PRICE®

Webinar

Raytheon Technologies

Affordability Analysis

Bill Williamson
Cost Engineer
General Engineering - RIS

PRICE®

Cost Analytics


TrueExplorer


TrueFindings


PRICE® Models


TruePlanner


TrueMapper


TrueBOE


TrueXLS

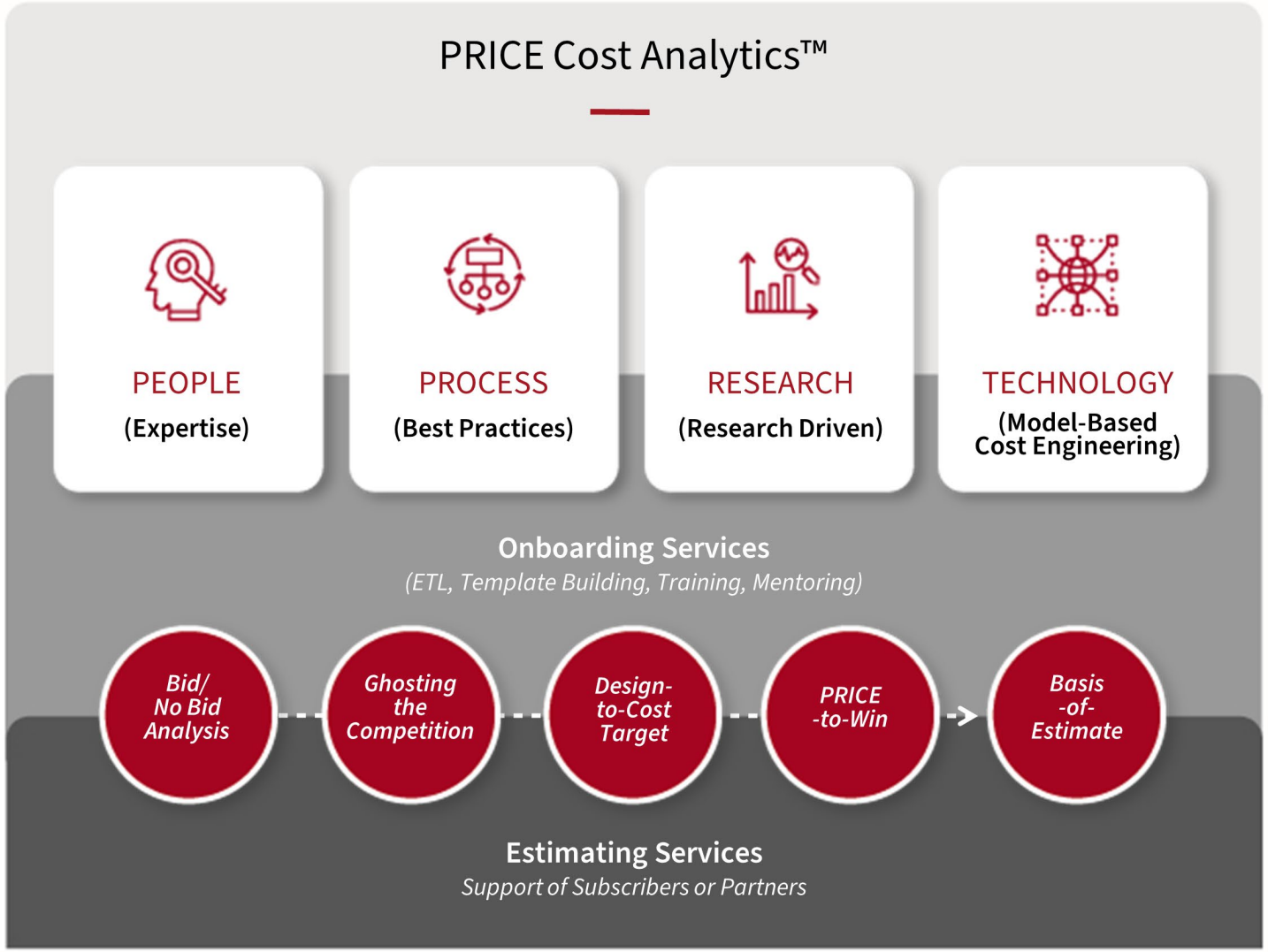
Search & extract data from the PCA Ecosystem	Manage & Analyze Data Sets	Predictive Models	Integration Framework	Customer Data Mapping	Basis-of-Estimate Generator	Access PCA Engine from Excel

Excel Word Project @RISK ORACLE CRYSTAL BALL PROPRICER PHOENIX INTEGRATION ACEIT

The Commercial Offer

Inclusive Subscription. More Than a Tool

Process Integration Focused



Prescriptive
5 of 40
Processes

Bill Williamson History

Raytheon

- U.S. Naval Academy Graduate
- Marine Corps Communications Officer – 7 Years
- Texas Instruments Defense/Raytheon – 13 Years
  - Production Control Supervisor on Printed Circuit Board Line
  - Assembly Line Supervisor for Common Module Scanner Line
  - Manufacturing Engineer – IRAD & Cost Estimating Support
  - Affordability Manager in Electro-Optics Group
- Lockheed Martin – 17 Years
  - DTC Manager
  - Affordability Program Support
  - ACEIT Trained – 21 Years Experience
- PRICE Systems LLC – 4 Years (30+ year training PRICE TruePlanning®)
  - Government and Commercial Contract Support
  - PRICE TruePlanning Cost Model Trainer

Agenda

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- 12-Step GAO Process
- Affordability Umbrella
- Definitions
- Target Costs – Establishing, Allocating, and Tracking
- Cost as a Design Parameter
- Exploring Trade Space for Optimizing Cost/Performance
- Uncertainty/Confidence Level
- Transition to a DTC Culture
  - Management Support
  - Affordability Document
  - Standardized Forms
  - Training
  - Cost Estimating Tools
- Questions/Answers

