It's Time to Take the Chill Out of Cost Containment and Re-energize a Key Acquisition Tool

Research Objective | Background | Methodology | Findings | Conclusion & Recommendations

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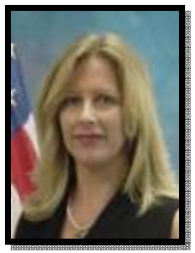

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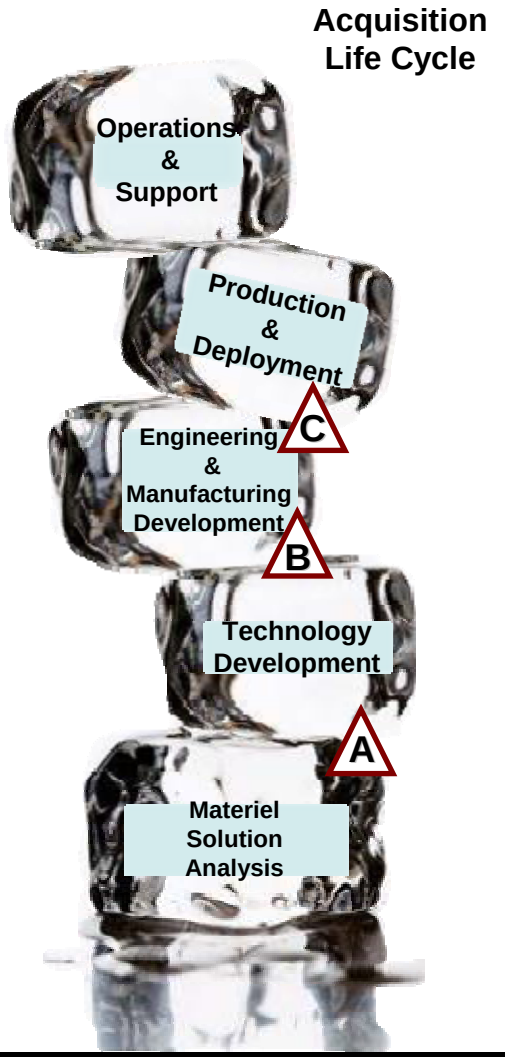
Research Objective

What this Research was About

- Review Total Life Cycle Cost Management (LCCM) theories in the Context of Cost Containment
- Solicit Program Mangers' overall Views on LCCM and Cost Containment
- Identify LCCM technique PMs Practice Today and their Usefulness, Applicability & Opportunities
- Find More Aggressive Cost Containment Strategies and Methodologies that Could Shift Acquisition Outcomes Upward and Contain Costs



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Defense Acquisition University

Background

Programmatic Hurdles

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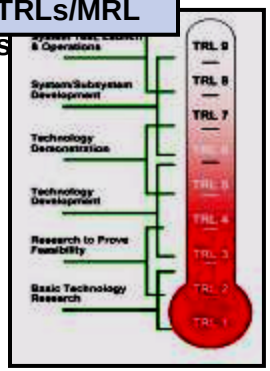
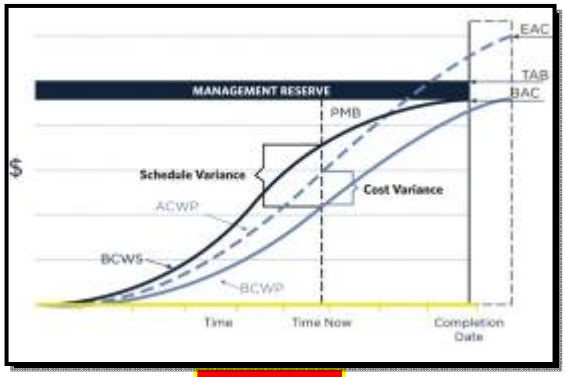
Background

