

Abstract

- The monitoring of projects requires a robust baseline from which to start. Project Controls is dependent upon the establishment of a justified and defensible, risk adjusted, resourced schedule regardless if you are using earned value management (EVM) or less formal techniques for control. For in-house resources the quality of the baseline is dependent upon your own maturity regarding cost estimating, risk management and scheduling. However, how do you establish a sound baseline for complex procurements that originate beyond your organisation?
- You want your career remembered for success, to stand out for providing value for money acquisitions and a record of excellence in delivery. However, how do you effectively assess the cost and schedule credibility for multiple tenders quickly and effectively. Traditionally, you plan, prepare and then execute a tender assessment with a large review board with risk, uncertainty and expense. At conclusion, there remains a doubt that the price offered will not escalate and the delivery schedule will not slip.
- This case study will introduce a methodology for assessing the Commercial volume of the tender that is as rigorous as the Technical volume. QinetiQ has been supporting a client with two approaches which have provided electronic tender evaluation and independent cost estimates (ICE) to determine “Should cost”. We have defined scoring criteria, RFP text and assessment logistics. These two capabilities provide confidence that your supply chain decisions will be transparent and benchmarked against average industry, realistic cost and schedule targets.
- The techniques will apply across all domains and businesses.



Dale Sherman – QinetiQ
Fellow / Managing
Consultant

- Dale was co-author of the ‘Association for Project Management (APM) Body of Knowledge (BoK) issue 7’, the ‘Cost Engineering Health Check: How good are those numbers?’, A Gower book published in 2017 and the author of the Gower publication ‘Systems Cost Engineering’ which was published in July 2009.
- He was the first European to be awarded the ICEAA Frank Freiman award in 2009 for “lifetime contributions to parametric estimating”. Dale was the first European to become an ICEAA Certified Cost Estimator / Analyst with Parametrics.

Designing better Project outcomes from complex procurements

Dale Shermon - QinetiQ Fellow
Managing Consultant

Project Controls Expo, London,
19 November 2019
QINETIQ/19/00xxx

Agenda

-
1. Internal baselines cost: Basis of Estimate (BOE)

 2. Sub-contractors costs

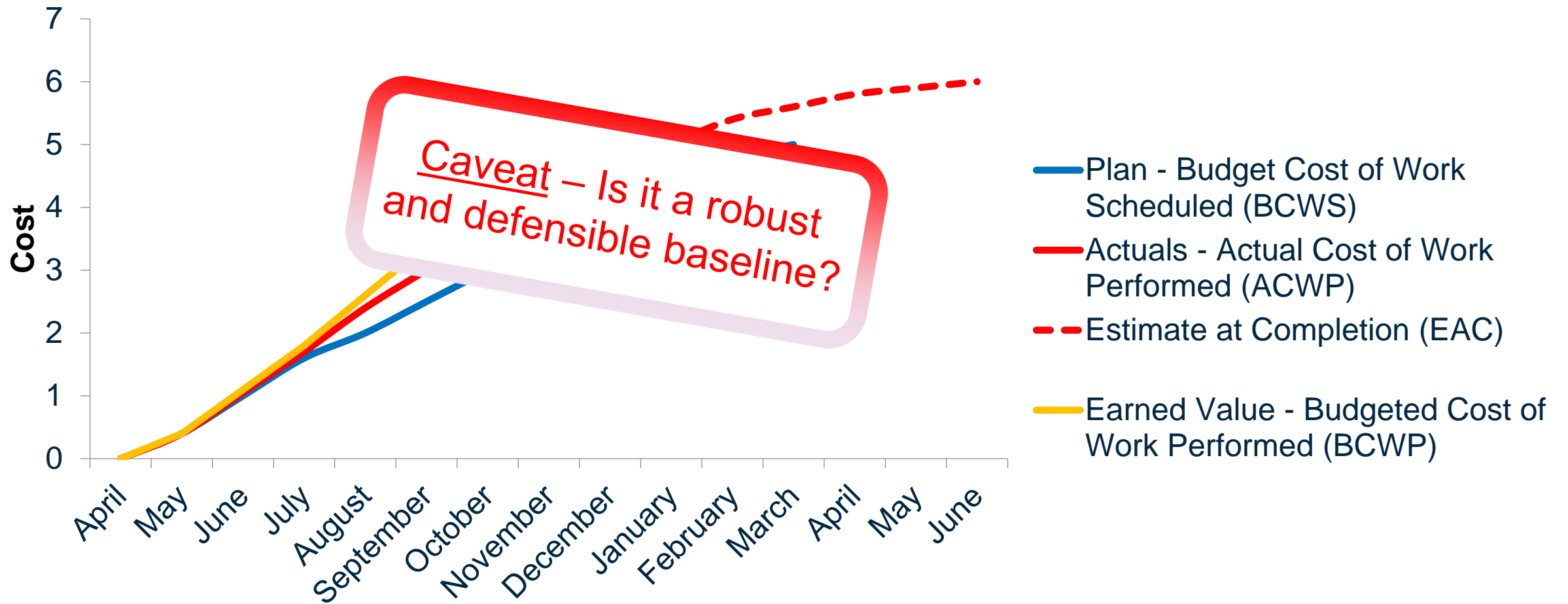
 3. Assessment Scheme Design and Execution

 4. Should cost

 5. Case study approach

 6. Summary

Controlling a project



Internal baseline testing

Appropriate

- ... by its characteristics or nature, it represents a cost that is expected to be incurred in the conduct of delivering the contract. Costs are those which should be able to withstand public scrutiny and which can be supported by sufficient justification.

Attributable

- ... a cost is Attributable if incurred directly or indirectly for the fulfilment of the contract in question and it is necessary to fulfil the requirements of the contract.

Reasonable

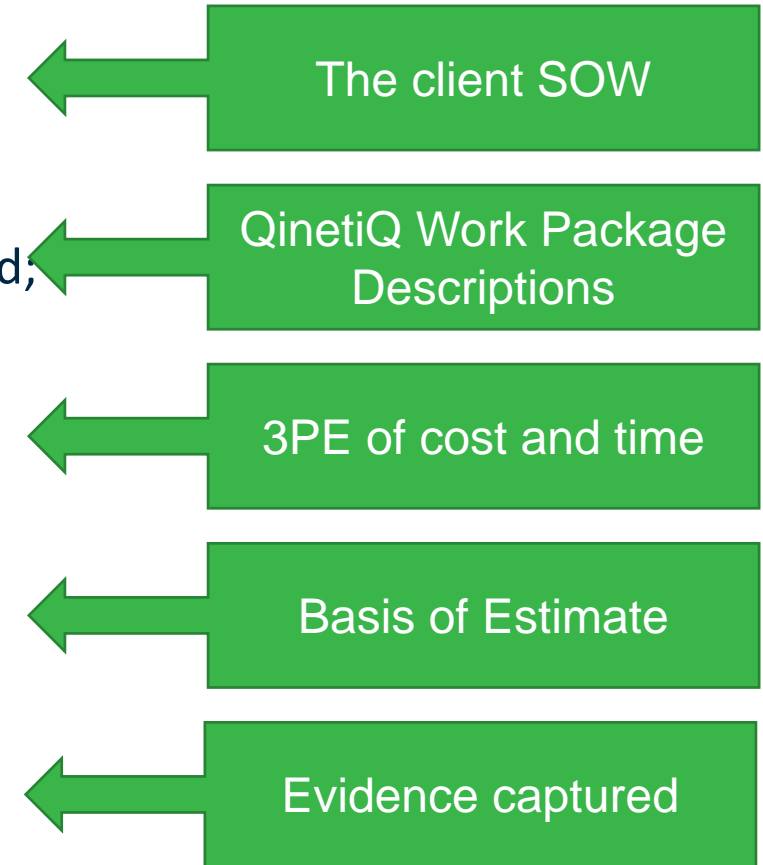
- .. A cost is Reasonable if by its nature it does not exceed what might be expected to be incurred in normal delivery of a contract.

Source: SSRO, *Allowable Costs guidance*, Issued: 1 February 2018

What do I look for? “A Golden thread”

To observe a **logical auditable flow** of information from:

- The Client needs, the **Statement of Work (SOW)**, through to;
- The QinetiQ **technical solution**, the work to be performed, with associated,
- **Estimate of the cost and schedule duration** backed up with;
- A credible and justified **basis for the estimates**, backed up with;
- **Evidence and historical information**.



