

- Unexecutable program
- Reduced buying power
- Lost opportunity costs

• Recommendations

- Establish the program baseline prior to releasing the RFP and include, at a minimum, an Integrated Master Schedule (IMS), approved requirements baseline, and high confidence cost estimate
- Conduct independent cost estimates and senior advisory panels at key program milestones, especially prior to Milestone B
- Incorporate management reserve into the program budget; keep a portion in the program office and release a portion to the contractor
- Implement rigorous trade studies of cost and schedule versus system impacts prior to Milestone B
- A common practice of limiting cost growth is to “establish an early program baseline that is maintained throughout the entire development”
- Review the industrial base and parts obsolescence issues prior to Milestone B and delay Milestone B if the base is not mature enough to handle the development

7. Inadequate Systems Engineering

- **What is it?**
 - An inability to translate customer needs into a specific capability
- **Why does it occur?**
 - Decline in federal and industry systems engineering expertise which has led to an inexperienced government and contractor workforce
 - Insufficient training and knowledge to decompose a system into its parts and address lower level risks that can significantly impact the total system
 - Emphasis on building large, complex systems that satisfy all user requirements without a generating a cost/benefit evaluation
- **Study Comments**
 - The government and contractor “underestimated the complexity”
 - That “clear tradeoffs among cost, schedule, risk, and requirements have not been well supported by rigorous upfront systems engineering”
 - The “fact finding skill has atrophied. The government must know exactly what it wants – it must work system specs, interface control documents (ICDs), component specs in parallel with engineering development - including test verification (test is 40-60% of cost) to a mature state before RFP release. *The seeds of failure are sown before RFP release.*”

Inadequate Systems Engineering (cont.)

- **Impact**

- Underestimation of technical complexity
- Risks are not realized or understood
- Inadequate flow down of requirements from prime to subcontractors, vendors, and suppliers

- **Recommendations**

- Hire experienced systems engineers, in-house or retired
- Follow the INCOSE Handbook guidelines and complete fundamental systems engineering documents (SRD, SEMP, CONOPs) prior to Milestone B
- Prior to Milestone B the government and contractor should invest in systems engineering training and develop specifications, interfaces, technology, trades, and risks before acquisition RFP release
- Develop an end-to-end test program guideline
- Programs that did not suffer cost or schedule growth cited “extensive systems engineering and performance trades in the pre-acquisition phase”
- Track, monitor, and control all interfaces – focus on “well-defined interfaces” and to “take great care to minimize any interface changes internally and externally”

8. Inexperienced Workforce and High Turnover

- **What is it?**
 - A human resource system that: 1) places inexperienced personnel in decision-making positions and 2) values frequent assignment rotations
- **Why does it occur?**
 - Federal and military downsizing in the 1990's and retirements
 - An emphasis on producing “well-rounded” personnel that lack any specific expertise
 - 1990's DoD adoption of Total System Performance Responsibility (TSPR) that relegated the government to observer versus active participant
 - Inexistence of any formal succession planning and career management
- **Study Comments**
 - The “importance of a competent and experienced government program office cannot be underestimated”
 - It is “hard to establish accountability with high turnover”
 - We “don't need process- we need decision makers who know what they are doing”
 - There is a “need for active mentoring – assign juniors to seniors – put mentoring in performance reviews”
 - *Average program manager tenure for large weapons systems ~17 mos. (GAO-08-467SP 2008)*

Inexperienced Workforce and High Turnover (cont.)

- **Impacts**
 - Optimistic source selections that lead to unrealistic program baselines
 - Reliance on contractors who are not ultimately responsible for mission success
 - Slow and/or bad decisions
- **Recommendations**
 - Extend program management tours as one RFI suggests that “5-6 year rotations was about right” and “continuity was key”
 - Hire back experienced federal and industry retirees, if only part-time
 - Implement small, experienced, and consistent teams throughout the entire acquisition – “the primary key to success was the exemplary partnership demonstrated by the experienced and lean government and industry team.”
 - Government and industry should establish active mentoring programs that connect senior-level with junior-level personnel

