TASC

Obtaining Greater Efficiency and Productivity in Defense Spending – *The Carter Memo*

TASC presentation to the ISPA/SCEA Annual Conference and Training Workshop – June 2011

Purpose

- Describe application of decision support processes to affordability-based decision making for major acquisition systems by:
  - Structuring and executing comprehensive, quantitative analysis
  - Providing enterprise level situational awareness

Cost Estimating / Analysis is critical to credible execution of the Carter Initiatives and reduced overall program costs.

Agenda

- Targeting Affordability and Controlling Cost Growth
- Mandating Affordability as a Requirement
  - Affordability Targets at Milestone A
  - Tradeoff Analysis at Milestone B
- Will Cost vs. Should Cost Management (S-Curves)
- Summary

Target Affordability and Controlling Cost Growth

USD (AT&L) Ashton Carter Memo - 3 Nov, 2010

"Directive for Better Buying Power - Obtaining Greater Efficiency and Productivity in Defense Spending"

Key Tenets:

- Mandate affordability as a requirement
- Drive productivity growth through Will Cost/Should Cost management

Mandate Affordability as a Requirement

- Milestone A: Set an Affordability Target

  "You will establish an affordability target to be treated by the program manager like a Key Performance Parameter (KPP)."

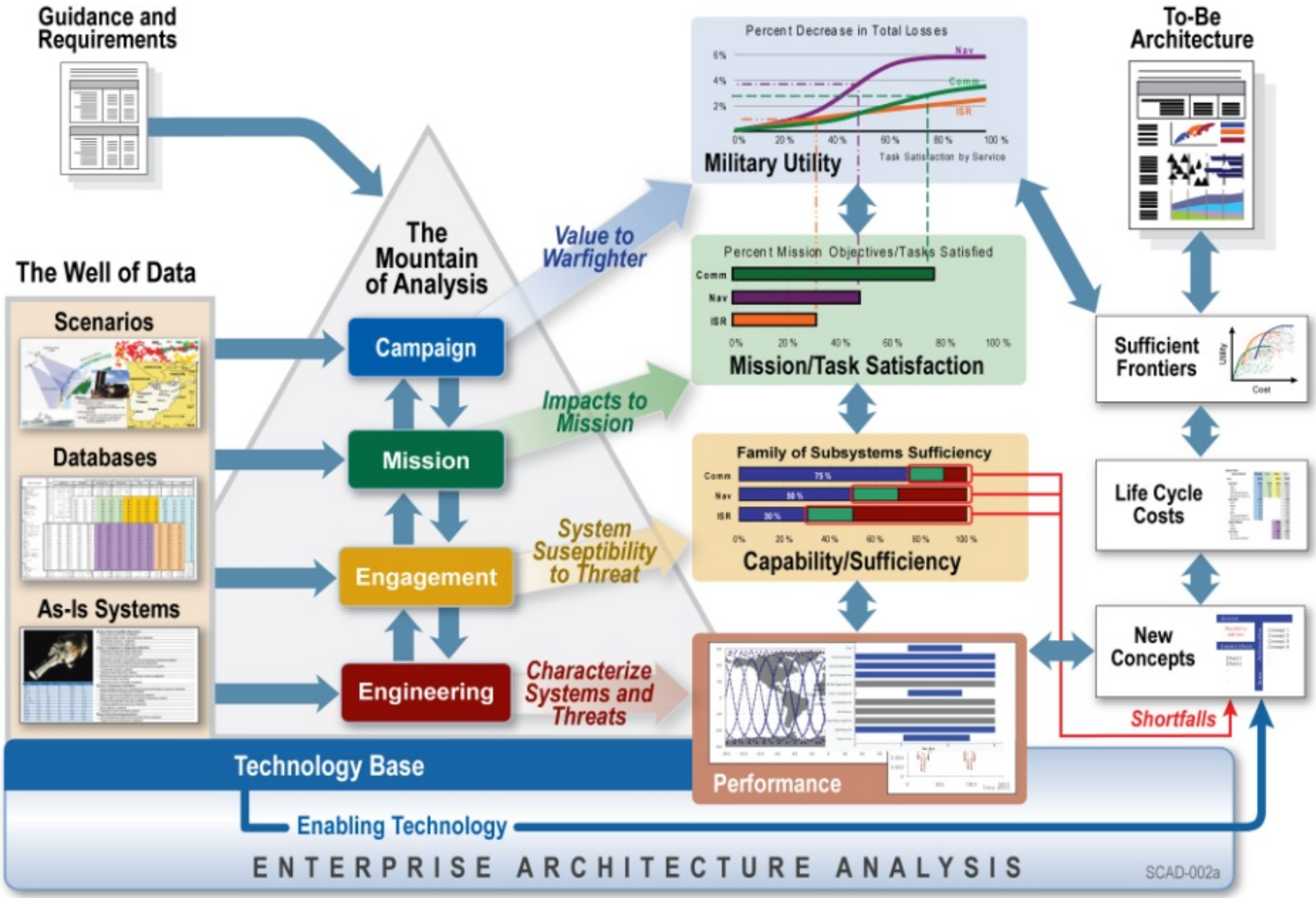
  - Targets (average unit acquisition and average annual O&S cost/unit) form the basis for Pre-MS B decision making
  - Must show *"capability excursions around expected design performance points to highlight elements that can be used to establish cost and schedule trade space."*
  - Focus on Life Cycle cost