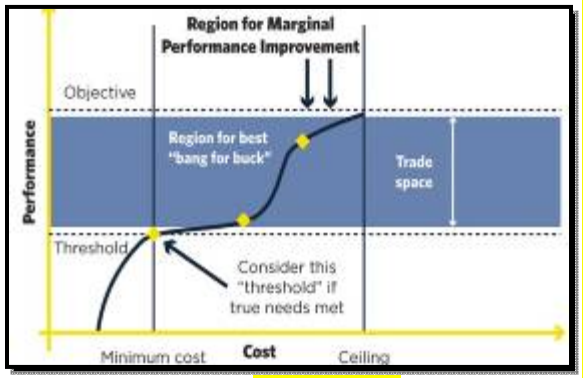
Various Tools

TRLs/MRL





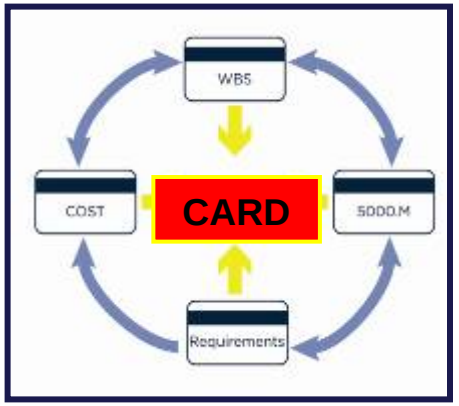
EVMS

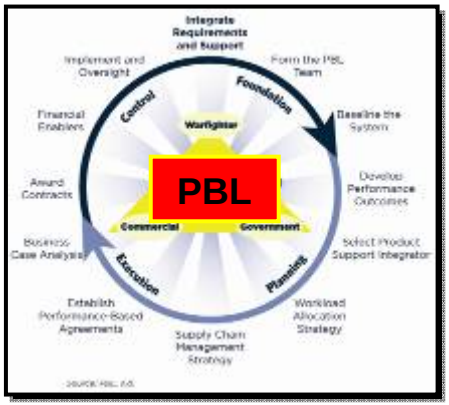


CAIV

Technical Processes	Technical Management Processes
Top-Down Processes (include requirements development, logical analysis, and design solution)	Technical Planning
	Technical Assessment
Bottom-Up Realization Processes (include implementation, integration, verification, validation, and transition)	Decision Analysis
	Technical Control Processes (include requirements management, risk management, configuration management, and technical data management)

Technical Processes





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Methodology

Literature Review ← **Historical Look**

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Focus Groups ← **Solicit Perspectives & Beta Test Survey**

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LCCM Survey ← **Field Experiences & Perspectives**

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Findings & Data Analysis = **Recommendations & Conclusions**

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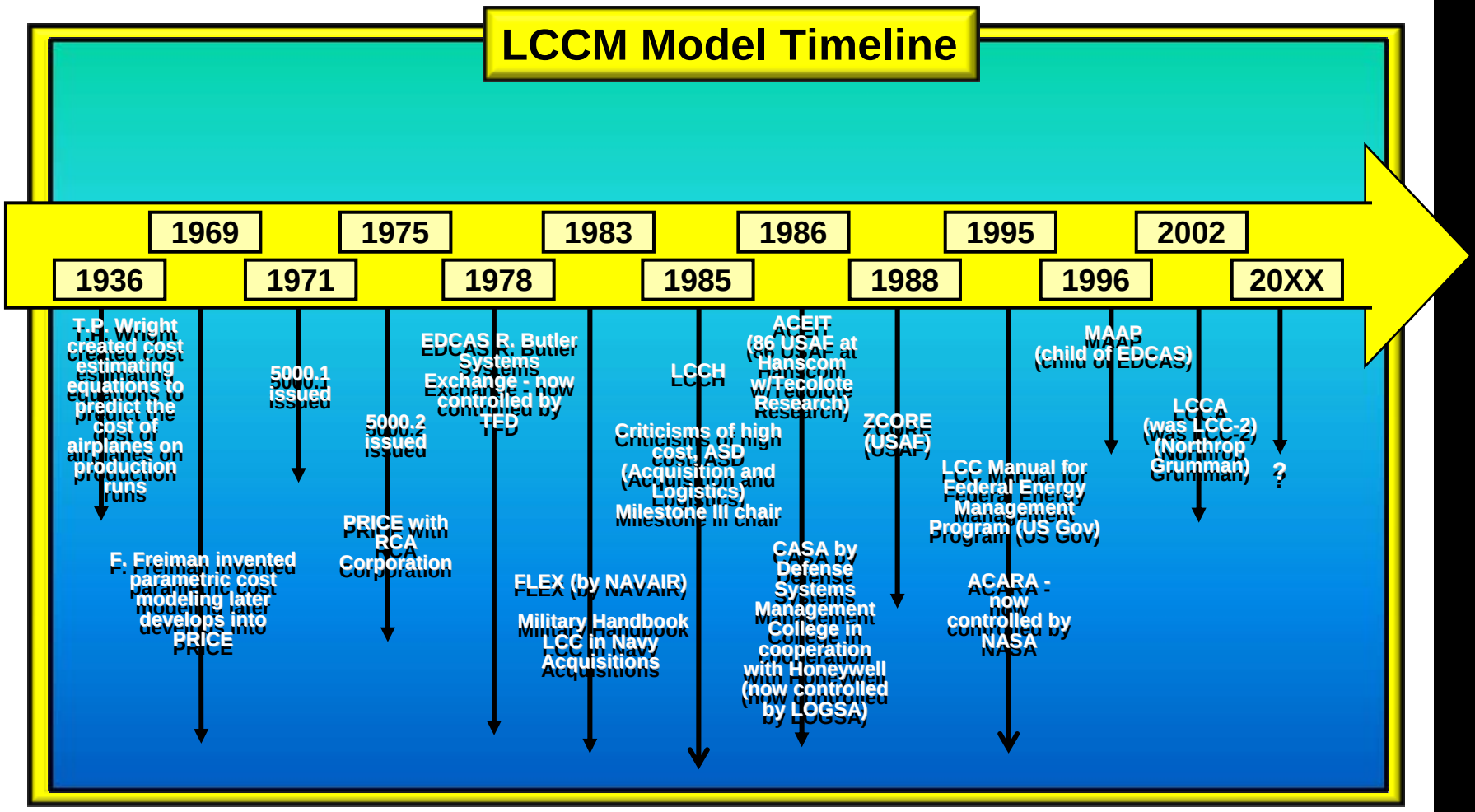
Methodology

LCCM Model Timeline



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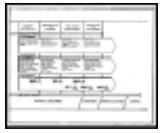
Defense Acquisition University