***Key Takeaway: What Needs to be done
Prior to Milestone B –
The Pre-acquisition Checklist***

The Pre-acquisition Checklist

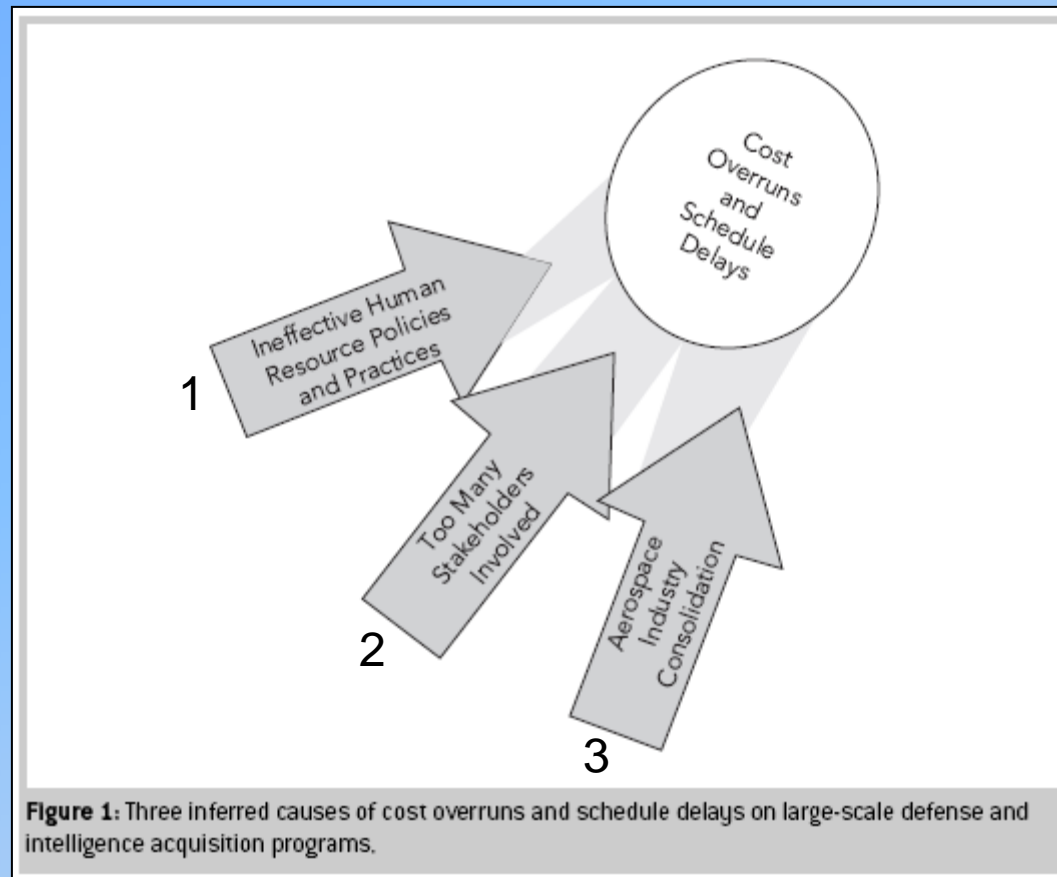
- ✓ Review and ensure all technologies are mature to a TRL of 6 and MRL 6 and do not require extensive rework to be integrated into the system
- ✓ Review all program office personnel with a focus on length of tour and experience level to ensure experienced personnel will be available for a minimum of 4 years
- ✓ Require a government approved requirements baseline which includes realistic inputs from users and mission partners following a cost/benefit analysis
- ✓ A review the number and detail of Key Performance Parameters (KPPs) and keep it to a maximum of 6 KPPs
- ✓ Complete system and technology trades that cover performance, cost, and schedule, and complete an end-to-end program risk assessment
- ✓ Complete system specification (A-Spec), CONOPS, SOW, SRD, and SEMP
- ✓ Establish an end-to-end test guideline, including software description documents
- ✓ Identify parts issues and establish dual sources if the part is on the critical path
- ✓ Establish interface specifications for all hardware and software
- ✓ Establish the acquisition strategy and contract vehicle with an appropriate incentive structure and use alpha contracting when appropriate
- ✓ Establish a high confidence cost and schedule baseline with identified management reserve that links the integrated master schedule to the full lifecycle cost
- ✓ Establish a comprehensive stakeholder communication plan that expedites the timely communication of accurate program information for the execution phase
- ✓ Review the industrial base capability for completing the program by reviewing the prime, subcontractors, vendors, and suppliers for parts obsolescence and mission assurance