"There is every reason to believe the efficiencies we are seeking can be realized."
3 Nov 2010 Carter Memo

MESA – Mission Engineering/Systems Analysis

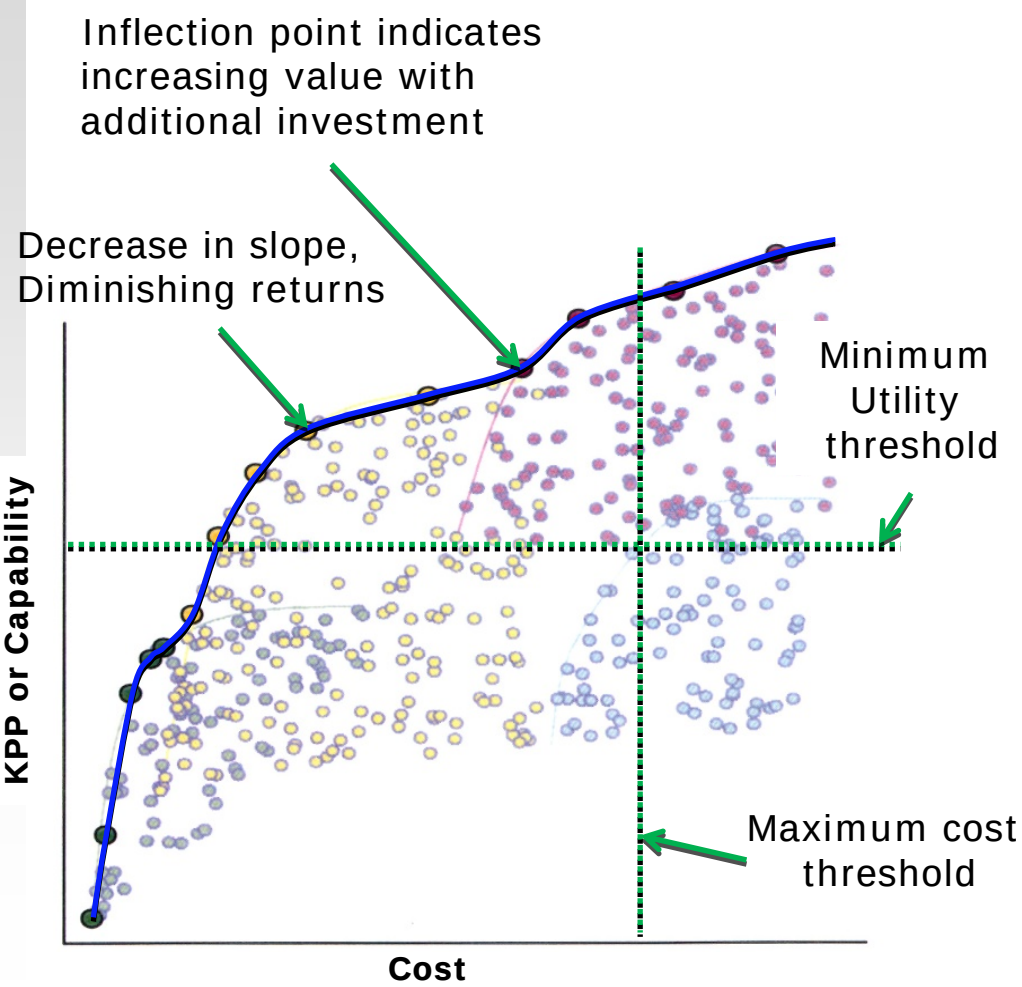
- The MESA process is a collaborative methodology for assessing as-is, to-be, and future architectures and identifying best-value solutions
  - Evaluates current/modified/planned:
    - Diagnostics, treatments, preventative measures, deployment infrastructure
  - Identifies capability gaps; quantifies impacts
  - Assesses performance vs. cost of alternatives to close gaps and resolve shortfalls
  - Analyzes requirement inputs, outputs production possibility frontier
  - Can be used to target affordability and set cost as a Key Performance Parameter
  - Draws the Capability/Cost Trade Space

MESA Process – Analyzing Implications



Milestone A: Conduct Cost / Performance Trades

Capability / Cost Trade Space



- Analyzes requirements inputs; outputs a viable trade space
  - Use this to target affordability and set a cost as a KPP
  - Identify "Knees in the Curve"
  - Balance all KPPs (including cost) to arrive at optimal architecture

Milestone B: Engineering Tradeoff Analysis

"You will present a systems engineering tradeoff analysis showing how cost varies as the major design parameters and time to complete are varied." *3 Nov 2010 Carter Memo*

- Capabilities, Cost, and Schedule are dynamic
- Understand and present all alternative combinations and their implications
- Establish an "Affordability Requirement"
- Provide cost tradeoff curves or trade space around major affordability drivers