12-Step GAO Process

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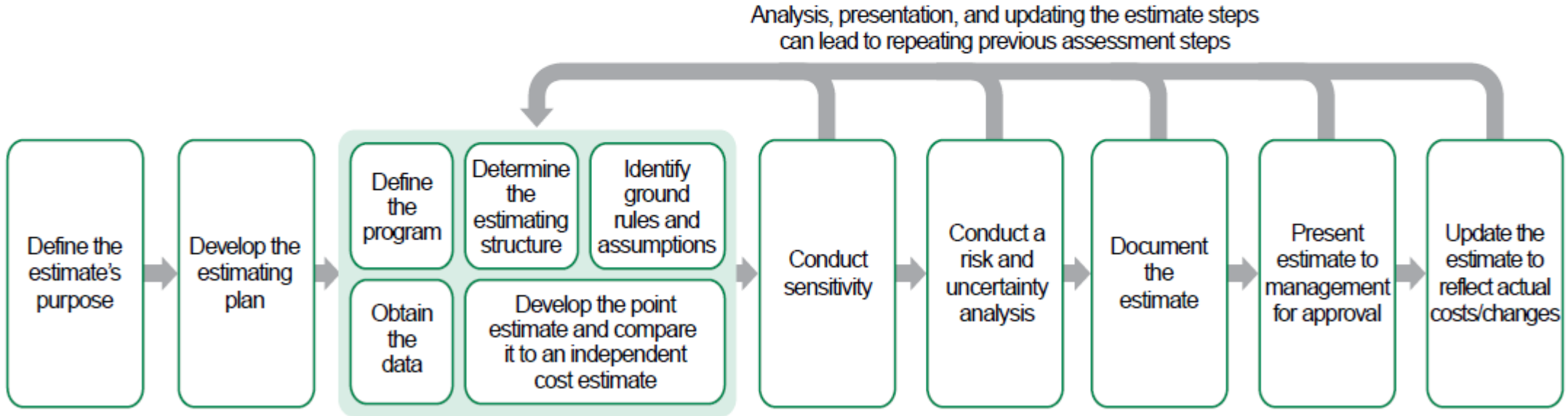
Figure 1: The Cost Estimating Process

Initiation and research
Your audience, what you are estimating, and why you are estimating it are of the utmost importance

Assessment
Cost assessment steps are iterative and can be accomplished in varying order or concurrently

Analysis
The confidence in the point or range of the estimate is crucial to the decision maker

Presentation
Documentation and presentation make or break a cost estimating decision outcome



Source: GAO.

Affordability Umbrella

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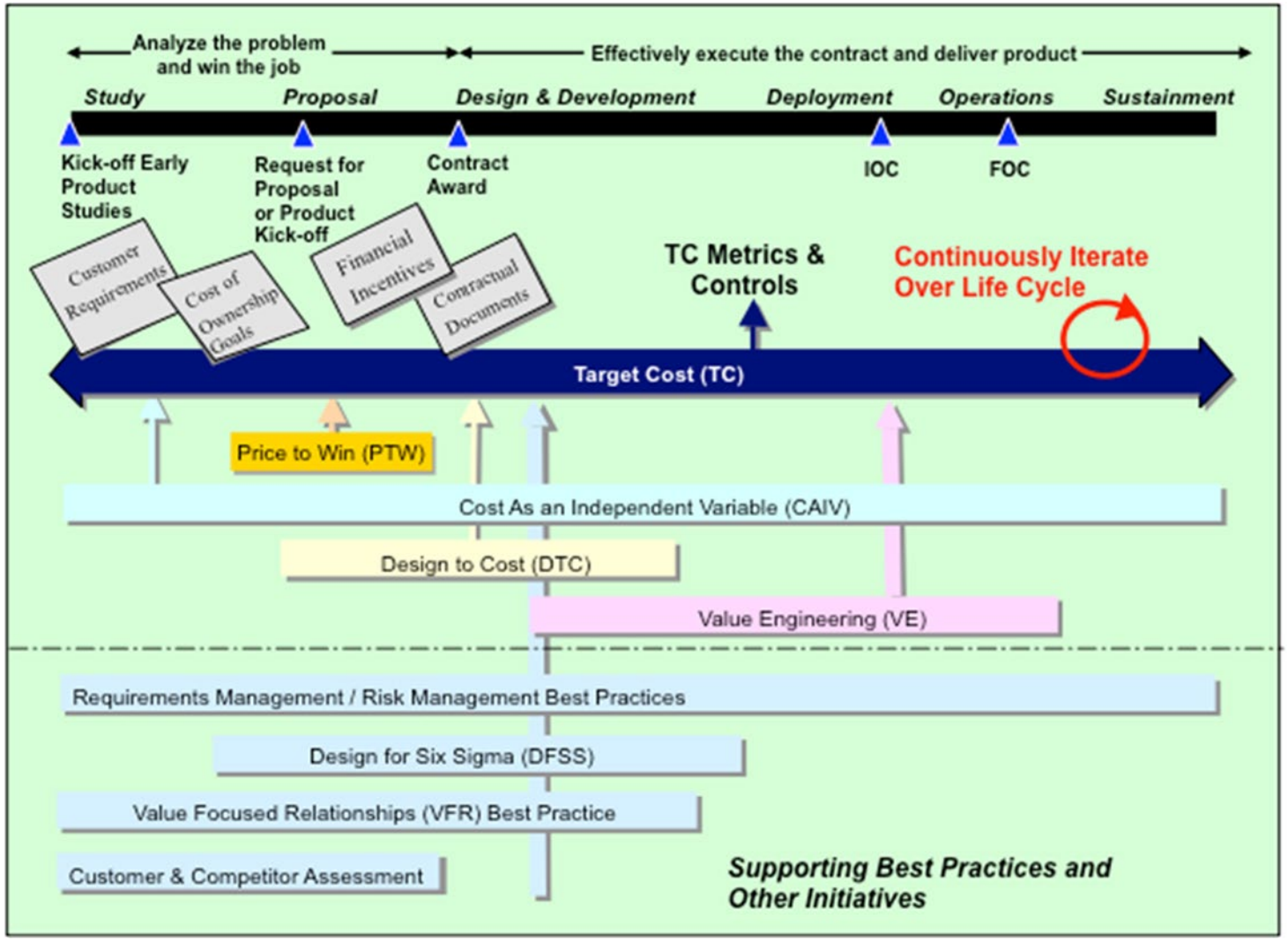