Methodology

Quantify LCC Models


LCC Model Types		Model Owners	Applicability & Usefulness Across Life Cycle	Ease of Use	Data Dependencies & Model Limitations	Current users
ACARA	Availability, Cost, And Resource Allocation	NASA	?	?	?	?
CASA	Cost Analyses Strategy Assessment	LOGSA	?	?	?	?
EDCAS	Equipment Designer's Cost Analysis System	TFD Group	?	?	?	?
MAAP	Monterey Activity-base Analytical Platform	TFD Group	?	?	?	?
FLEX	Navy Material Command LCC Model	NAVAIR	?	?	?	?
LCCA	Life Cycle Cost Analyzer	Northrop Grumman	?	?	?	?
LCCH	Life Cycle Cost Model	Air Force(TASC)	?	?	?	?
Price	Family of Models for Costing/Evaluation	Lockheed Martin	?	?	?	?
ZCORE	Cost Oriented Resource Estimating Model	USAF	?	?	?	?
ACEIT	Automated Cost Estimating Integrated Tools	(USAF, USA)	?	?	?	?

Methodology

Focus Group Comments

Session 1

- LCCM discussions tend to be short-lived
- Apparent lack in LCCM discipline and absence of cross communication in programs that generally need it the most
- Funding allocations and key decisions typically seem to be focused on development and not sustainment
- "illities" are generally not well-defined enough
- Establish a formulary similar to TRLs where a program could not proceed to the next phase until it demonstrated some minimum level of achievement
- Institute a LCC breach construct (similar to the intent behind Nunn-McCurdy breaches

Methodology

Focus Group Comments

Session 2

LCCM typically suffers from a lack of sufficient cost detail to adequately address sustainment costs that predominate once systems find their way into operations

- **Funding instability makes cost containment insurmountable**
- **Funding instability creates a gyrating funding baseline on top of other strategic concerns including:**
  - **Industry partners who are not necessarily motivated by cost containment**
  - **Frequent changes in requirements**
  - **Internal staffing shortfalls that are sometimes tough to fill**
  - **Lack of certain key functional experience in program offices, and**
  - **Cultural realities that emphasize program survival over program affordability**

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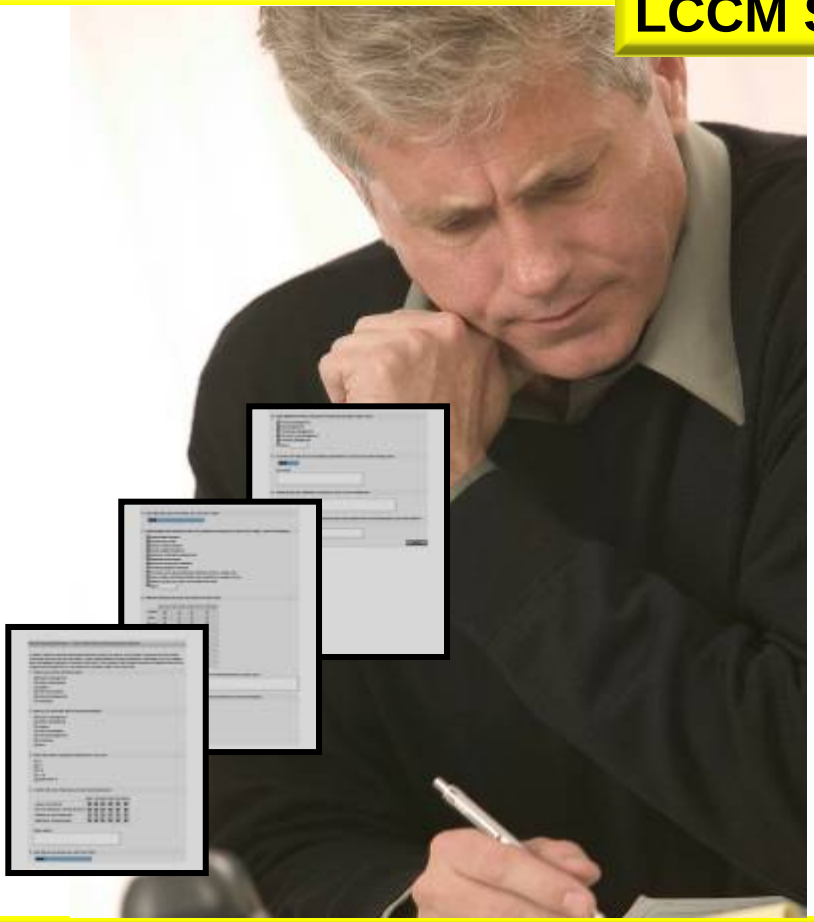
Methodology

LCCM Survey



Survey Target Audience

- Eight hundred and eighty-seven current and former DoD Acquisition Professionals responded to this survey
- Five hundred and forty three respondees were either current or former DoD Program Managers
- Solicited Views on Cost Containment including various tool types and associated processes were Solicited
- Analysis centered on PMs with over 11 years of experience in ACAT IC and ID programs.