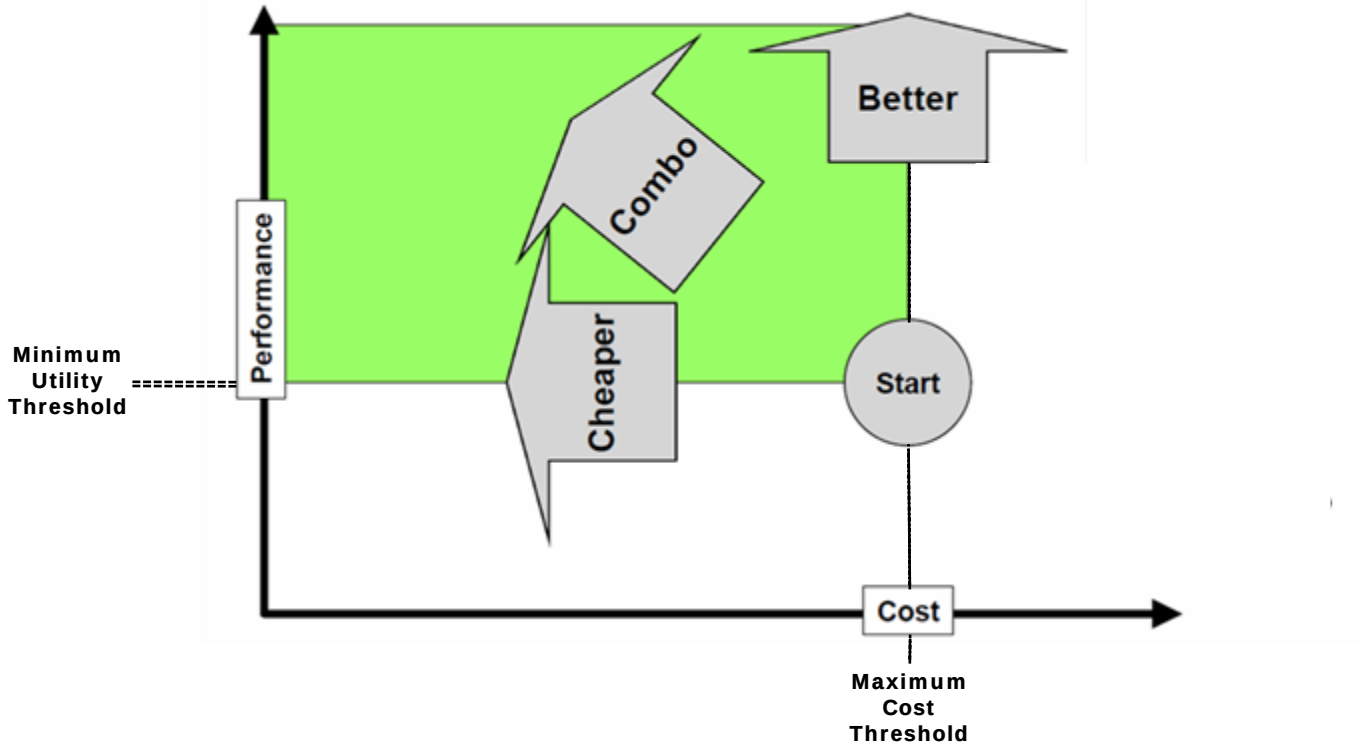
MS B trades…."we have a program, now how much can we do?"

Milestone B: Cost as a Driver for Trade Space

- Classic Cost As an Independent Variable (CAIV) analysis
  - Instead of cost being the dependent variable (output), it is now the independent variable (input)
    - Desired cost and schedule determine performance, desired performance does not determine the cost
    - Focuses on Cost/Performance tradeoffs
- Focus is on engineering tradeoffs to meet a target cost

Goal: Get the most "Bang for the Buck"

CAIV Tradeoffs



- Requires refocus on Cost Estimating Relationships
  - For example: Instead of sensor weight (engineering input) we want to use ground resolution as the cost driver; or some measure of user requirements instead of SLOC
- Need to focus on Total Ownership Cost earlier in the process
- This makes CAIV trades meaningful

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Driving Productivity Growth

- Will Cost/Should Cost Management
  - Identifying inefficiencies to bring will cost to should cost
    - *"Scrutinize every element of program cost, assessing whether each element can be reduced relative to the year before, challenging learning curves, dissecting overheads and indirect costs, and targeting cost reduction with profit incentive – in short, executing to what the program should cost."* *3 Nov 2010 Carter Memo*
- Responsibility falls onto PEOs
  - Must report performance and efficiency improvements throughout program life-cycle
    - *"These costs will be used as a basis for contract negotiations and contract incentives and to track contractor and program executive officer/project manager performance."* *3 Nov 2010 Carter Memo*