Definitions

Terminology	Probability of occurrence	Impact	
		Cost / Hours	Schedule
Baseline	100%	Deterministic estimate (Most Likely)	Deterministic estimate (Most Likely)
Uncertainty	100%	Three point estimate (Minimum /ML / Maximum)	Three point estimate (Minimum /ML / Maximum)
Risk (Pre or Post Mitigation)	<100%	Three point estimate (Minimum /ML / Maximum)	Three point estimate (Minimum /ML / Maximum)
Mitigation	100%	Three point estimate (Minimum /ML / Maximum)	Three point estimate (Minimum /ML / Maximum)

All risk have been considered



Political



Economic



Social



Technical

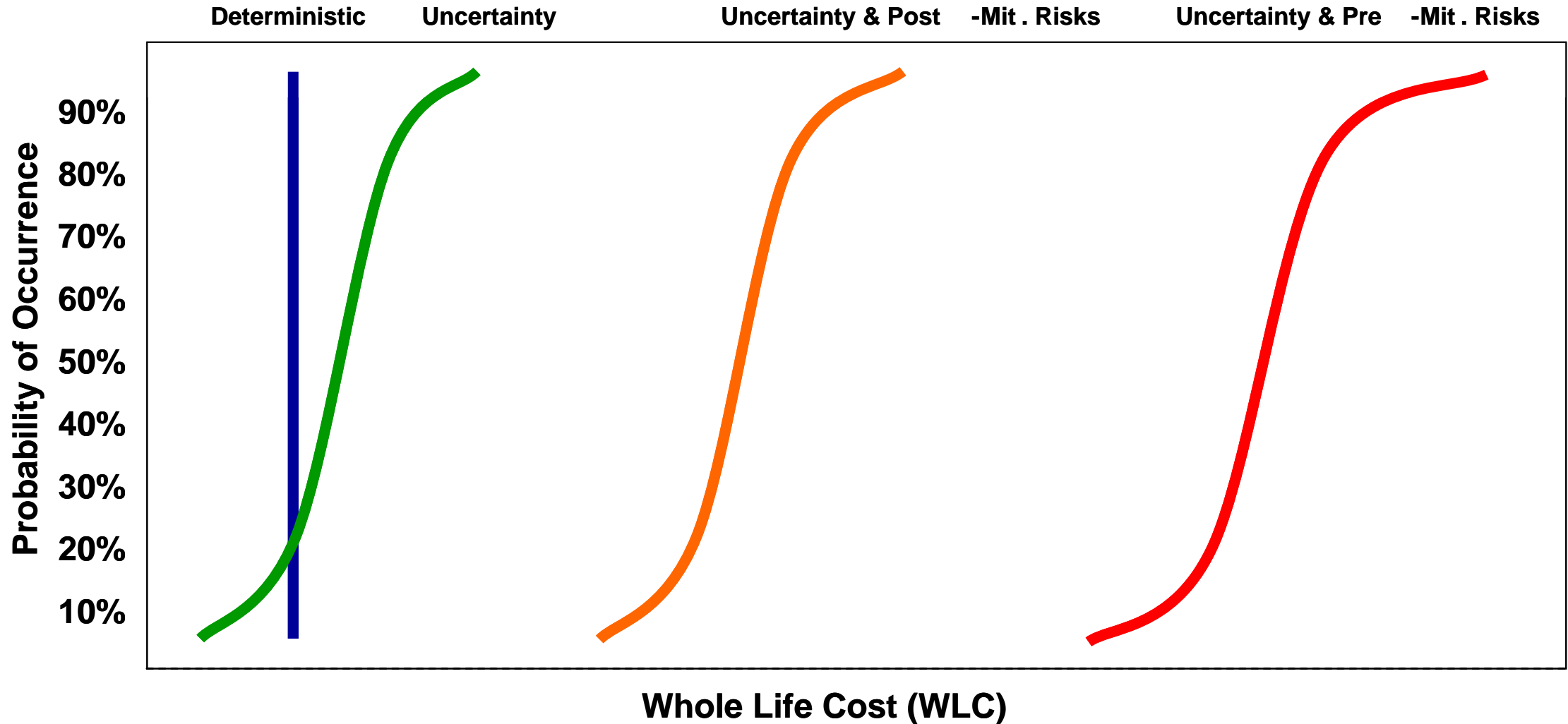


Environment

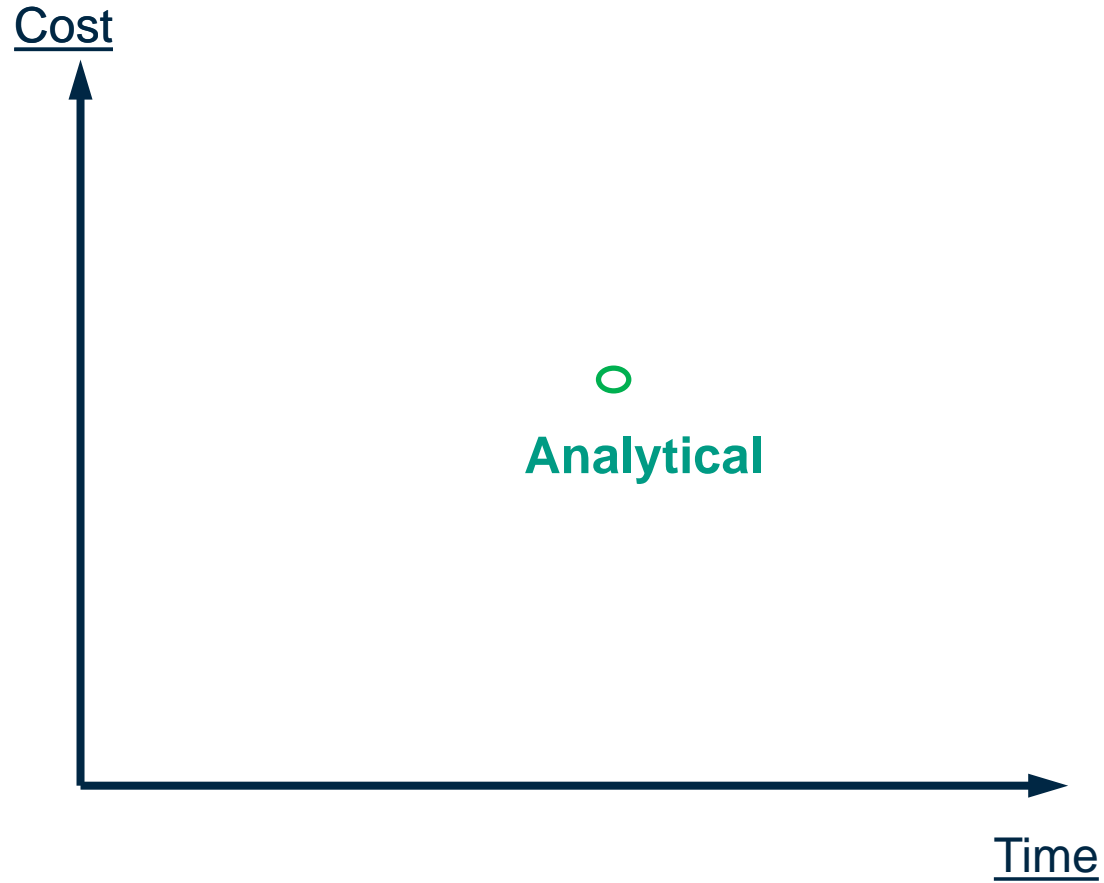


Legal

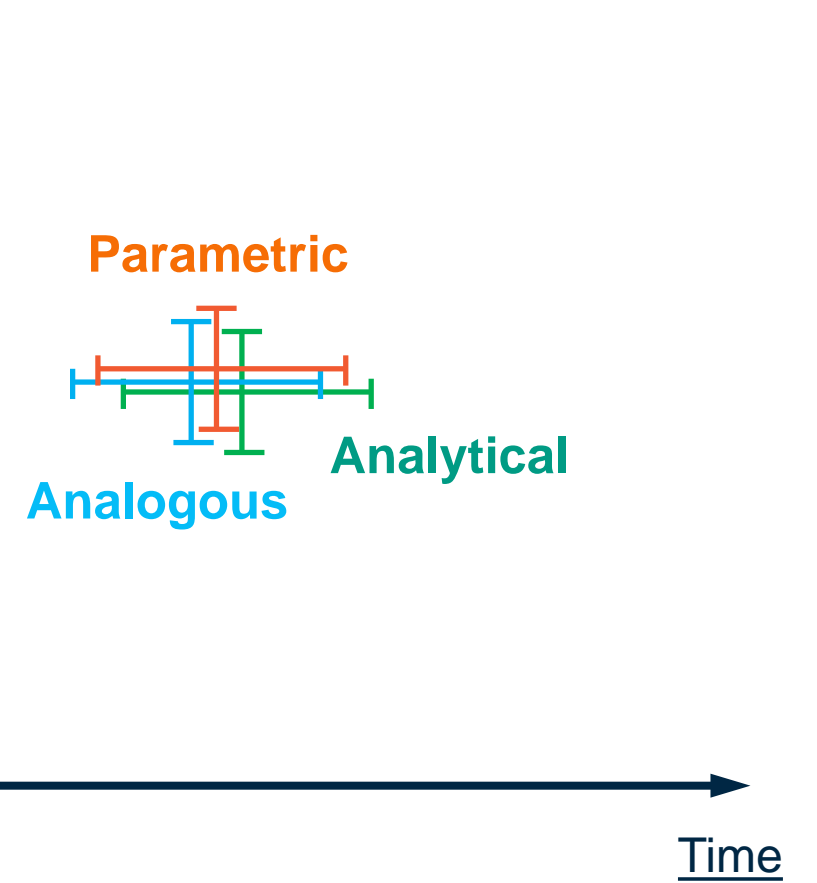
Risk Analysis



Little Confidence



More Confidence



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Sub-contractor costs?



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Objectives

There are two objectives for Tender Assessment:

1. **Value for money:** Select the **correct supplier**, when compared against a benchmark should cost model, based upon an assessment of suppliers cost and risk data in a consistent, standardised format ;
2. **Will cost:** To provide an input into the **Baseline budget setting** to help inform the Whole Life Costs (WLC) for Business Case Approval.

Caveat – there is a possibility
that the preferred supplier is not
affordable!

Traditional approach



	Weighing	Supplier A	Supplier B	Supplier C
Experience	VV%	↑	←	↓
Understanding	WW%	←	↓	←
Approach	XX%	↑	↑	↓
Quality	YY%	←	↓	←
Management	ZZ%	↓	↑	↑
Score		85%	65%	75%

Highest technical compliant score!

Are the costs affordable?