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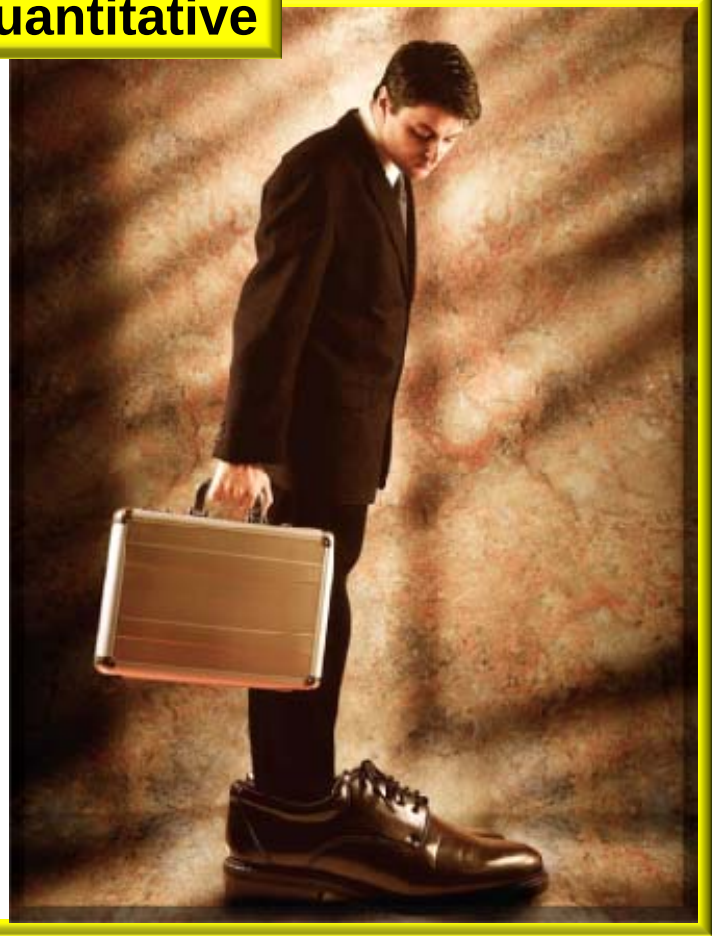
Findings

Data Analysis-Quantitative

LCCM Models	ACAT I Program Managers with over 11 years of experience			
	No Experience with Model	Thoughts based on Experience with Model		
	Not Familiar or Not Used	Not Useful	Useful	One of the Best
ACARA	87%	2%	10%	1%
CASA	78%	2%	18%	2%
EDCAS	90%	2%	7%	1%
MAAP	89%	2%	7%	2%
FLEX	91%	3%	4%	2%
LCCA	72%	3%	22%	4%
LCCH	74%	2%	21%	3%
PRICE	73%	2%	23%	3%
ZCORE	92%	2%	3%	0%
ACEIT	70%	2%	24%	4%



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Findings

Data Analysis-Quantitative

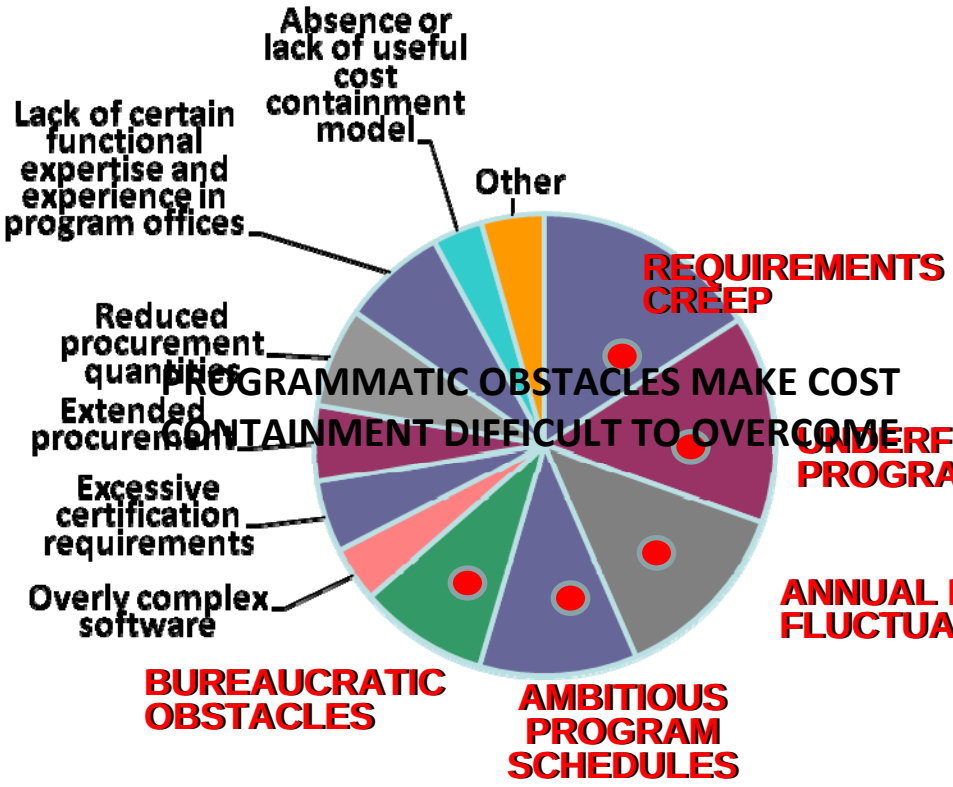
ACAT I Program Managers with over 11 years of Experience were asked to select Life Cycle Phases where the Life Cycle Cost Models made Impact