Will Cost / Should Cost

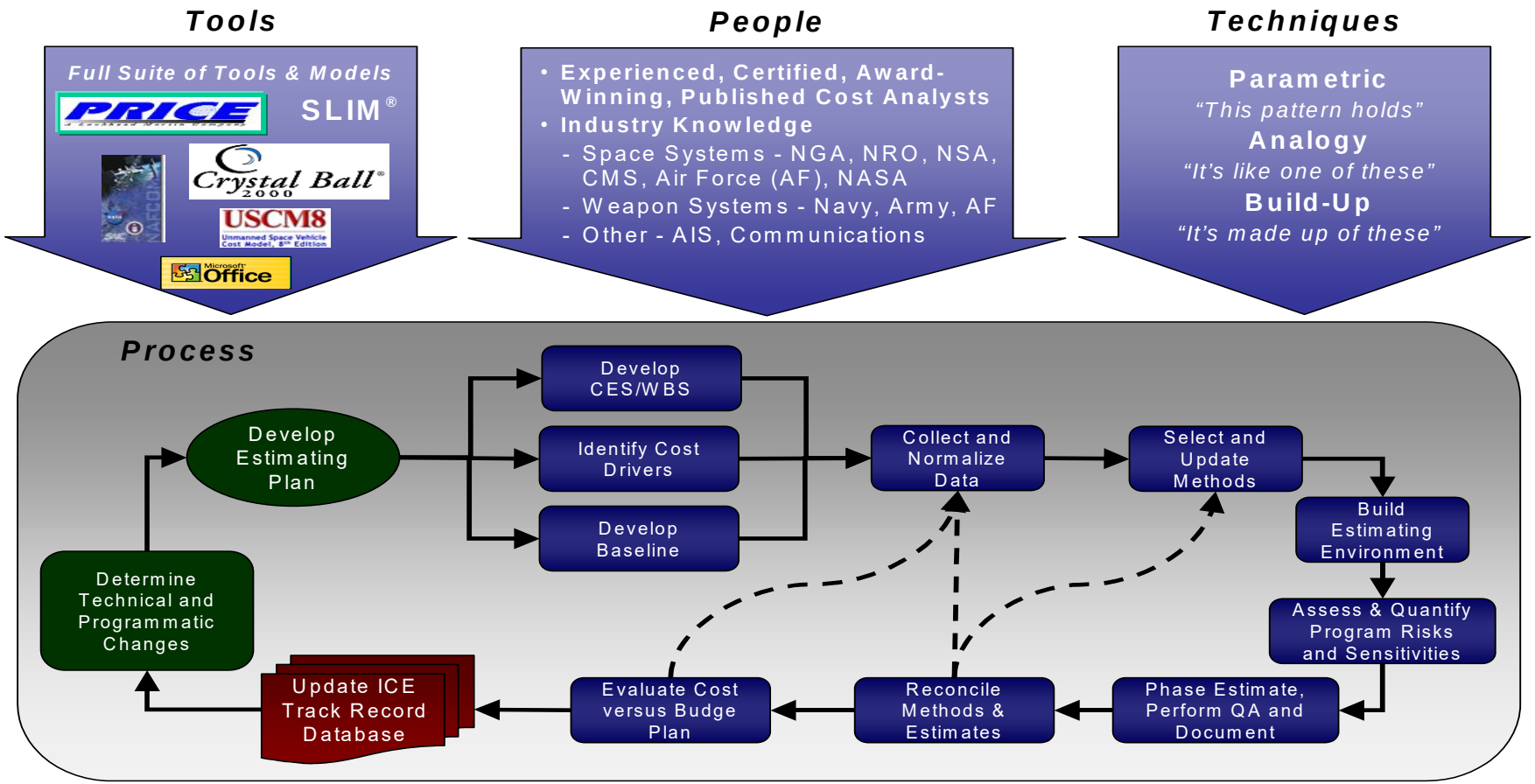
- The FAR "Should Cost" definition – *"method of contracting pricing that employs an integrated team of Government representatives to conduct a coordinated, in-depth cost analysis at the contractor's plant."*
  - Focus can be greater than the FAR definition
- As a PM, how do you identify areas for efficiency improvements?
- Will Cost vs. Should Cost is about managing risks and uncertainties
  - Identifying inefficiencies in past and current programs
    - Knowing the difference between what a program will **likely cost** given the usual risks and inefficiencies and what it **should cost** if these risks were reduced.

Will Cost / Should Cost

- Will-Cost Baseline (budget baseline) - Sets realistic program budget
  - Provides resources necessary to execute the program accounting for an acceptable level of program risk (normally based on an ICE)
- Should Cost Baseline (program execution baseline)
  - Factors in lessons learned, best practices, and focused risk management
  - Based on implementation of efficiencies in key cost driver areas (e.g. schedule, overhead, weight, design changes, etc) while maintaining a realistic technical and schedule baseline
  - Supports program execution ensuring achievement of affordability goals, and incentivizing expectations of successful contract performance to targets
- Identify these baselines on a typical program estimate “S Curve”