Definitions

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- Affordability
  - A determination that the Life Cycle Cost (LCC) of a program is in consonance with the long-range investment and infrastructure plans of the customer. Therefor, Affordability is the process that balances performance with price to meet customer needs. A product is affordable if it meets customer needs, is within the customer's budget and is **perceived** as the best value among all available alternatives.
- Design to Cost
  - A dynamic process of iteratively refining a product's design by trading cost and performance so that well-defined cost targets are met. DTC has maximum impact if it is begun during requirements definition prior to contract award and is continued throughout development. Design to Cost focuses on the average unit cost of production while considering all elements of product life cycle (production, development and support). [Ref 1]
- Cost as an Independent Variable (CAIV)
  - A strategy that sets aggressive, yet realistic cost objectives (constraints) when defining operational requirements. Trade studies, a proactive risk management process, and customer/user involvement balance cost, performance, and schedule over the life of the project. [Ref 2]

Definitions continued…

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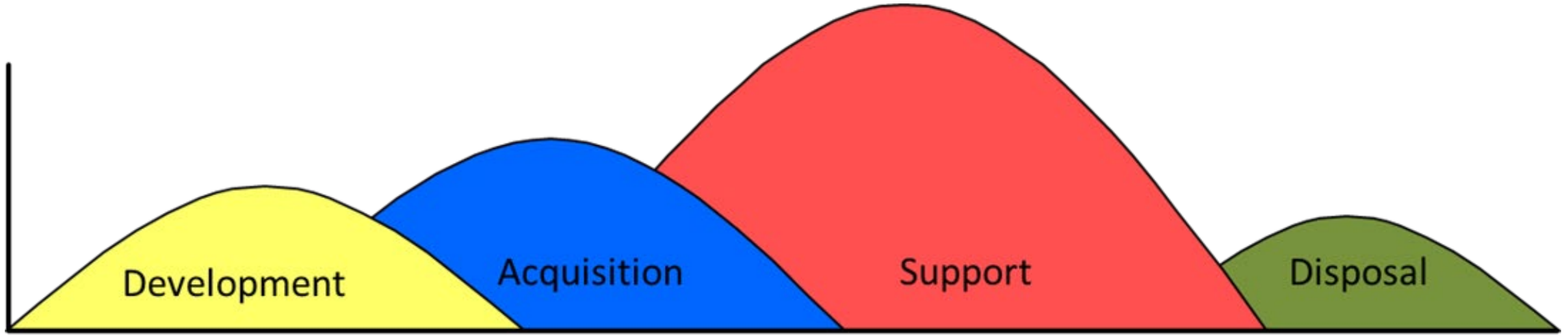
- Life Cycle Cost
  - The sum of all recurring and one-time (nonrecurring) costs over the full life span or a specified period of a good, service, structure, or system. It includes design and development costs, purchase price, installation cost, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life. [Ref 3] Also known as the total cost to the Government or organization of the Acquisition and Ownership of a system over its complete Life Cycle
  - LCC includes the cost of Development, Acquisition, Support, and, where applicable, Disposal*



* ICEAA Glossary

Target Costs – Establishing, Allocating, and Tracking

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- Business Development Number
- Proposal Number
- Contract Number
- Management Decree

Cost as a Design Parameter

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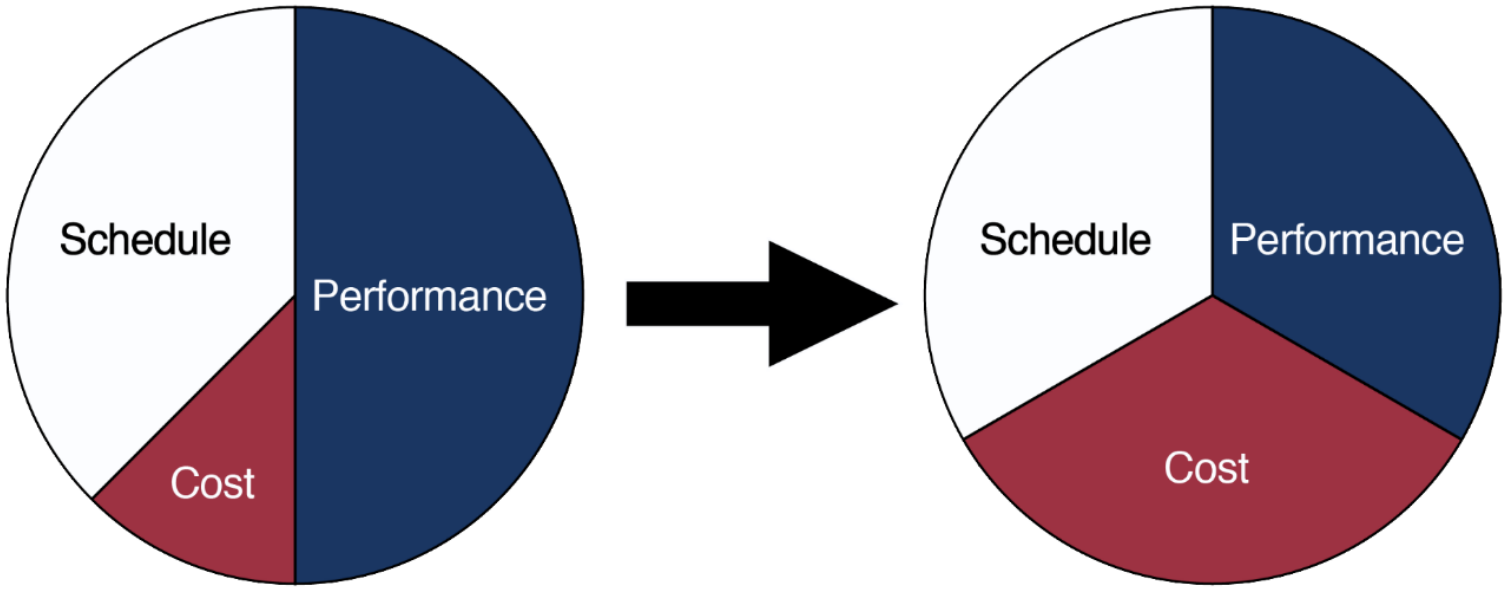
- Change in Environment
  - Performance is no longer paramount – it has changed to Value!
  - Customer money is limited
  - Customer is extremely cost aware