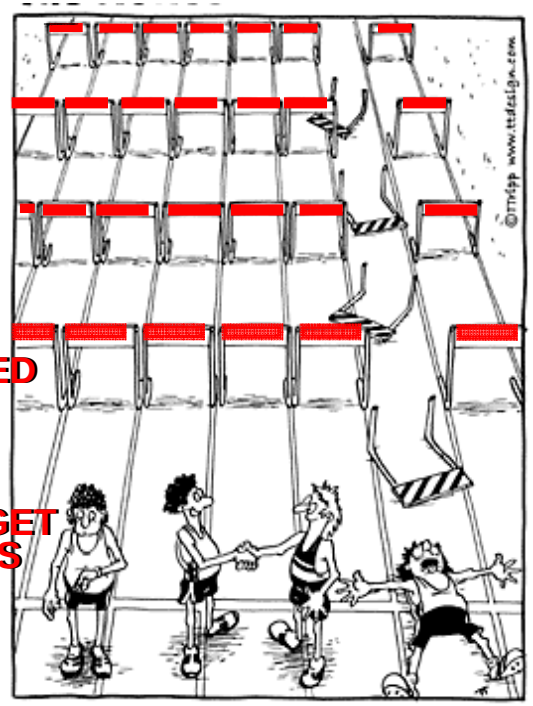
In what Life Cycle Phases are the Life Cycle Models …	Pre-Systems Acquisition		Systems Acquisition		Sustainment	None	Don't know
	Materiel Solution Analysis (ICD; Materiel Development Decision; AoA)	Technology Development (A; PDR)	Engineering and Manufacturing Development (B; CDD; Post PDR Assessment; PDR; Post CDR Assessment; CDR; C; CPD)	Production & Deployment (IOC; FRP Decision Review)	Operations & Support (FOC)		
a good cost predictor?	14	19	59	68	67	45	31
most influential in driving decisions?	45	66	91	41	34	20	28
suitable for cost containment?	15	28	52	64	48	56	33
significantly underestimated?	65	82	107	58	60	18	32