***What are the Causes that Drive these
Symptoms in the DoD Federal Acquisition
Environment?***



Paper 2: S.R. Meier, “The Inferred Causes of Cost Overruns and Schedule Delays on Large-Scale U.S. Federal Defense and Intelligence Acquisition Programs, Project Management Journal, Vol. 41, No. 1, 28-39 (2010)

The Three Inferred Causes for Cost Overruns and Schedule Delays



Ref. S.R. Meier, "The Inferred Causes of Cost Overruns and Schedule Delays on Large-Scale U.S. Federal Defense and Intelligence Acquisition Programs, Project Management Journal, Vol. 41, No. 1, 28-39 (2010)

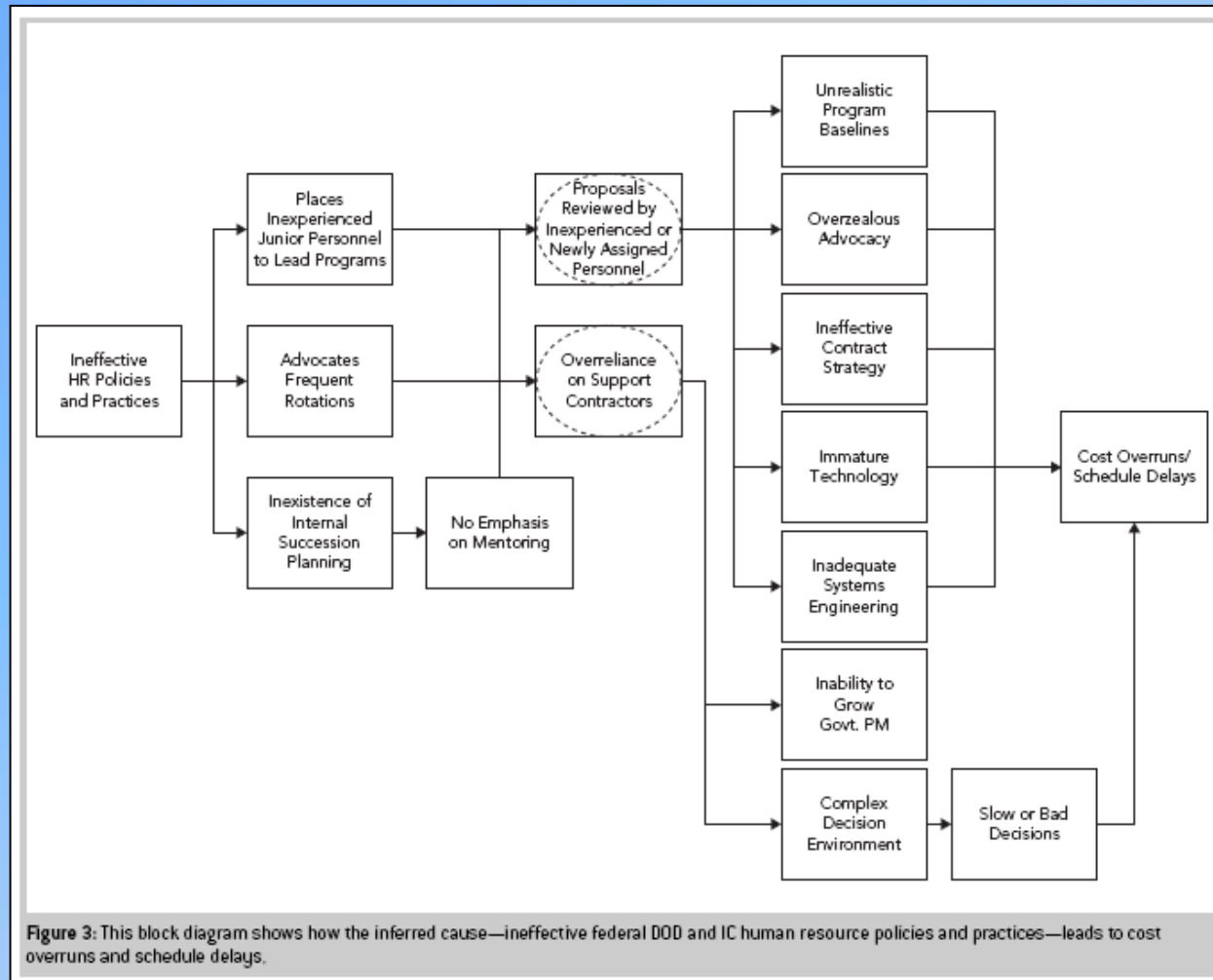
Inferred Cause #1 Data: Ineffective HR Policies and Practices