Exploring Trade Space: Optimizing Cost/Performance

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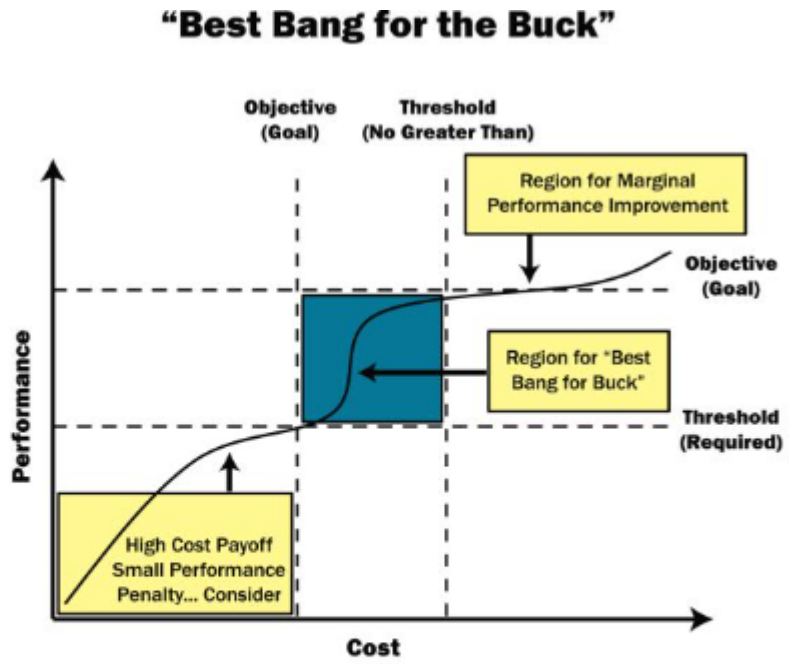
- Trade Space

  Trade space is the degree of flexibility in balancing cost, schedule, performance, and supportability requirements to meet Warfighter capabilities with affordable and supportable system designs. [Ref 4]



Courtesy of PRICE Systems, LLC

Uncertainty/Confidence Level

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Risk Register

Code	Risk Event	Prob.	Financial Impact (USD)			Risk Level
			Min	ML	Max	
R1	Risk of delays in delivery of new vessel	0.475644	(731,729)	(6,343)	562,984	Very Low
R2	Risk of insufficient speed design	0.009663	247,757	390,208	559,245	Very Low
R3	Risk of excessive fuel consumption	0.012198	112,987	197,343	266,662	Very Low
R4	Risk of insufficient dead weight tonnage (DWT)	0.004492	32,605	150,788	494,325	Very Low
R5	Risk of tanker having off hire after a year delivery	0.014133	30,000	115,000	300,000	Very Low