Re-Energizing a Key Acquisition Tool

Findings

Data Analysis-Quantitative

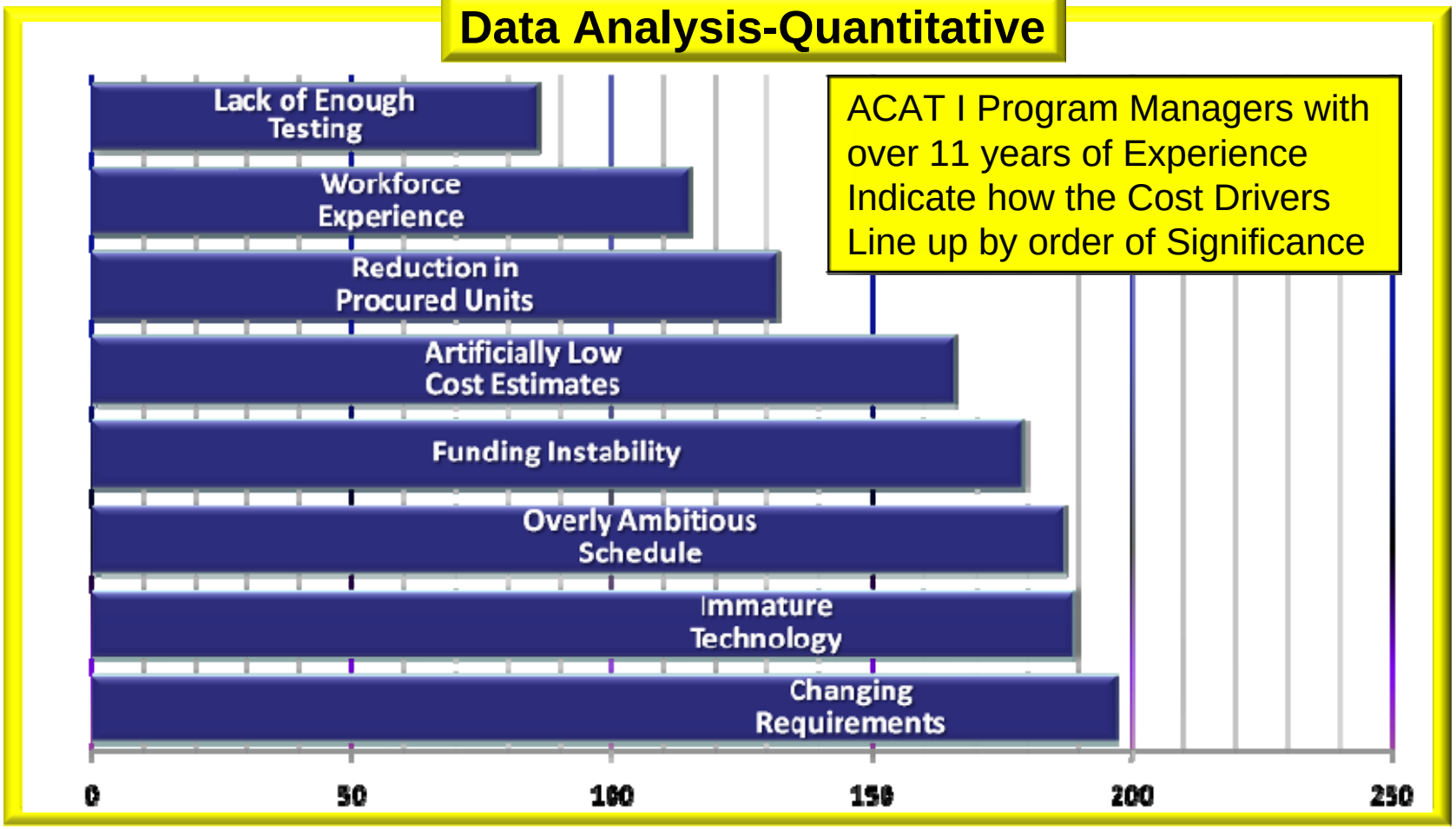




Findings

How Cost Drivers Stack-up?

