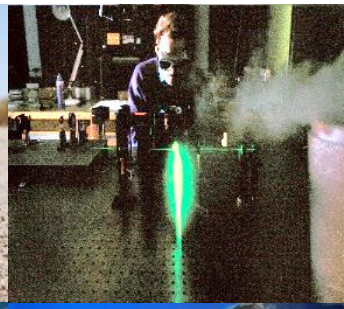
Project Controls EXPO

QinetiQ

Cost Estimating : What does a mature organisation look like?

Project Controls Expo, London

16 November 2016



Dale Shermon

QinetiQ Fellow / Head of Profession – Cost

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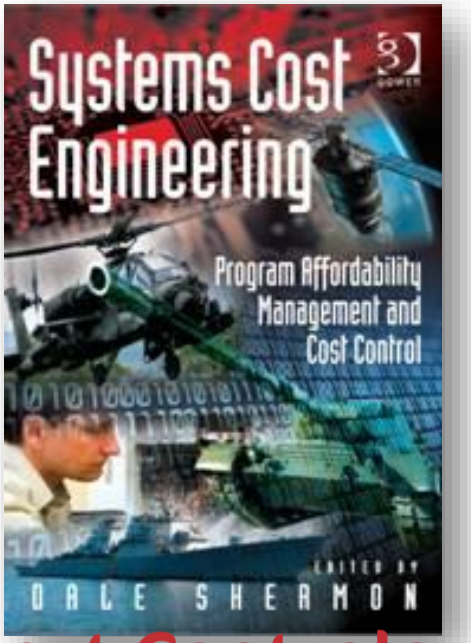
Dale Shermon

- QinetiQ Fellow and Head of Profession – Cost Engineering
- Estimating since 1984, parametric estimating since 1987
- Life member of ICEAA and ICEAA Certified Cost Estimator / Analyst with Parametrics (CCEA-P)
- Author of “Systems Cost Engineering” book
- Fellow of ACostE and member of council
- Chairman of SCAF
- Published articles
- Member of APM
- ISPA “Frank Freiman” Award
- Thought leader



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Contents

- Introductions
- Cost Engineering Health Check
- Data gathering, normalisation and application
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QinetiQ Businesses

Air and Space

Maritime, land and weapons

North America

Cyber, Information & training

OptaSense®

International

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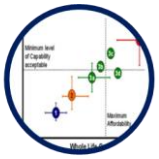
QinetiQ, International Business, Advisory Services

Requirements & Acceptance

WLC Modelling

Options Analysis


COEIA

Through Life Support

Benefits Analysis

Strategy Devt / Wargaming

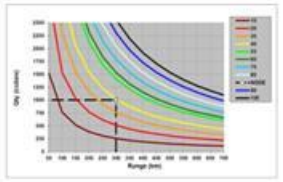
Technology Management

Legacy & Market Surveys

Risk Management

FACET
(Family of Advanced Cost Estimating Tools)

RMM
(Risk Maturity Model)


Joint Utility Model

EVC
(Economic Value Chains)

Industry Standard Toolsets

- **Over 150 highly skilled and experienced subject matter experts**
- **70%+ Professional Accreditation**
  - ACostE, SCAF, APM, Prince2, MSP, ICEAA
- **Based across 5 UK Sites**
  - Deployed internationally
- **Average experience of 10 years**
- **Over 40% PhD / MSc qualified**

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Cost Engineering Health Check

Dale Shermon | QinetiQ Fellow

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What is it?

- A standardised competency assessment framework
- Based on QinetiQ Knowledge Based Estimating Philosophy
- Provides an objective evidence based audit against both best practice and industry standard.