Supplier A is the WINNER!

Traditional approach



..... within one year of announcing a **delay of up to 19 months** for the three programs, “NASA senior leaders acknowledged the revised date of June 2020 is unlikely,” GAO said. “Any issues uncovered during planned integration and testing may push the launch date as late as June 2021. Moreover, while NASA acknowledges about **\$1 billion in cost growth** for the Space Launch System program, GAO estimated the **cost growth in excess of \$1.8 billion.**

<https://www.govexec.com/management/2019/06/nasa-managers-and-contractors-significantly-lowballed-space-mission-costs-watchdog-found/157858/>

The ASB project is about **\$40 million over its original budget** of \$445m, and about **a year behind schedule.**

<https://www.stuff.co.nz/national/health/107678276/christchurch-hospital-build-beset-by-persistence-of-errors-and-omissions>

MOTS projects currently in the MPR report an average of **24 months of slippage** per project, while Australianised MOTS projects report an **average of 41.2 months** and Developmental projects report an **average of 46.4 months.**

<https://www.anao.gov.au/work/major-projects-report/major-projects-report-2017-18#7-1-costperformanceanalysis>

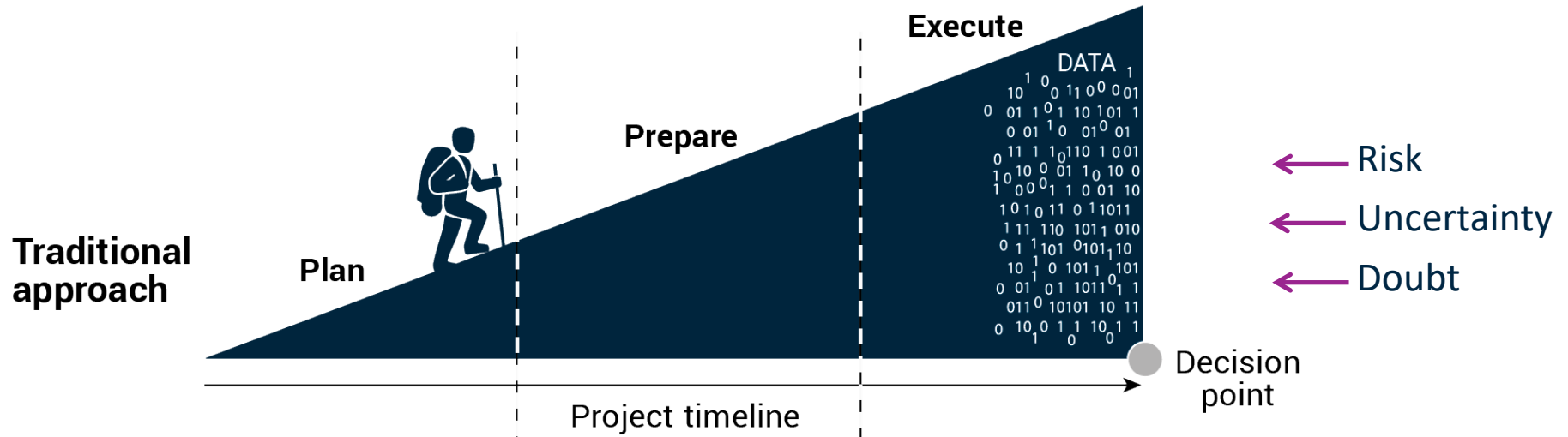
..... an analysis of what effect further significant delays would have on the project. For a **one-year delay**, the PBO estimates, an **extra \$2.2 billion** will be added to the project cost, and a **two-year delay would cost the government \$4.5 billion.**

<https://www.theglobeandmail.com/politics/article-canadas-new-warships-will-cost-almost-70-billion-over-next-quarter/>