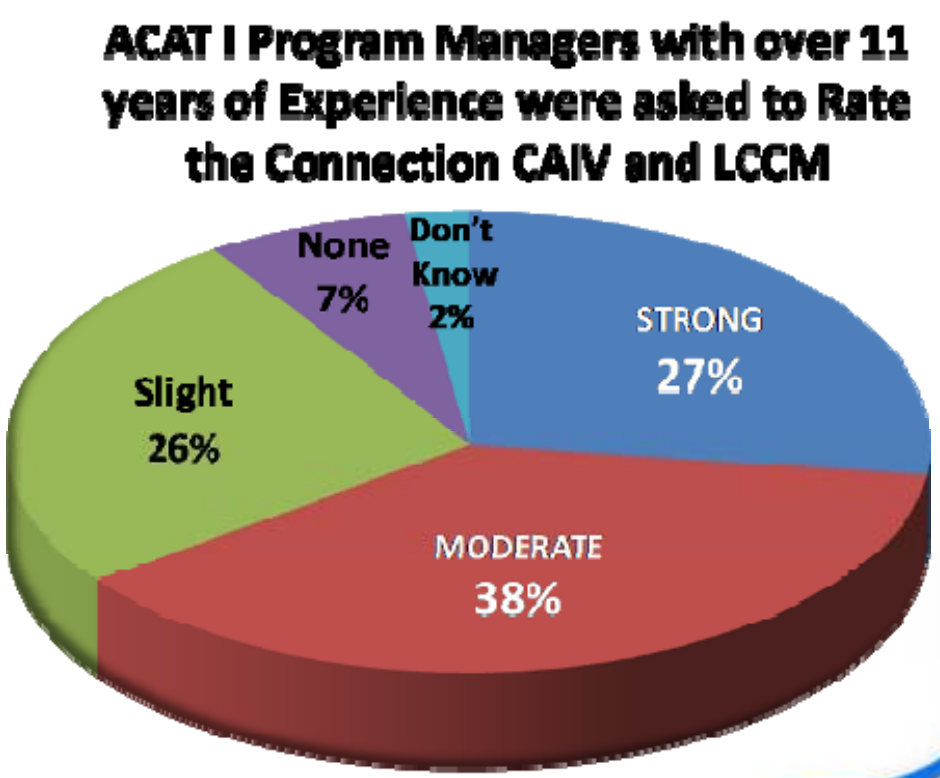
Data Analysis-Quantitative

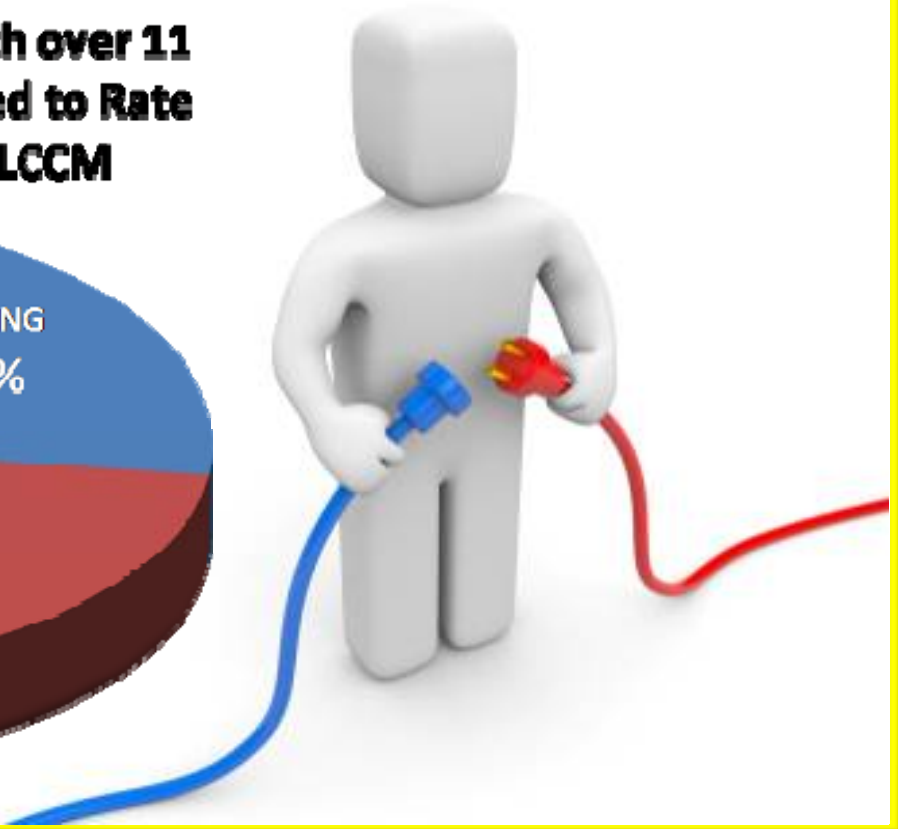


ACAT I Program Managers with over 11 years of Experience Indicate how the Cost Drivers Line up by order of Significance

Findings

Data Analysis-Quantitative





Findings

Data Analysis-Qualitative

LCC MODEL FAMILIARITY AND EXPERIENCE

Sorry, just not that familiar with the models. Somebody else uses them and provides data to me.

~

As a PM, I have not been involved with the details regarding the specific model used to derive cost estimates. Primarily, the cost estimates were derived from legacy numbers of the previous program.

~

To be honest, not my field of expertise, and I am only familiar with the tools to the extent my team uses them.

~

I have no first-hand knowledge of any of these systems/models.

Very unfamiliar

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Findings

Data Analysis-Qualitative

USEFULNESS OF LCC MODELS

Most models have many assumptions, and those assumptions are not monitored over time; and risks are not addressed to keep the assumptions valid, so the models are not valuable when decision makers really need the information.

~

LCC for O&S appears to be generally inaccurate.

~

As programs proceed along their life cycle, LCC doesn't seem to be appropriately updated.

~

LCCM never captures changes allowed/forced during program and can't "predict" well. Models are used early on, but eventually lose influence as "inertia" takes over and programs enter "make the best of it mode."

~

Overly optimistic estimates.

~

No one seems to put the thought and time into a thorough estimate of determining LCC.

~

No one seems to update LCC and use it as a yardstick.

Poor Assumptions, Overly Optimistic Estimates

Findings

Data Analysis-Qualitative

MAJOR OBSTACLES TO COST CONTAINMEN

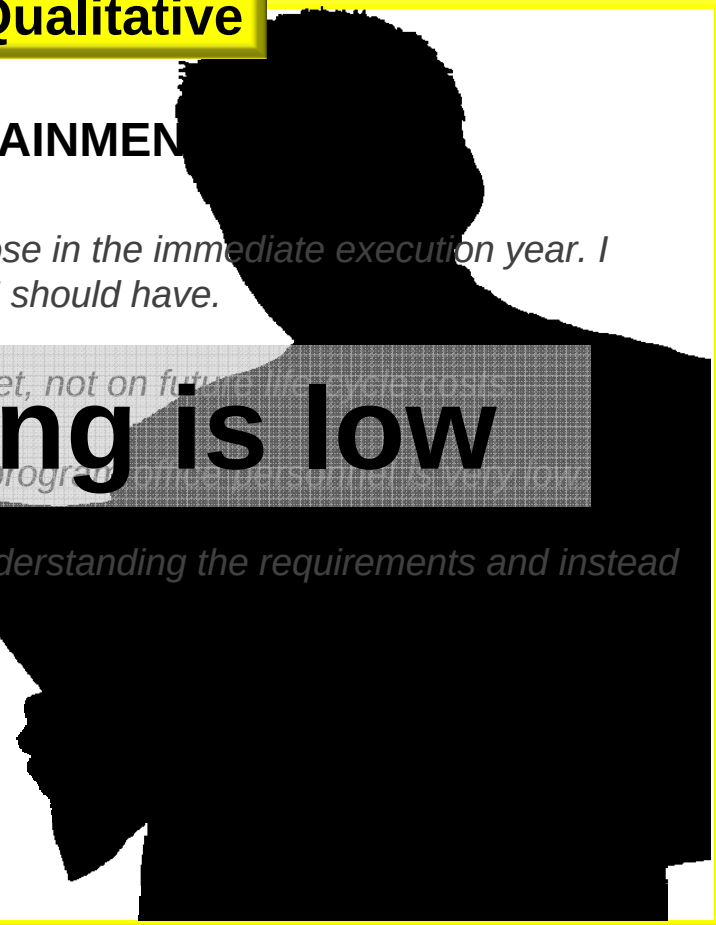
The costs that are of the most concern to me are those in the immediate execution year. I have considered out-year costs but not as much as I should have.

My focus is on providing most capability within budget, not on future [illegible] costs.

General knowledge on cost containment among all program [illegible]

Understanding is low

Many of the cost growths are based on not really understanding the requirements and instead based on assumptions on both sides.



Findings

Data Analysis-Qualitative

CONNECTION BETWEEN CAIV AND LCC

Strong in theory but weak in practice.

~

I think the relationship between LCC and CAIV has been diminished.

~

I've never seen CAIV used to contain costs on a program.

~

I don't believe CAIV has anything to do with CAIV. It's an artificial constraint that prevents the PM from meeting the requirements.