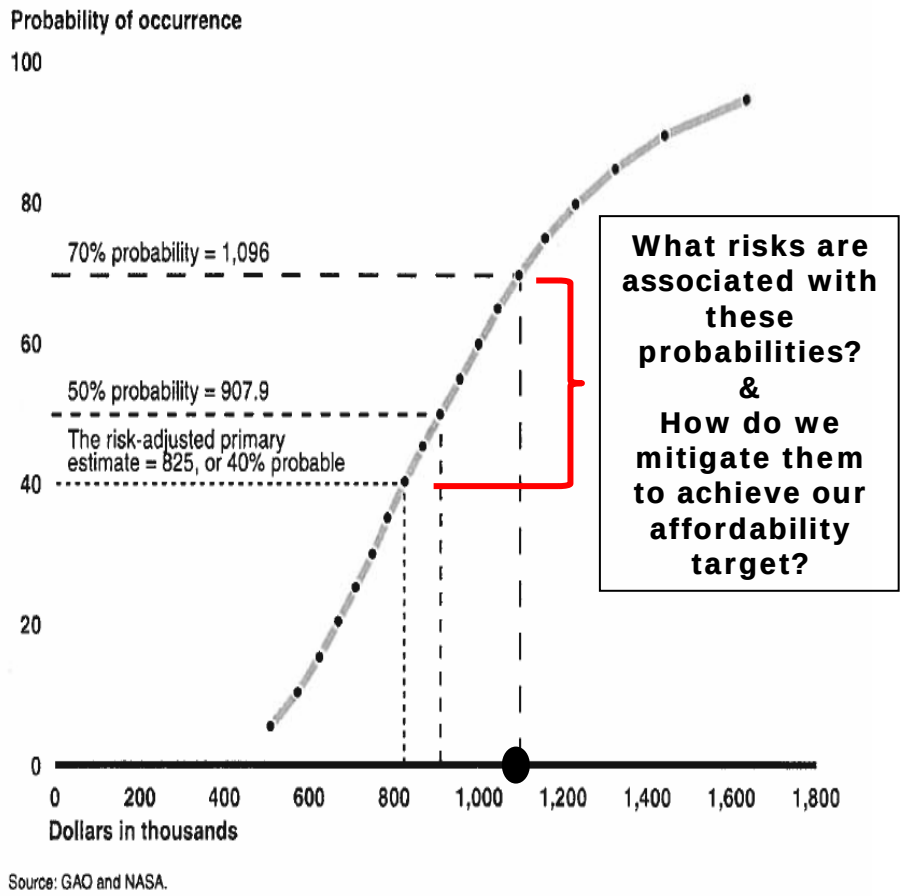
Cost Estimating/Risk Analysis Process

- The TASC CERA process is the foundation for realistic, traceable, and defensible cost estimating and analysis



S-Curve Analysis

- What is an S-curve?
  - Probability vs. Cost
    - ex: with 70% probability, the program will come in under $1.1M
  - Graphical representation of the amount of risk associated with a cost estimate
- Trace risk back to cost drivers and the WBS
  - Identify and analyze the riskiest elements in your cost estimate
  - What can you do to ensure the lowest cost and greatest efficiency in these areas?

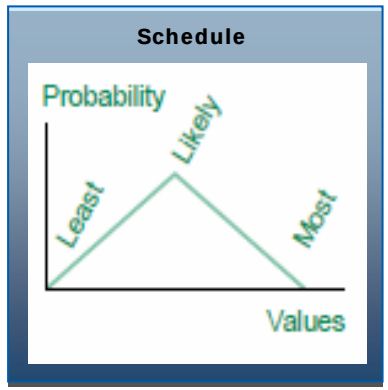


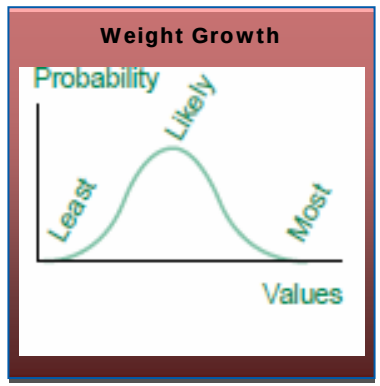
S-Curve represent the cumulative distribution function for the range of project costs

Managing Should Cost

- Understanding and managing the WBS elements and the risk distributions that build up the S-curve can help manage program costs

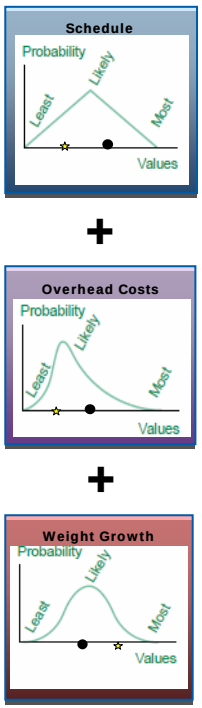
- PMs can focus on:
  - Schedule
  - Overhead costs
  - Weight growth
  - Learning curves
  - SW code growth
  - Unexpected design change
  - Failures in testing
  - Government costs





Managing Should Cost – Shift the Curve

- If the PM manages these factors to cut down the associated risks, the probability of success in reaching cost goals increases.