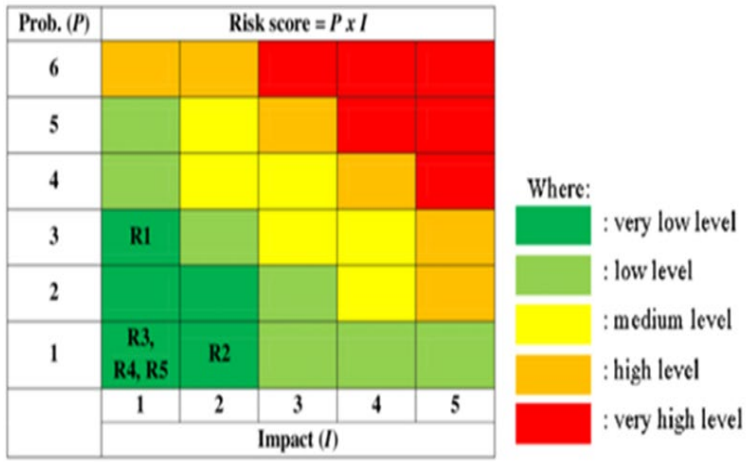
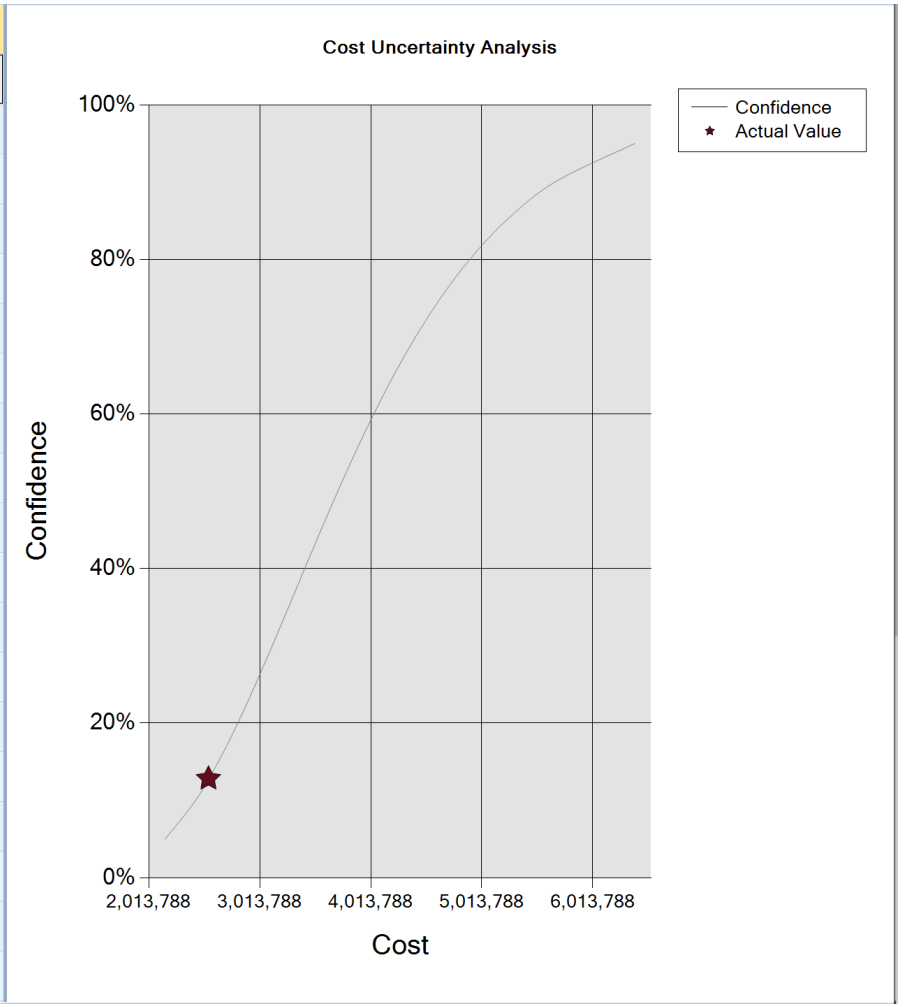


Figure. 2. Risk Repretentation in Risk Matrix

Uncertainty S-Curve

	Confidence	Cost
1	5%	2,159,369
2	10%	2,434,446
3	15%	2,639,577
4	20%	2,814,863
5	25%	2,974,492
6	30%	3,125,546
7	35%	3,272,455
8	40%	3,418,036
9	45%	3,565,160
10	50%	3,716,126
11	55%	3,873,484
12	60%	4,040,212
13	65%	4,219,948
14	70%	4,418,297
15	75%	4,642,672
16	80%	4,905,954
17	85%	5,231,743
18	90%	5,672,579
19	95%	6,395,197



Program Affordability/DTC Requirements

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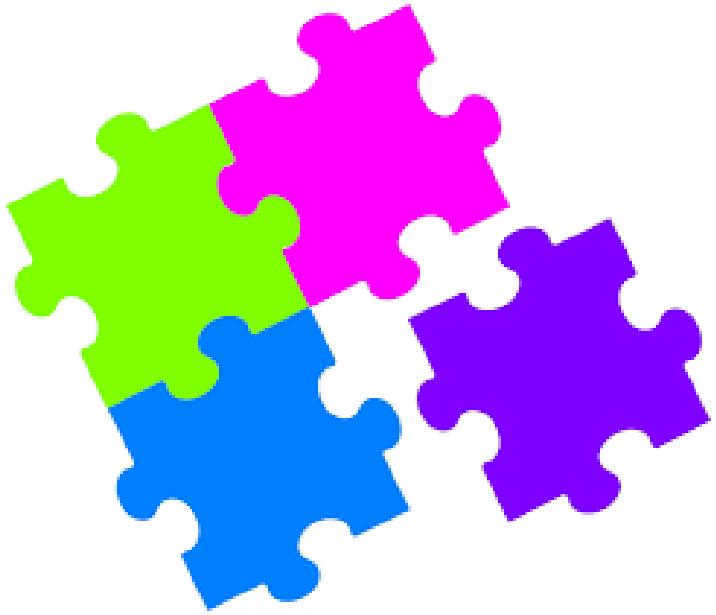
- Affordability/DTC Program Plan
- Product and Phase Related Cost Models
- DTC Target Cost Goals and IPT Assignment
- Target Cost Goal Metrics and Tracking
- Cost Reduction Initiatives
- Cost Trade Studies