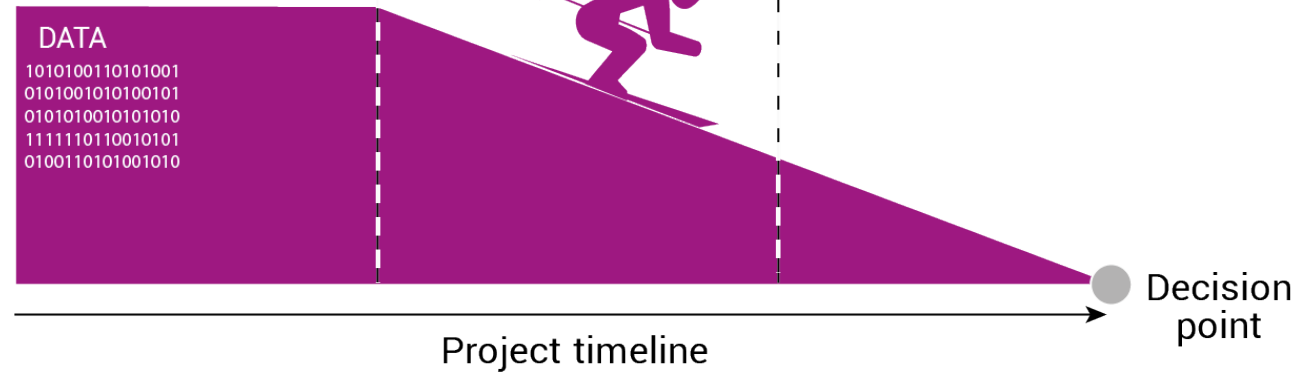
Assessment Scheme Design and Execution



Procurement journey

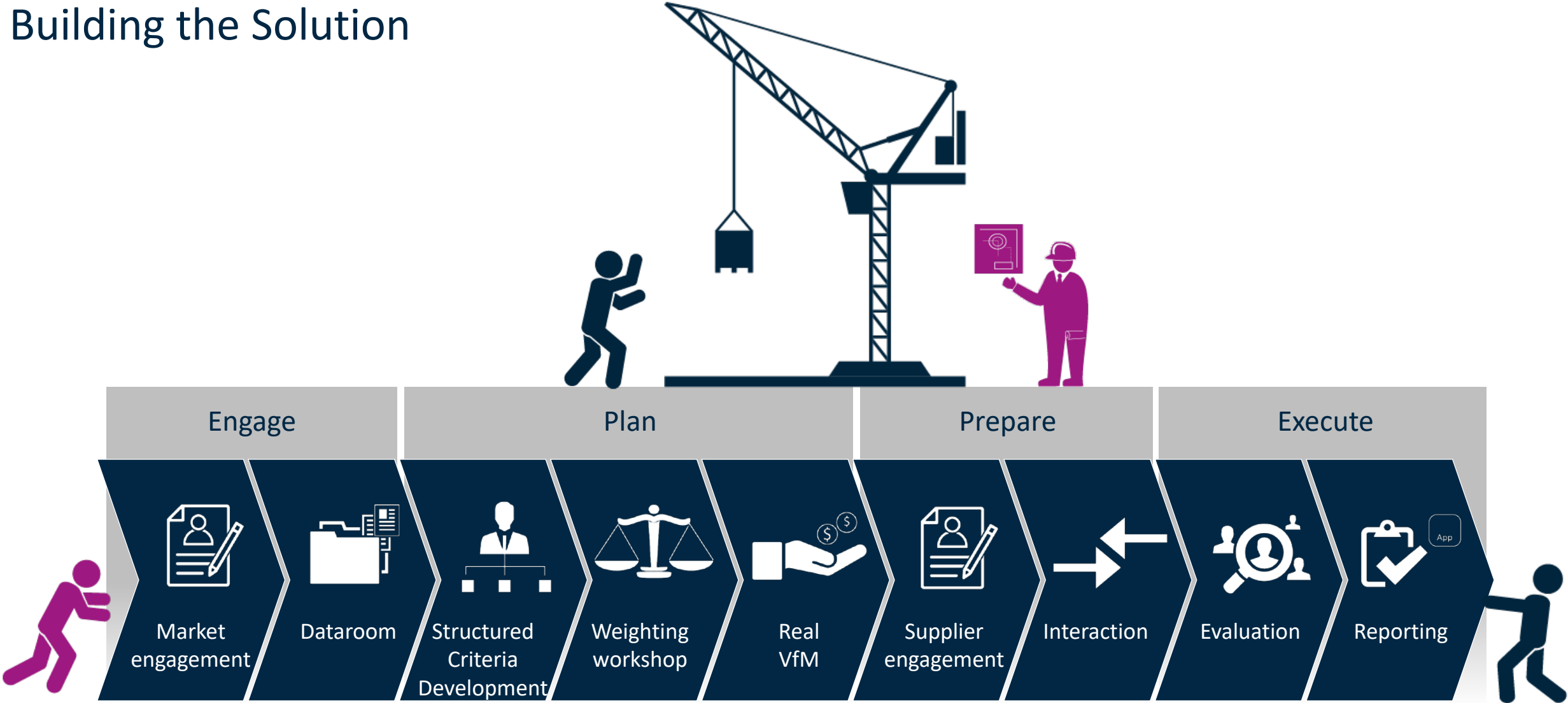


CDL approach



Building the Solution

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Should cost

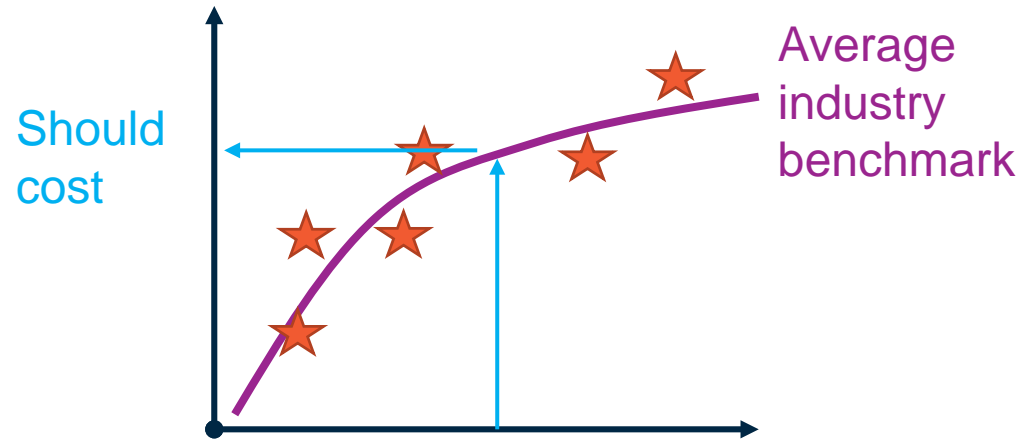


Benchmark Cost Modelling

Cost Estimating Relationship (CER)