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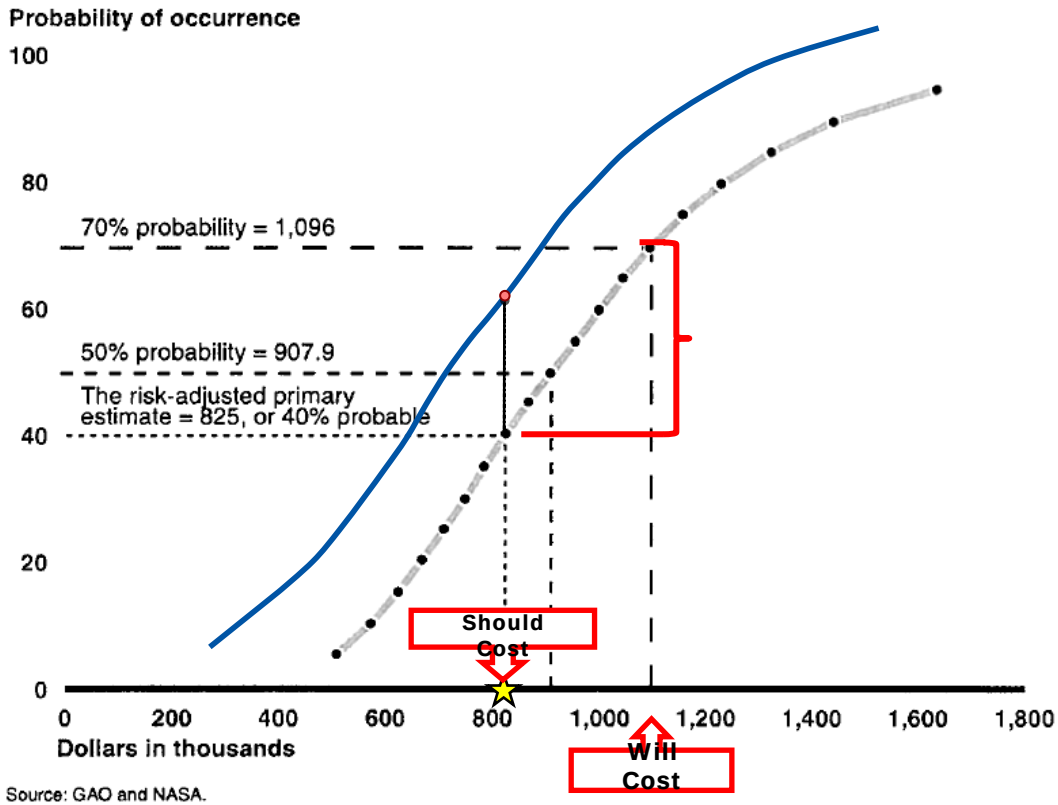
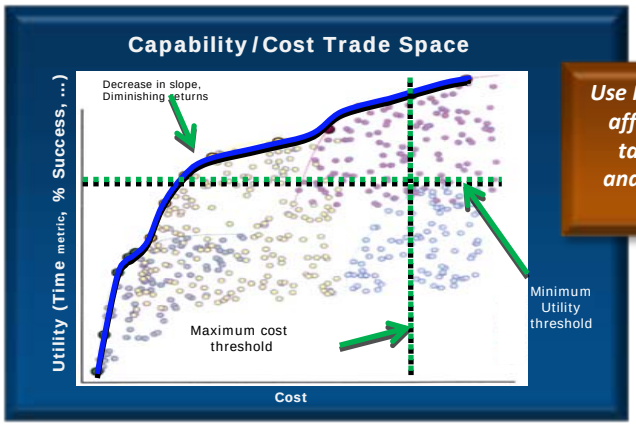
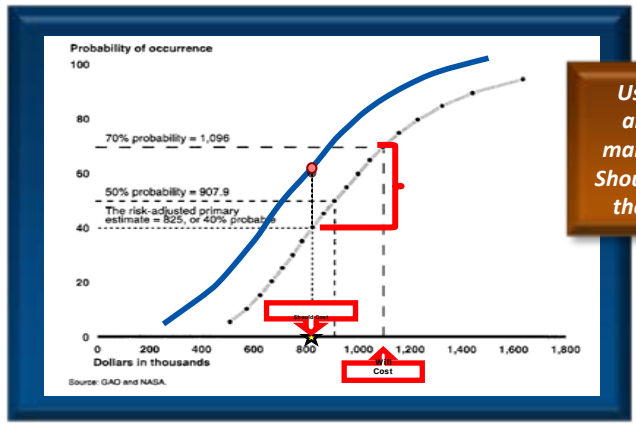


Summary

- PMs must understand the capability/cost trade space in order to set MS A affordability goals.
- Once a program is established, CAIV analysis helps conduct Engineering trades that meet the KPP
- Tracking risk will help shift the S-curve to help drive programs to a Should Cost level



Use MESA to set affordability target and analyze trade space



Use S-Curve analysis to manage to the Should Cost, not the Will Cost

Cost Estimating / Analysis is critical to credible execution of the Carter Initiatives and reduced overall program costs.