~

I didn't see CAIV used in any organized way because hardly anyone on the PM team has enough practical experience.

~

Unfortunately, the CAIV tool of last resort became common to overcome cost overruns due to funding stability and poor execution.

~

CAIV trades are rarely supported by the requirements community. The requirements community is 99 percent focused on capability and mildly interested in long-term O&S cost-reduction efforts.

Strong in theory, weak in Practice

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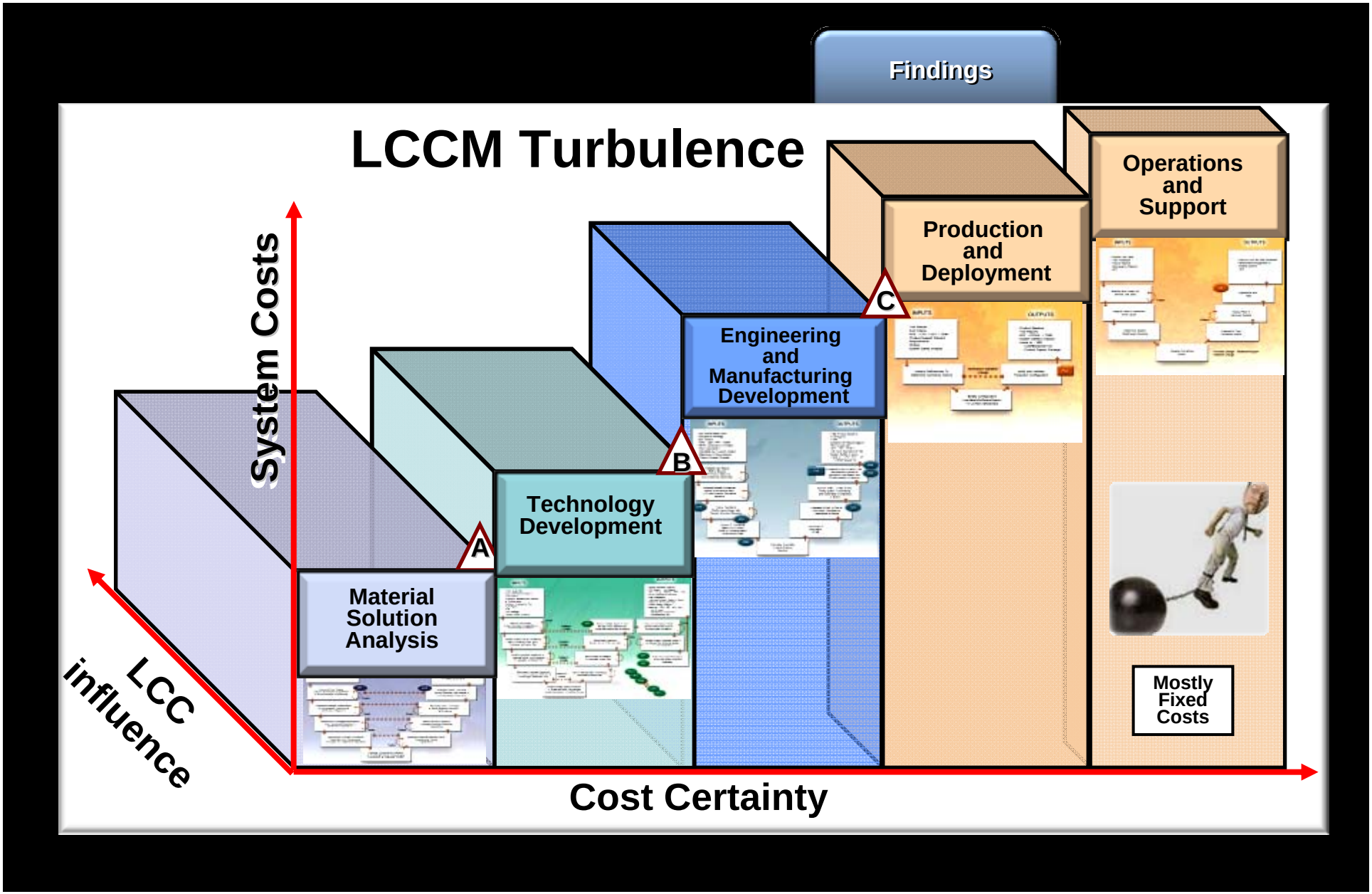

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Recommended Actions

- Make cost containment everyone's business
- Elevate LCC to a Key Performance Parameter
- Continuously challenge strategies
- Base cost decisions on programmatic realities and more current data
- Establish an LCC Continuous Learning Model (CLM)
- Add an LCC best practice link to each functional Community of Practice (CoP)
- Establish LCCM trip wires throughout a program's life cycle
- Reward and incentivize PMs for containing and/or lowering costs
- Develop cost-containment strategies that are carefully evaluated and painless to execute
- Promote more CAIV

Conclusions

- Fewer new systems will be built and fielded
  - More pressure will be exerted on extending and sustaining current systems
  - More pressure can be expected on containing costs

- PMs must:
  - Challenge the programmatic "cost status quo" at every juncture and not just the major milestones
  - No longer "kid themselves" about what something is going to cost
  - Tightly integrate the art and the science of containing costs