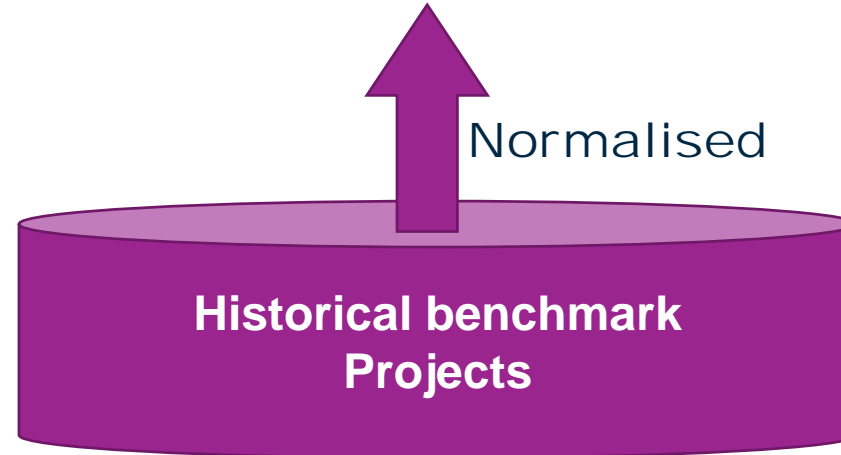
Independent

- Design
- Performance



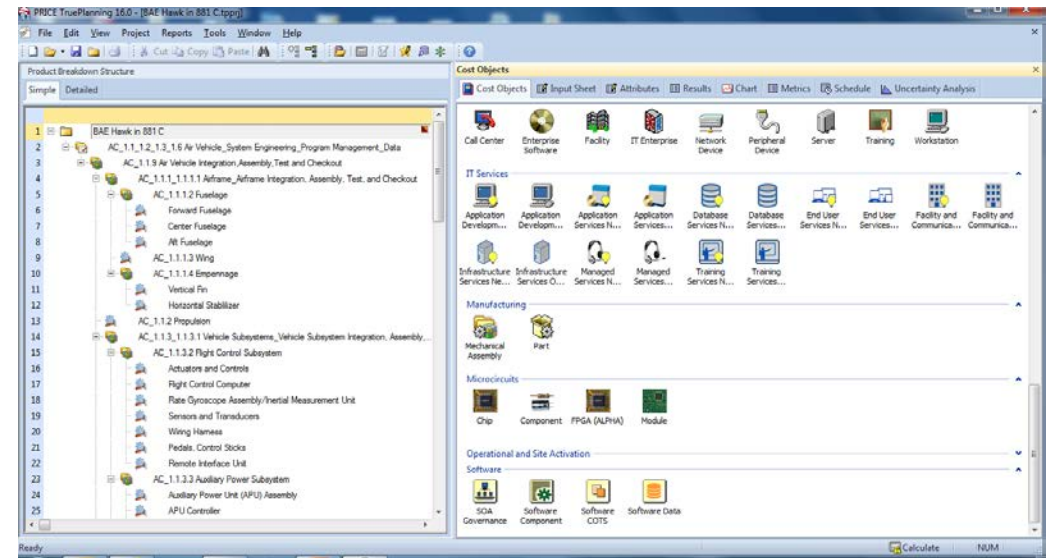
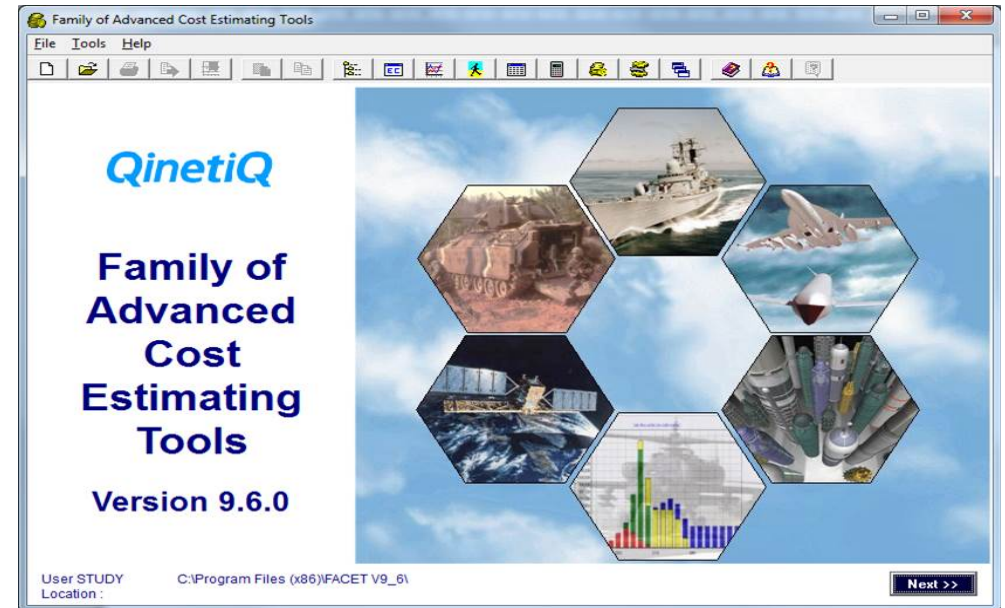
Dependent

- Cost
- Schedule
- Performance



Benchmark Cost Modelling

- QinetiQ Advisory Services (QAS) has a history of producing Should cost models to support clients and internal proposals
- Applying benchmark cost modelling capability QAS is able to predict the cost of average industry costs for products and services



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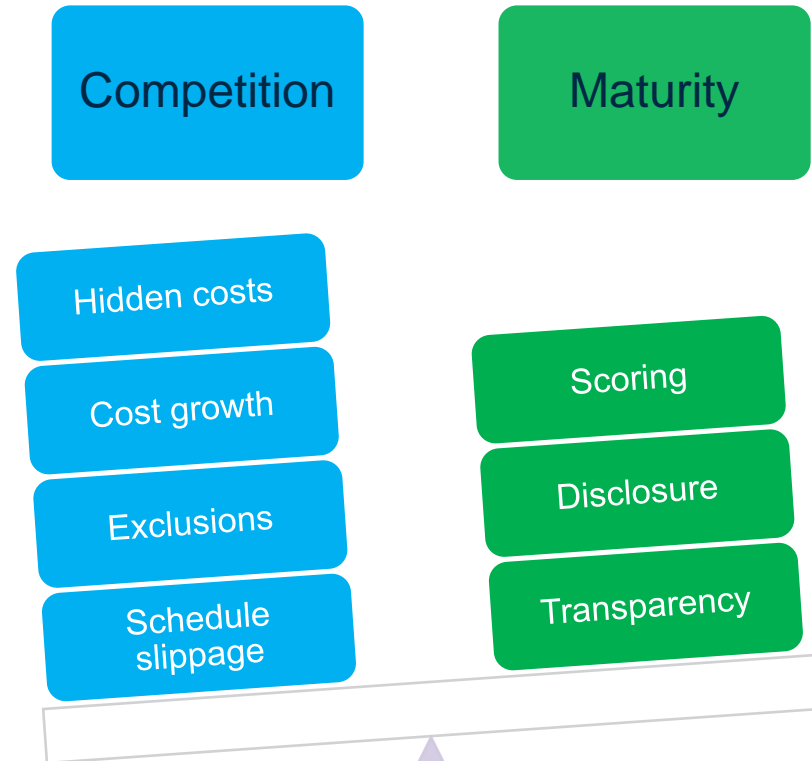
Case study approach



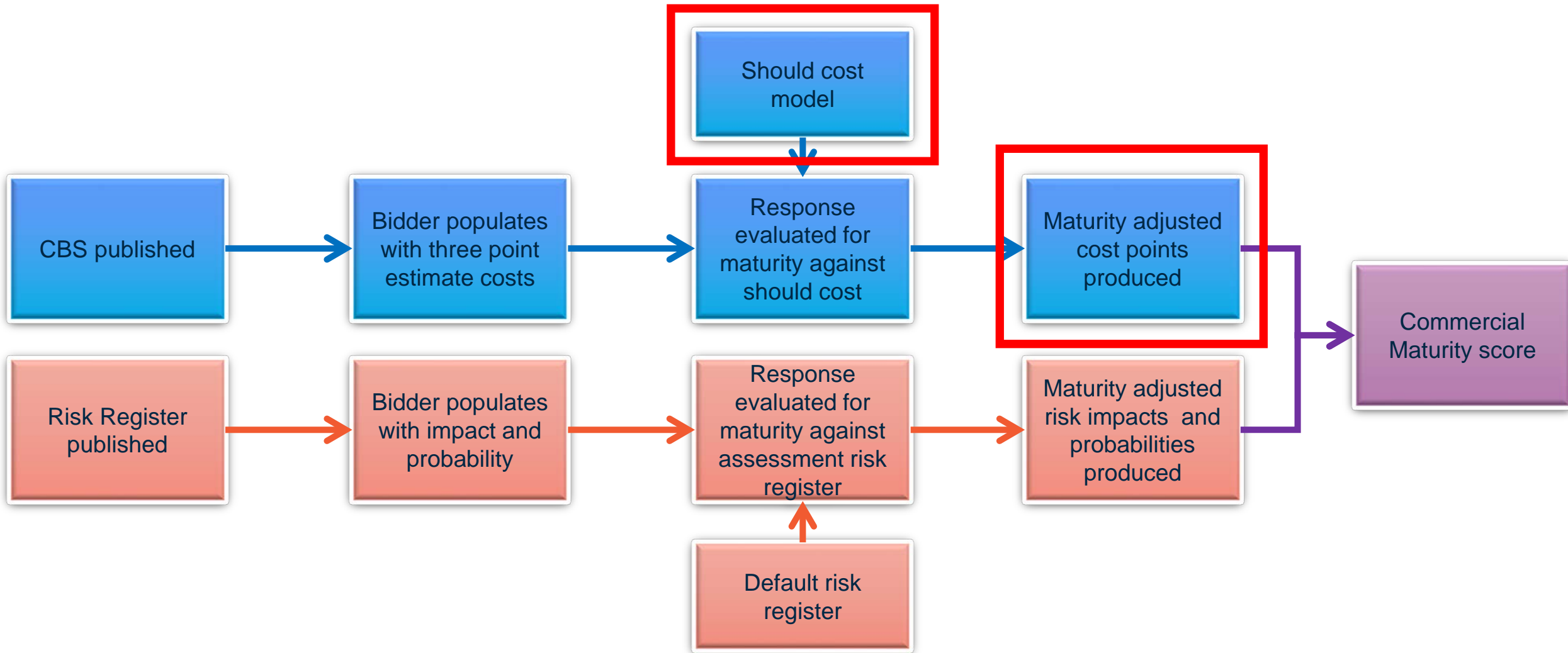
Case study approach



- Why not apply the **same assessment rigor** to the Commercial offer as the Technical offer?
- Relying on competition ensures the **lowest price; not the best price!**
- Competition is **no indicator of the quality** of the price being offered
- **Price maturity assessment** is the future approach to tender evaluations



Case study approach



Cost maturity criteria

- **Data** – Is the cost estimate based upon historical cost, programmatic and schedule data? Complimentary data the proposed product or service.
- **Tools** – Has the cost estimate been prepared using validated and verified statistical tools for analysis of data and cost models to forecast the proposed product or service?
- **People** – Was the proposed cost estimate prepared by suitable trained and skilled staff experts in cost forecasting and modelling?
- **Processes** – Was a comprehensive, proven approach applied that will consistently produce justified cost estimates?