- On average, DOD personnel rotate every 4 years or less and Intelligence Community rotate personnel every 3-4 years
- No formal succession planning at key acquisition agencies
- At Space and Missiles Command there has been an overall reduction of 62% in the Col. and Lt. Col. Ranks, an increase of 414% in Lts. with the majority of Lts. being assigned to the program management field (Thurman 2006)
- Average program manager tenure was 17.2 months on 39 major weapons systems (GAO-08-467SP)
- Contractors outnumber government personnel in major weapons system program offices (GAO-10-706T)

Ineffective HR Policies and Practices

- One interview states, “There is a big difference between the A team and the A+ team. Experienced people have set of things to watch for. They can give you a set of risks that are 90% without a special process.”
- Another interview states, “Inexperienced people have difficulty judging what’s important vs. non-important.”
- Data from an RFI states that, “The large system acquisition was “first managed by junior officers who had little domain knowledge or acquisition experience.”
- There is widespread shortfalls in the experience level of government acquisition managers, with too many inexperienced individuals and too few seasoned professionals (DSB 2003)
- One interview states, “We are not proactive in grooming people and developing careers.”
- Study data cite a “Reliance on support contractors perpetuates the inability to develop future program managers and acquisition experts and delays decision processes.”
- Another interview states that, “The inexperienced government team during source selection got the program off on rocky footing that caused catastrophic consequences.”
- More interview data states that, “SETAs are self-fulfilling prophecy. Formats, chart editing, etc. are decisions made by SETAs.”
- Interview data, states, “Too many SETAs intermingled with the government staff blurs accountability.”

Inferred Cause #1 Cause and Effects: Ineffective HR Policies and Practices



Ref. S.R. Meier, "The Inferred Causes of Cost Overruns and Schedule Delays on Large-Scale U.S. Federal Defense and Intelligence Acquisition Programs, *Project Management Journal*, Vol. 40, No. 1, 28-39 (2010)

Inferred Cause #2 Data: Too Many Involved Stakeholders

- A majority of programs changed key systems requirements after development start (23 of 42 programs) (GAO-10-388SP)
- Two programs that have suffered excessive cost overruns and schedule delays have had multiple stakeholders: NPOESS (3) and JSF (11). NPOESS is undergoing a restructuring.

Inferred Cause #2 Comments: Too Many Involved Stakeholders

- One interview states, “The larger user community involvement in defining interfaces and requirements drives us to new technologies and the use of large systems of systems.”
- One PM dedicates “75% of her time to non-mission work”
- Continued requests for data “impede execution”
- PM quote, “Anyone can ask for anything” and that “Even our contractors are overwhelmed by requests for data”
- The government has an “action staff of SETA to do non-value added work”
- “Too many people are doing duplicate work. There are overlapping functions between organizational directorates. Internal processes also add an additional layer of reporting.”
- “Paper has become king and that there is no longer a distinction between important paper and documentation.” Nowinski and Kohler (2006)