Transition to a DTC Culture

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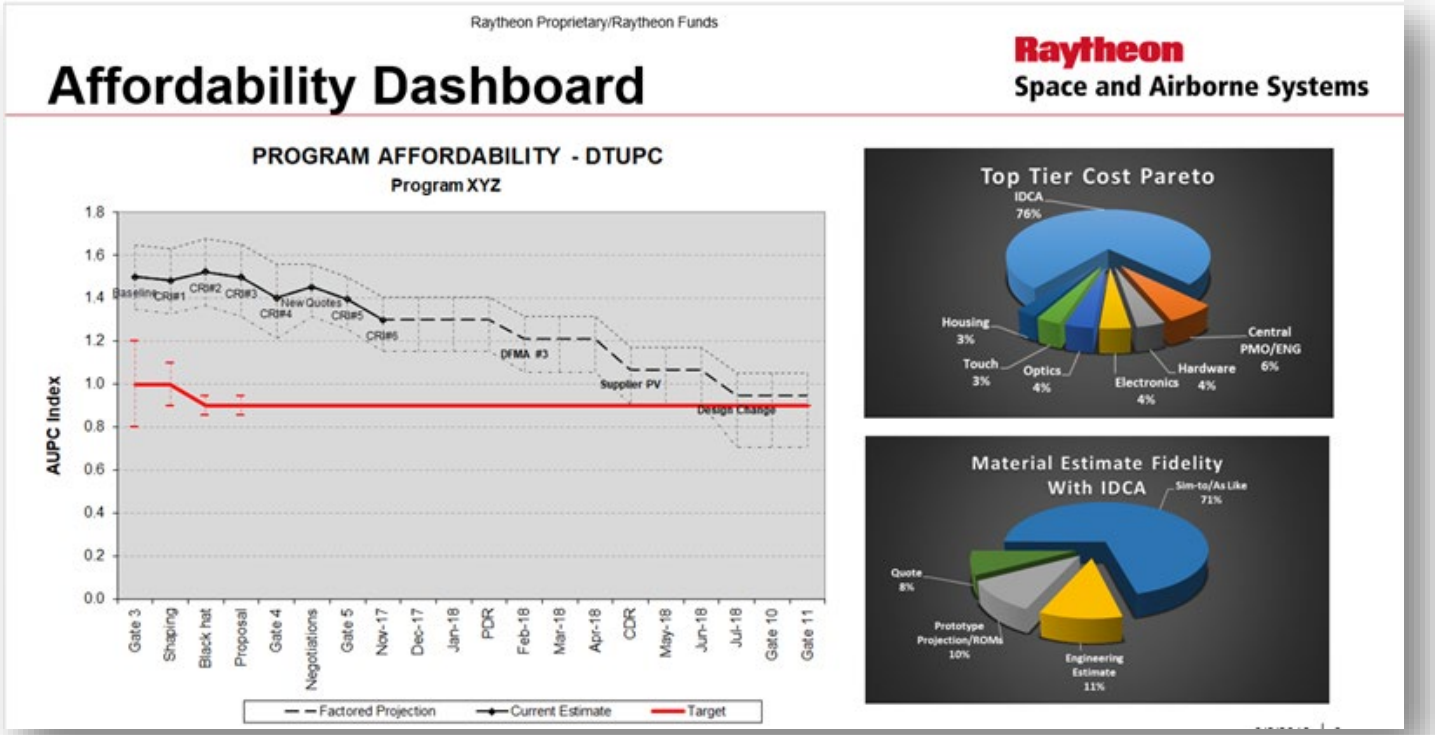
- Management Support
  - #1 Key to Affordability Implementation
  - Funding ($) at the right time
  - Metric Measurement & Enforcement
  - Positive Reward System
  - Removal of Barriers
- Affordability Document
  - Legitimacy
  - Authority
  - Sets Requirements
  - Defines Responsibilities
  - Standardization
    - *Process*
    - *Forms*
  - Templates
  - Checklist

Transition to a DTC Culture continued…

- Standardized Forms
  - Familiarity
  - Key Information Delivery
  - Examples
    - *Management Review*



Transition to a DTC Culture continued…

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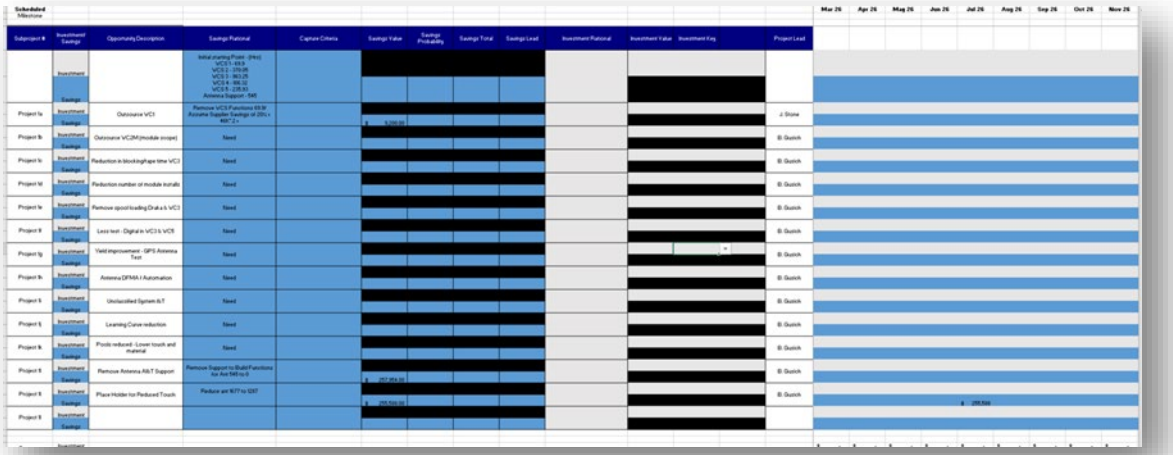
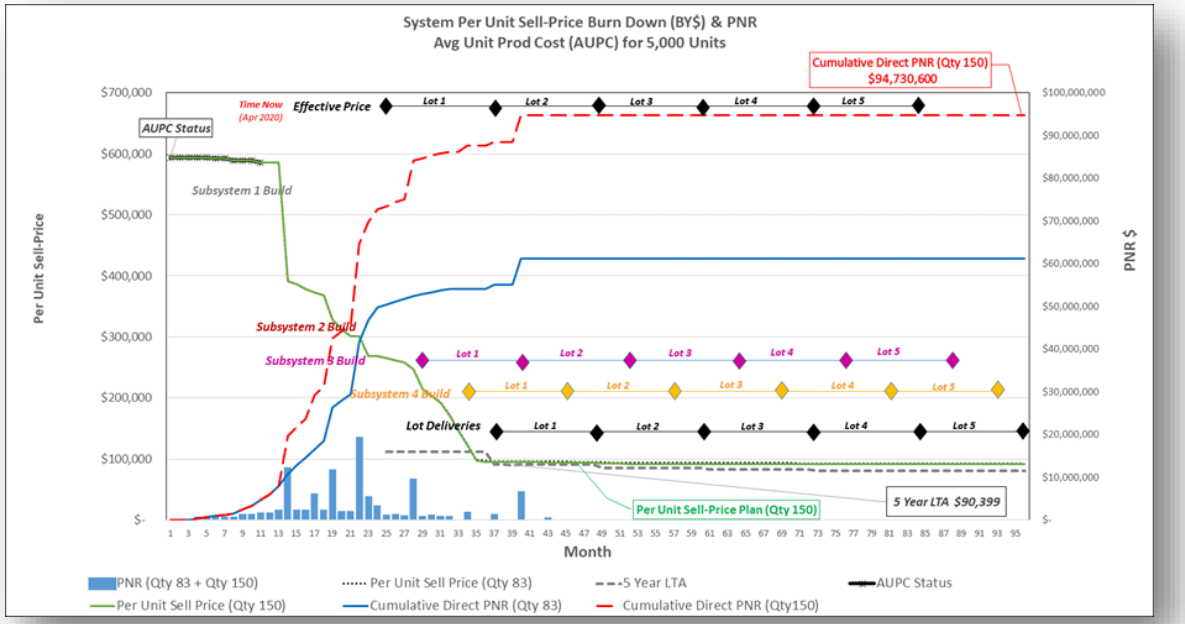
- *Cost Reduction Initiatives*