Case study approach



	Weighing	Supplier A	Supplier B	Supplier C
Experience	VV%	←	↑	↓
Understanding	WW%	↓	←	←
Approach	XX%	↑	↑	↓
Quality	YY%	↓	←	←
Management	ZZ%	↑	↓	↑
Score		65%	85%	75%

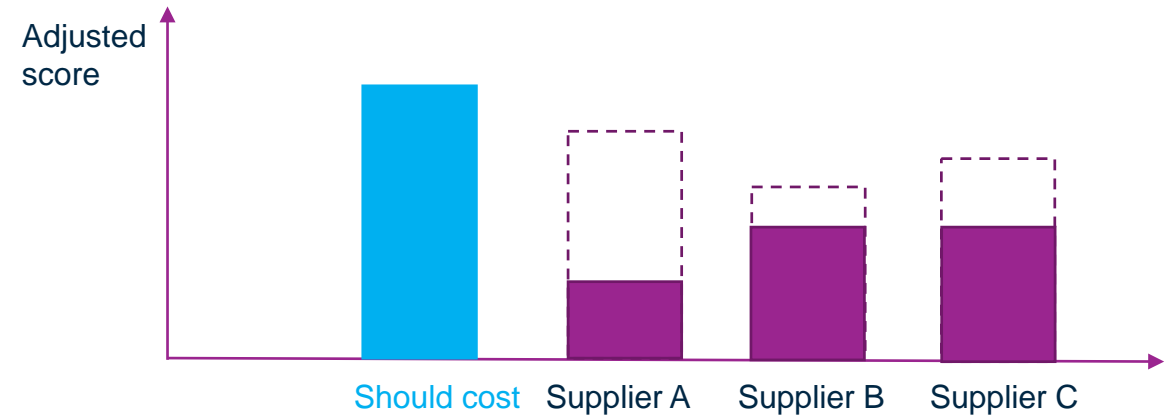
	Weighing	Supplier A	Supplier B	Supplier C
Data	AA%	←	←	↑
Tools	BB%	↓	↑	←
People	CC%	←	↑	←
Process	DD%	↓	↑	↑
Score		20%	90%	50%