Questions

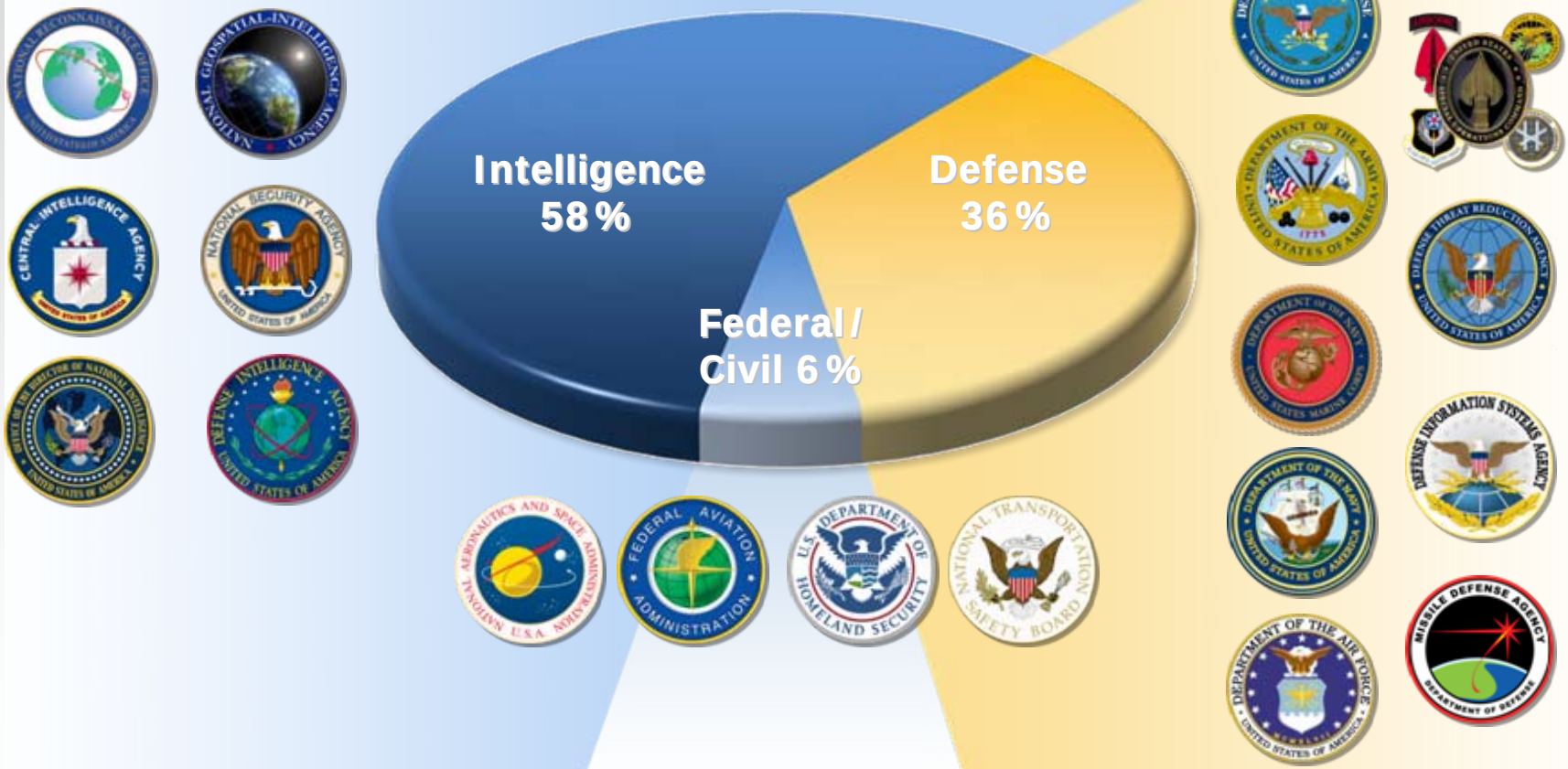
Back-Ups

TASC – Corporate History Summary

- TASC established in 1966 in Winchester, Massachusetts
- Acquired and sold multiple times over the years (Primark, Litton, NGC)
- 2009 Public Law 111-23 enacted highlighting OCI issues in DoD
- Northrop Grumman sold TASC after re-organizing all OCI conflicted work into the Advisory Services Division (TASC)
- Sale completed on 18 Dec 2009
  - KKR and General Atlantic 50% owners in Birch Parent Corp LLC (TASC)
  - No majority owner – thus no controlling interest
- **TASC is now a fully Non-OCI Conflicted stand-alone company**

TASC – Our Customer Base

Providing Advanced Systems Engineering, Integration and other Advisory Services Across the Defense, Intelligence and Civilian Markets



TASC – Our Core Capabilities

- Advanced Concept & Technology Development
- Systems/Enterprise Engineering & Integration
- Program & Acquisition Management
- Mission Planning, Engineering & Operations
- System/Policy Studies, Analysis & Evaluation
- Security & Program Protection Engineering
- Test & Evaluation/Independent Validation & Verification

Over 40 years of helping our Nation solve real-world security challenges

TASC – Our People

- **World-class Staff**
  - Nearly 5,000 of the best engineering and analytical minds in the industry
    - 81% are professional or technical personnel
    - Majority hold advanced degrees in engineering, computer science, mathematics, business or economics
    - Promote continued learning through in-house training and development and university-sponsored instruction
- **Recognized Thought Leaders**
  - Academic appointments (Air Force Academy)
  - Board memberships (AFCEA, INSA, NMIA, USGIF)
  - Government advisory panels (National Academy of Science, STRATCOM Advisory Board, NRO, DNI)