- *Step-Down Chart*



Transition to a DTC Culture continued…

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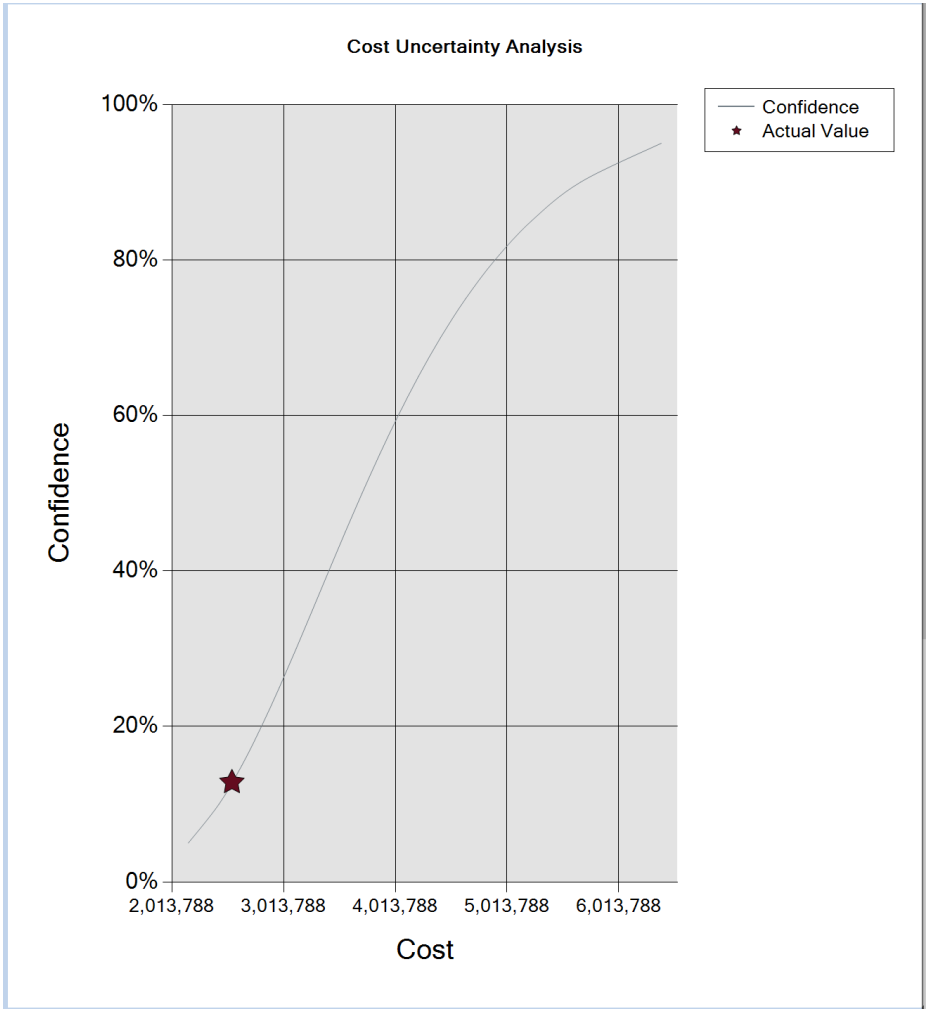
- *Uncertainty*



Transition to a DTC Culture continued…

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- Training
  - Methodology and Practical Application – Affordability Team (IPT)
  - Methodology/Informational - Management
- Cost Estimating Tools
  - PRICE® TruePlanning 16.2 – Parametric (Predictive) Activity Based Costing
    - *All Program Phases*
    - *ROM Estimate*
    - *Detailed Estimate*
    - *Uncertainty Analysis*
  - Excel Spreadsheets
  - ACEIT Toolset
  - Seer
- Cost Estimating Support
  - Trained Experts
  - IPT Members