Case study approach

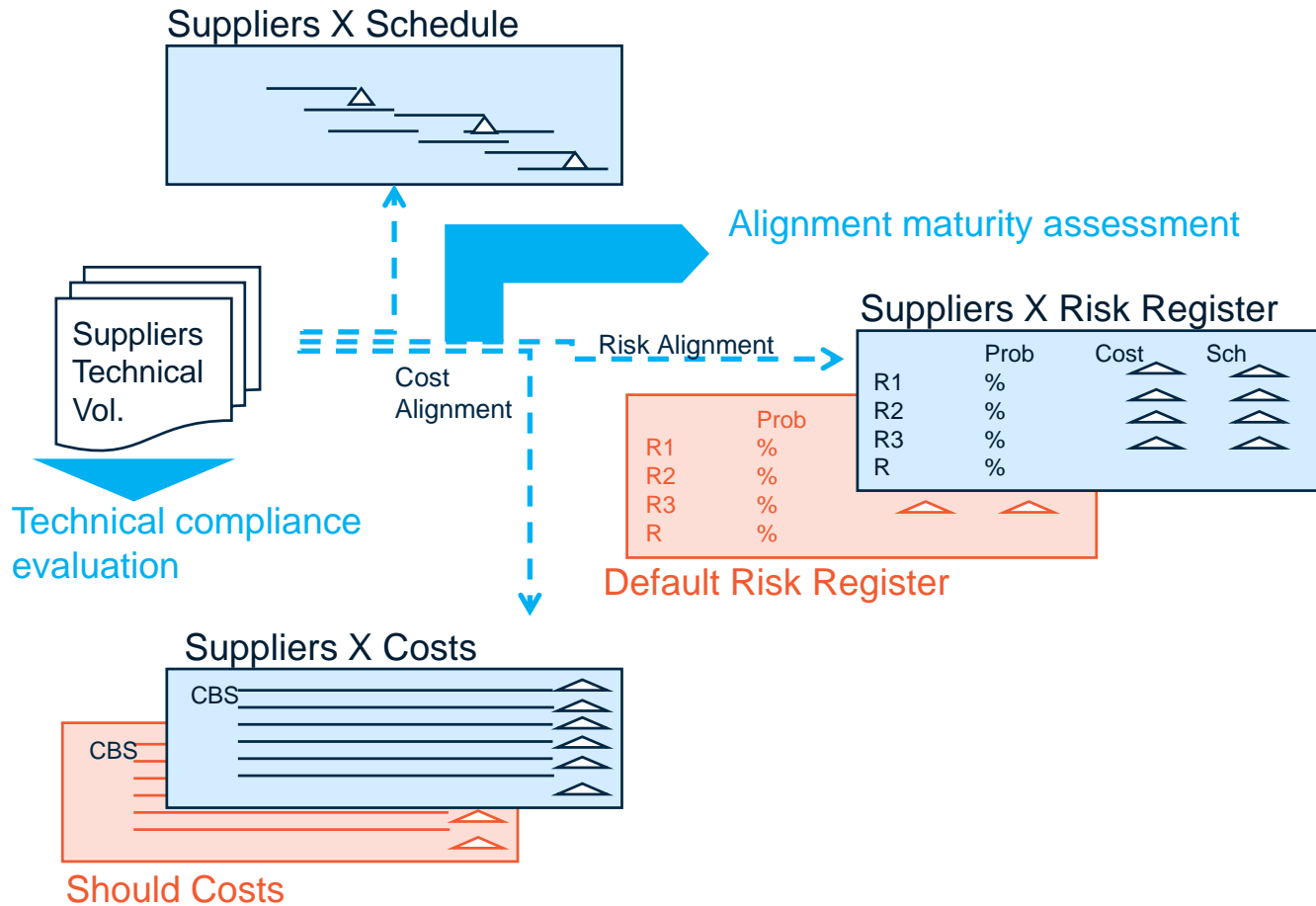


	Weighing	Supplier A	Supplier B	Supplier C
Experience	VV%	←	↑	↓
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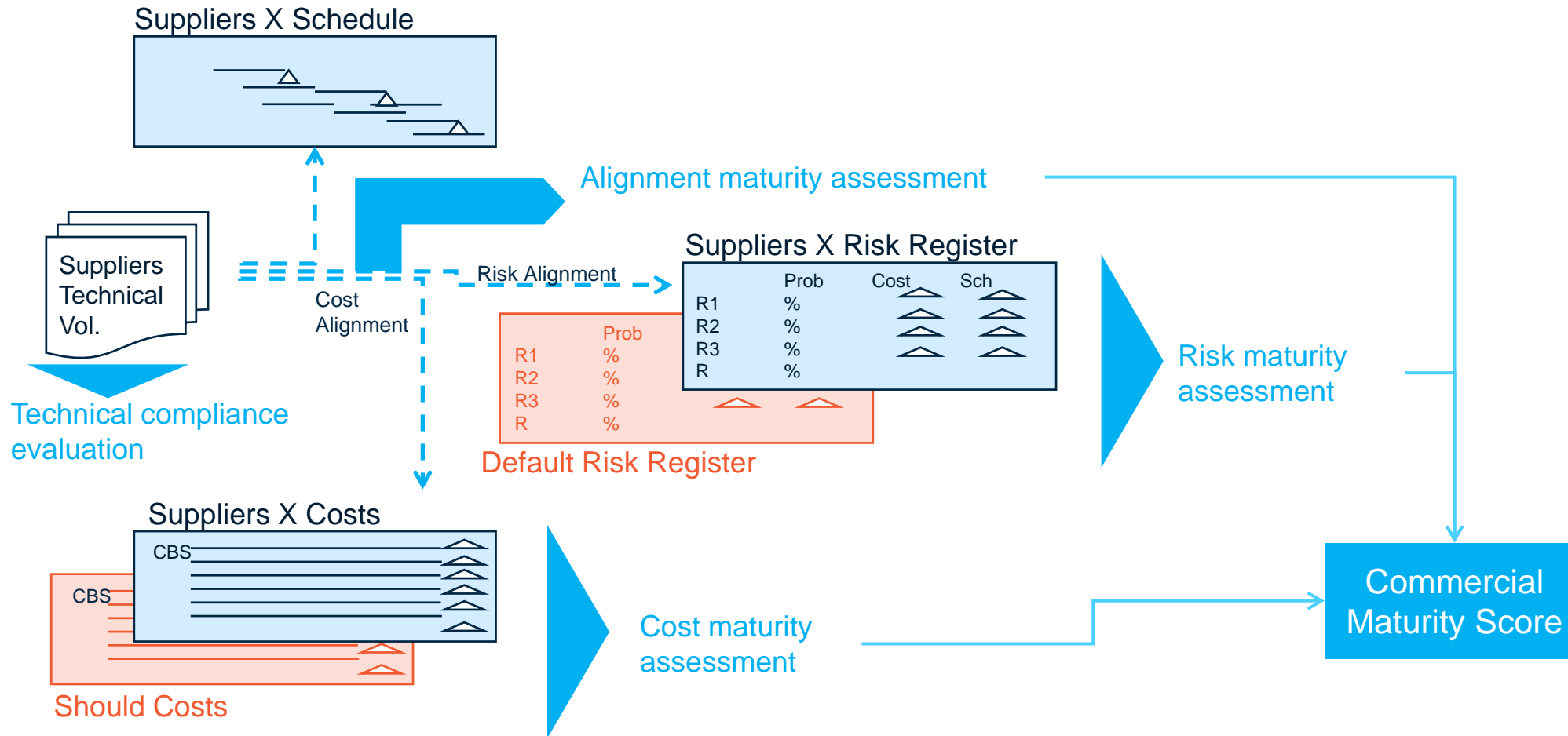
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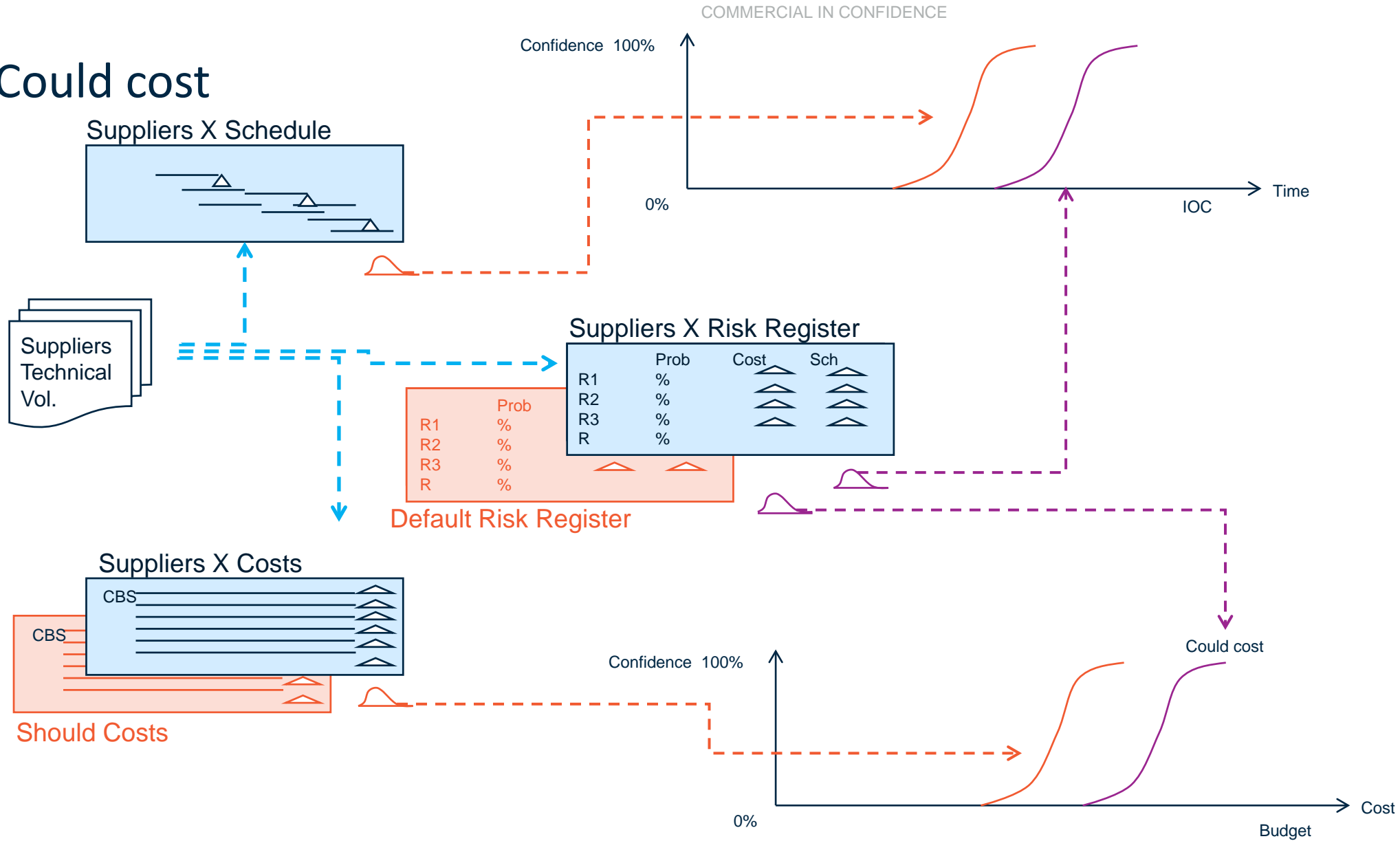
Tender evaluation