Committed to Excellence, Integrity and Mission

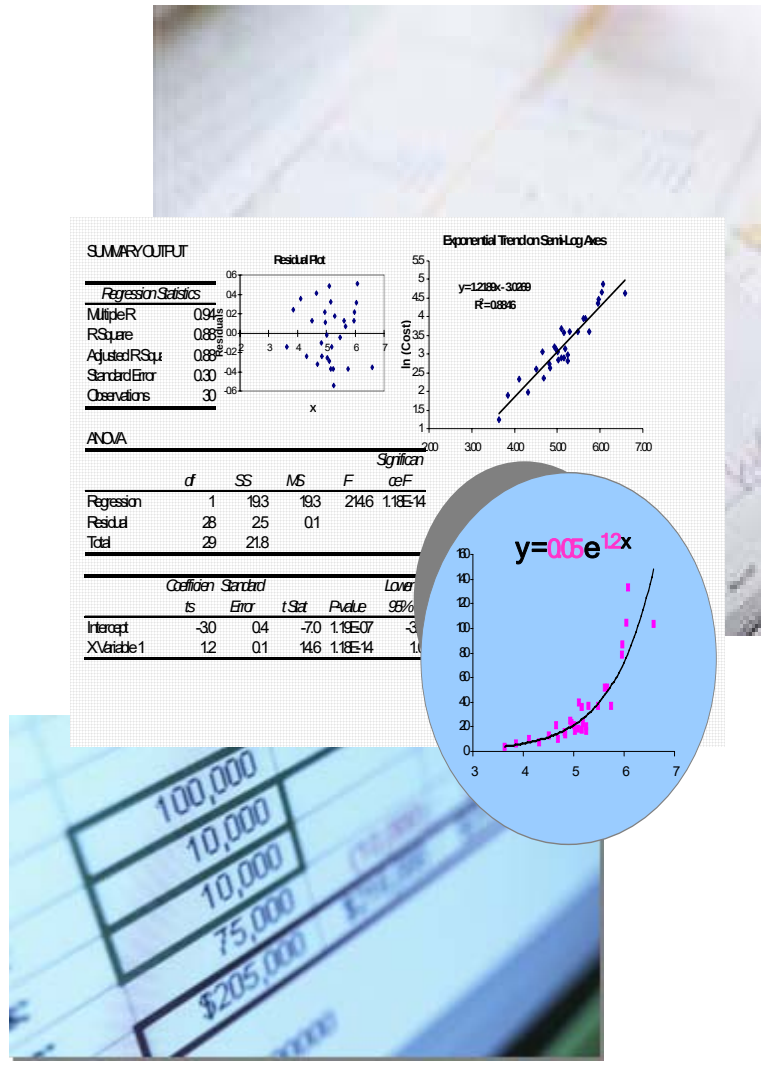
TASC Cost Analysts

- Nationally recognized professionals in cost estimating and risk analysis
- Community respected analysts in the IC, DoD, Federal Government and Industry
  - Air Force, NRO, NGA, NSA, DIA,
- One of the largest pools of cleared cost analysts in our Industry
- We “wrote the book” for Society Cost Estimating/Analysis (SCEA) training manual
- Reach back to hundreds of TASC’s technical experts

People And Processes That Achieve Results

Cost and Risk Analysis Solutions

- Life Cycle Cost Estimates (LCCE)
  - LCCE, ICE, IGCE, GEAC
- Technical Baseline Descriptions
  - Cost Analysis Requirements Description (CARD)
  - Intelligence Community Baseline Description (ICBD)
- POM Development and Review Support
- Business Case Analysis
- Cost Benefit Analysis (CBA)
- Analysis of Alternatives (Design & Performance Trades)
- Cost As an Independent Variable (CAIV)
- Source Selection Evaluations
- Earned Value Management (EVM)
- Risk Research and Analysis
- Schedule Realism Assessments
- Proposal / ECP evaluations
- Unique Inflation Studies
- Cost Analysis Training



TASC Support to Air Force Cost Analysis Agency (AFCAA)

- Supporting AFCAA since 2004; currently 5 full time analysts support the Space Programs Division
- TASC team performs estimates in support of Key Milestone Decisions (KDPs), Analysis of Alternatives (AoA), Source Selections, and the President's Budget
- Major efforts include:
  - Program Objective Memorandum (POM) exercises which present budget recommendations to the Air Force Space Panel
  - Air Force Service Cost Positions (SCPs) completed on all major space programs for KDPs
  - Non-Advocate Cost Assessments (NACAs) completed every year on all major space programs
  - Special studies and research completed on ad hoc basis
- Collaboration during estimate process & reconciliation with:
  - Space and Missile Systems Center (SMC), OSD CAPE, Air Force Space Command, Electronic Systems Center (ESC), NRO CAIG, and others

TASC Cost Estimating Training

- TASC has run the National Society of Cost Estimating/Analysis (SCEA) conference training since 2004
- TASC was selected by SCEA to develop the Cost Estimating Body of Knowledge (CEBoK).
- TASC provided training to the United Kingdom (UK) Ministry of Defence (MOD); the National Aeronautics and Space Administration (NASA), The Australian Ministry of Defense, the Navy Engineering Logistics Office (NELO) and trained extensively within all sectors of Northrop Grumman based on the CEBoK curriculum

Cost As an Independent Variable (CAIV)