Inferred Cause #2 Cause and Effects: Too Many Involved Stakeholders

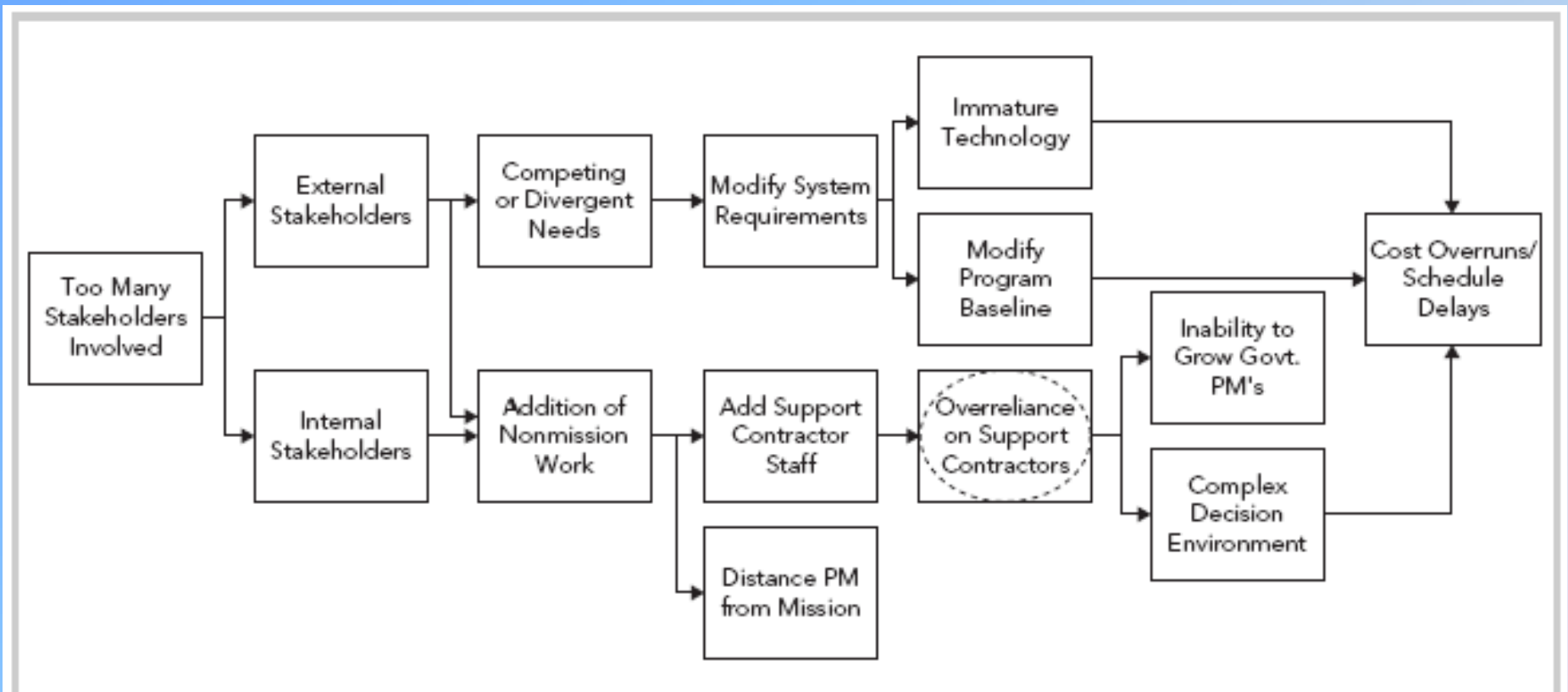


Figure 4: This flow diagram shows how the inferred cause—too many stakeholders—leads to cost overruns and schedule delays.

Ref. S.R. Meier, "The Inferred Causes of Cost Overruns and Schedule Delays on Large-Scale U.S. Federal Defense and Intelligence Acquisition Programs, Project Management Journal, Vol. 40, No. 1, 28-39 (2010)