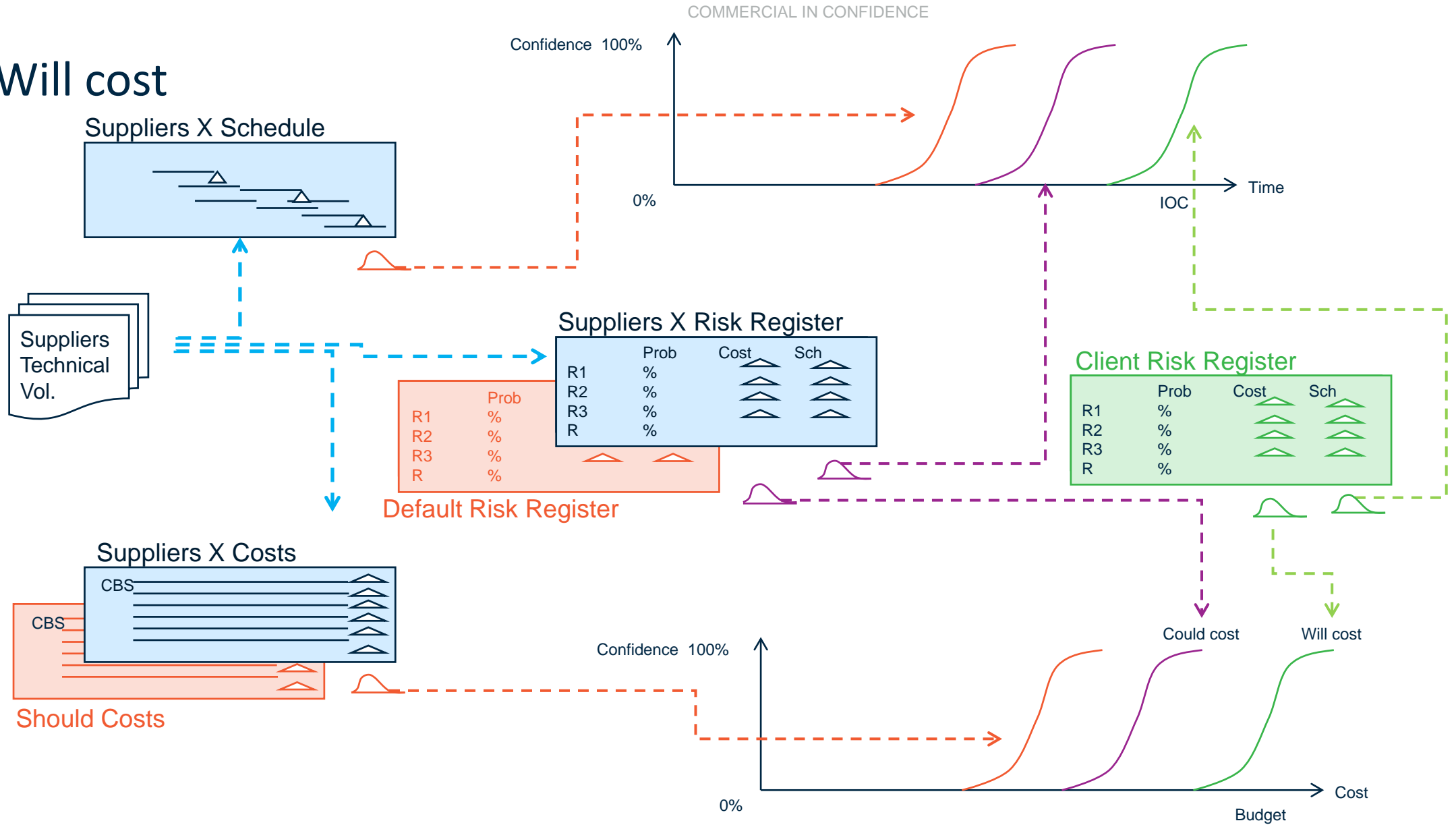
Tender evaluation



Could cost



Will cost



Summary

- Project Controls is dependent upon the establishment of a **justified and defensible, risk adjusted, resourced schedule baseline**.
 - For **in-house resources** the quality is dependent upon your own maturity regarding cost estimating, risk management and scheduling;
 - For **complex procurements** you are dependent upon a tender assessment.
- This case study introduces a methodology for **assessing the Commercial volume** of the tender that is as rigorous as the Technical volume.
- QinetiQ has been supporting a client with two approaches which have provided **electronic tender evaluation** and **benchmarked “Should cost”**. We have defined scoring criteria, RFP text and assessment logistics.
- These two capabilities provide confidence that your supply chain decisions will be **transparent and benchmarked** against average industry, realistic cost and schedule targets.



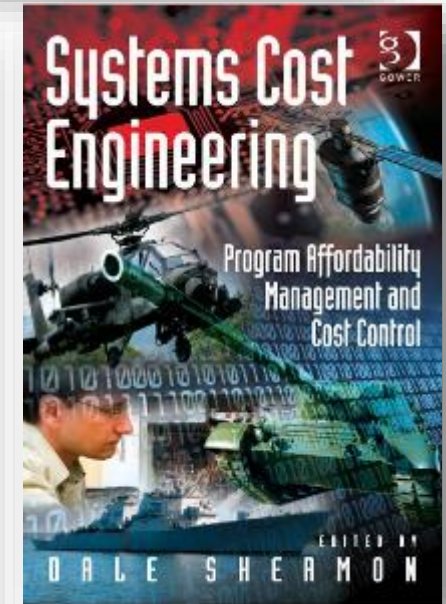
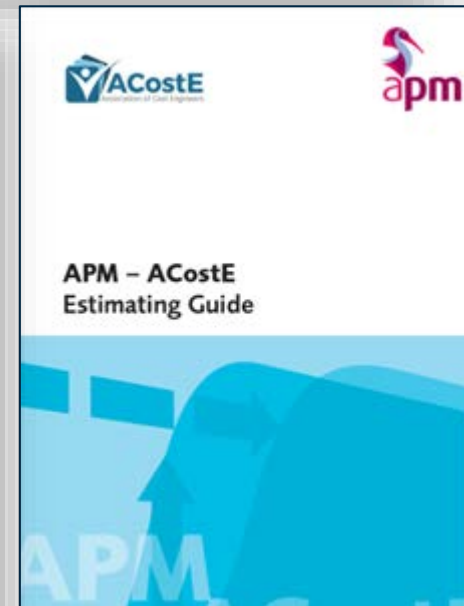
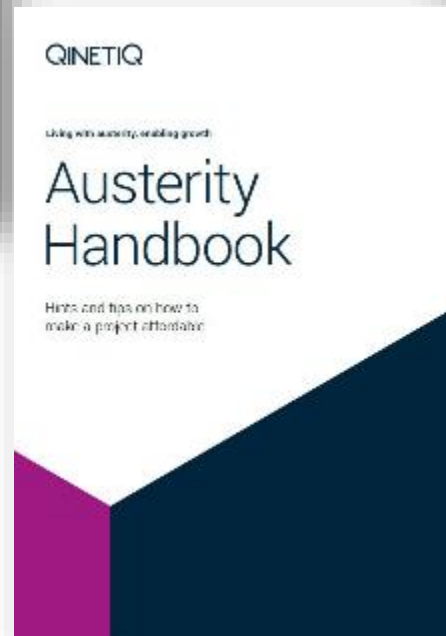
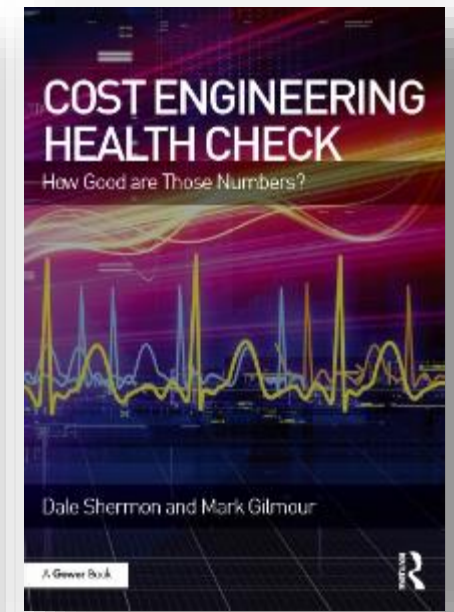
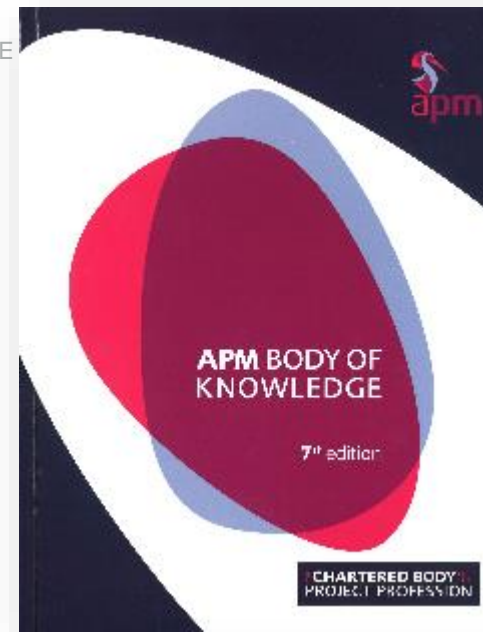
Any questions?

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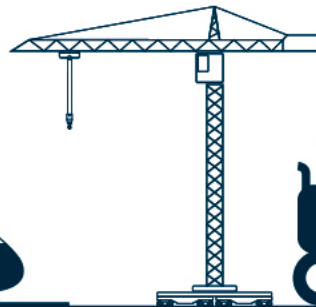


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TREES SAVED**



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ANSWERED
QUESTIONS**



**206k
INDIVIDUAL
USERS**



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40%**



**96%
CUSTOMER
RETENTION**

5

5 fundamental mobile phone technologies including Touch Screen and Liquid Crystal Displays (LCD) developed by QinetiQ experts

40

40 organisations, including the Royal Navy involved in 6 weeks of operations during the Unmanned Warrior Exercise

50+

including 50+ unmanned vehicles operating in the air, land and sea

12

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12 Empire Test Pilot School students have become astronauts including Major Tim Peake



3secs



Every 3 seconds a Boeing aircraft takes off or lands that has been tested in QinetiQ's low speed Wind Tunnel

85+

locations worldwide

1,300+

patents (including 300+ pending)

We are QinetiQ

£833m

FY2018 revenue

6,000+

people with unique science and engineering expertise

1,850km

1,850km of the TANAP pipeline will be protected by OptaSense®

16

Our Ocean Basin in Gosport, UK contains enough water to fill 16 Olympic swimming pools

QINETIQ