Questions and Answers

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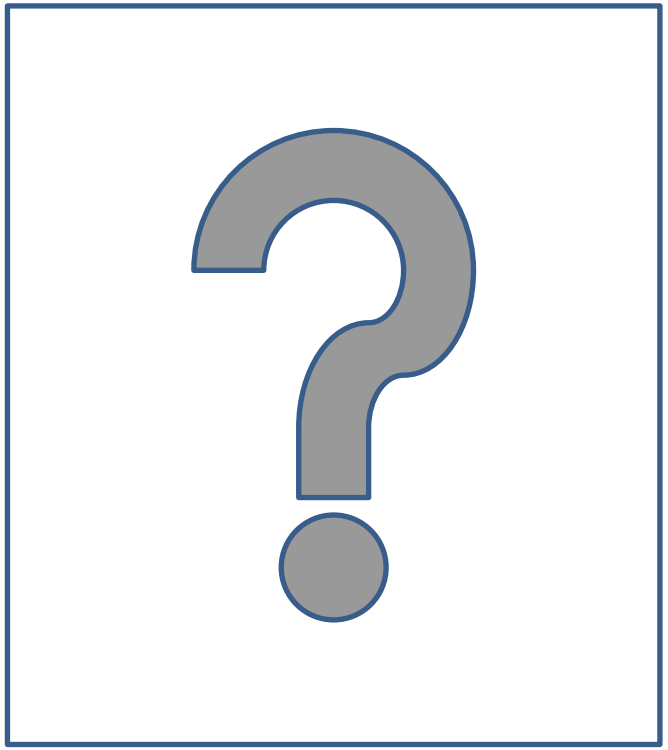

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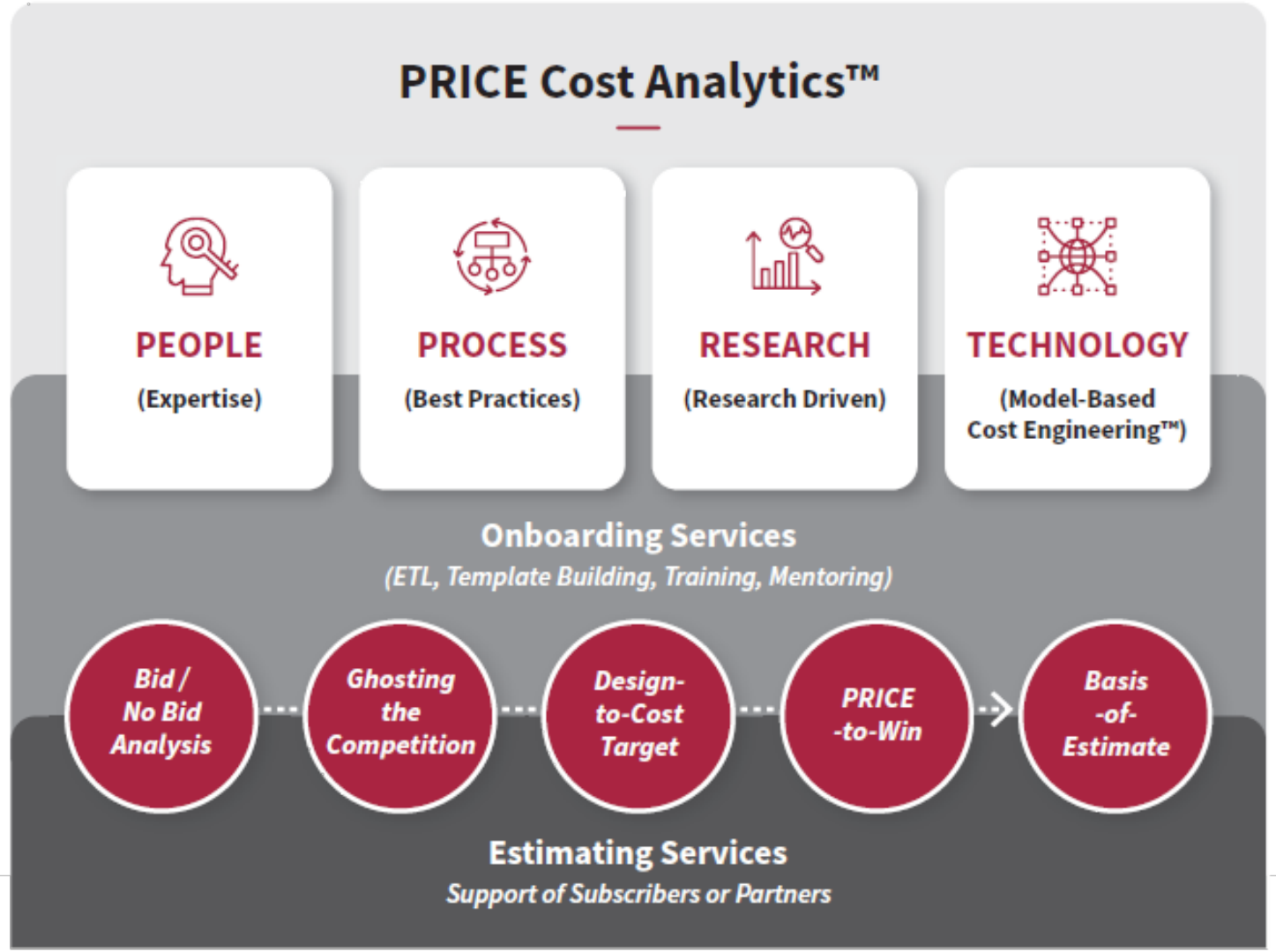

Process Integration Focused

Prescriptive
5 of 40
Processes

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Please leave a message and I will call you back. I have RoboKiller to prevent unwanted phone calls

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References

- [1] Wikipedia; https://en.wikipedia.org/wiki/Design-to-cost
- [2] AcqNotes; http://acqnotes.com/acqnote/careerfields/cost-as-an-independent-variable
- [3] BusinessDictionary; http://www.businessdictionary.com/definition/life-cycle-cost.html
- [4] Course Hero; https://www.coursehero.com/file/p3d80j2/Trade Space-Selection-Which-is-the-correct-definition-of-Trade-Space-that-Devon