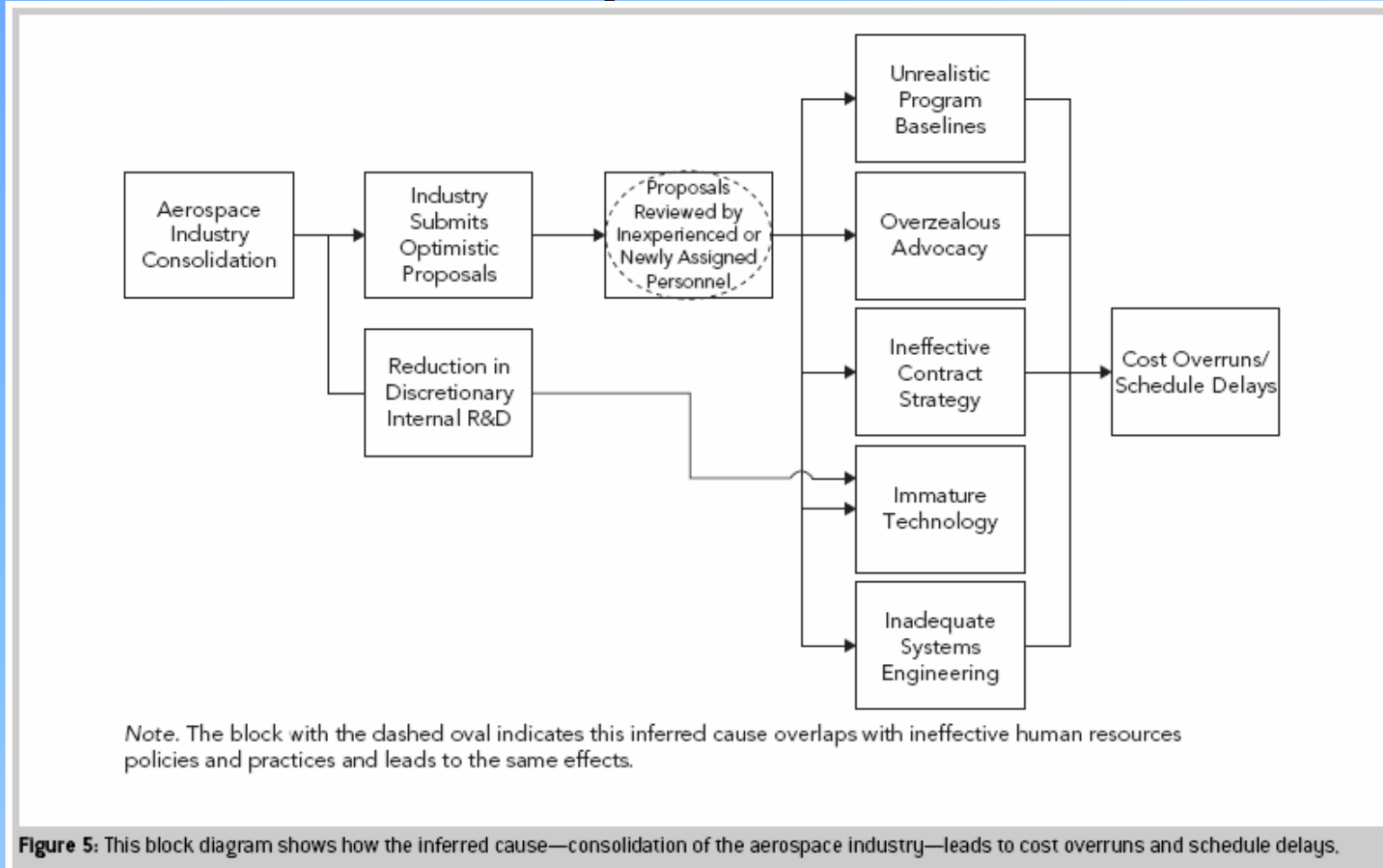
Inferred Cause #3 Data: Aerospace Industry Consolidation

- One RFI states, “The aerospace industry has suffered a reduction from 86 first- and second tier companies to five major prime contractors”
- In 1985 there were 10 competent space prime contractors and now only 2 that can handle complex DOD space systems (GAO-06-626T)
- The space industrial base has consolidated from 53 space contractors in 1990 to four contractors in 2006 (Thurman 2006)
- In an effort reduce expenditures and maintain a viable industrial base in the post-cold war era, DODs acquisition reform policies in the 1990s spurned these consolidations (Deutch 2001)
- One RFI states, “Only 1 in 8 incumbents retains incumbency”

Inferred Cause #3 Comments: Aerospace Industry Consolidation

- One RFI states, “In an effort to close consolidation business cases, non-incumbent firms offered aggressive bids because an incoming competitor is not burdened by the actual cost of the ongoing program.”
- Consolidation and reform policies have “Led to “winner-takes-all” competitions”
- One RFI states, “Without a doubt the major problem in all of these troubled acquisitions can be traced to unrealistic cost and schedule expectations made during the proposal period.”

Inferred Cause #3 Cause and Effects: Aerospace Consolidation



Ref. S.R. Meier, "The Inferred Causes of Cost Overruns and Schedule Delays on Large-Scale U.S. Federal Defense and Intelligence Acquisition Programs, *Project Management Journal*, Vol. 40, No. 1, 28-39 (2010)

Summary

- This webinar has detailed the inferred causes and effects that lead to cost overruns and schedule delays on large-scale, federal acquisition programs
- Symptoms
 - Overzealous Advocacy
 - Immature Technology
 - Lack of Corporate Roadmaps
 - Requirements Instability
 - Ineffective Acquisition Strategy and Contractual Practices
 - Unrealistic Program Baselines
 - Inadequate Systems Engineering
 - Inexperienced Workforce and High Turnover
- Inferred Causes
 - Ineffective Human Resource Policies and Practices
 - Too Many Stakeholders
 - The Aerospace Industry Consolidation

Next Webinar

- June 24, 2010
- We will discuss best leadership, project management, and systems engineering practices to manage a large-scale federal defense acquisition programs

Contact Info

- **Steven Meier, Ph.D., PMP**
- smeier@srmconsultingllc.com