- Identifies strengths and weaknesses in costing capability, including 'intangible' enablers
  - Stakeholder engagement
  - Cultural integration

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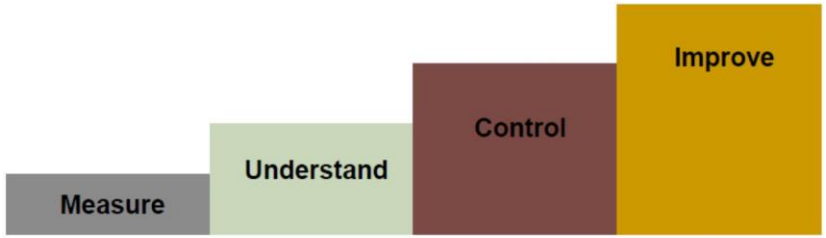
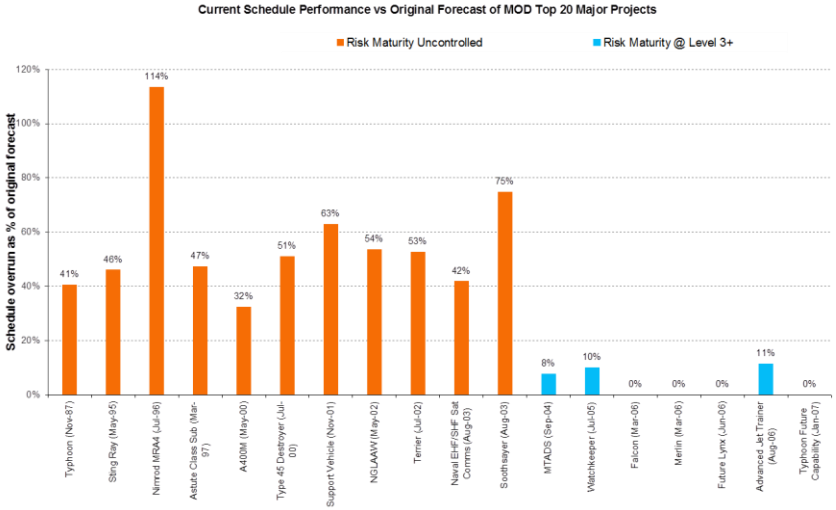
Why do it?

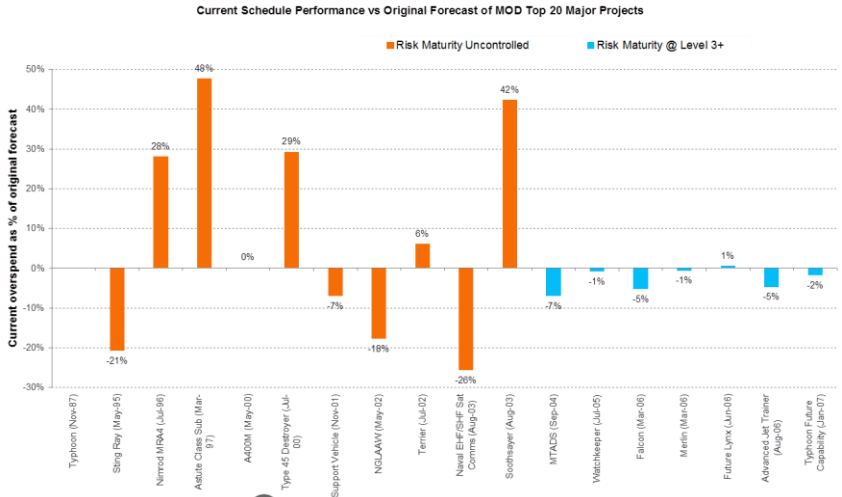
- **How good is your estimating capability?**
  - Benchmark against best practice
- **How do you compare with your peers?**
  - Benchmark against industry standards
- **How can you improve?**
  - Focus resources towards areas identified as weak



If you can't measure it, you can't understand it.
If you can't understand it, you can't control it.
If you can't control it, you can't improve it.

-James Harrington
The Improvement Process





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How is it typically done?

Enablers include …

- Cost Analysis and Management Plans
- Cost data and assumptions lists/ databases
- Cost Models
- Analysis Toolsets
- Staff certification
- Stakeholder Maps
- Cost Review Records
- CRA Reports

Review Documentary Evidence

Enablers include …

- E-voting kit
- Workshop materials
- CEHC SQEP facilitators
- Organisational Workshop attendees

Conduct CEHC Workshop

Enablers include …

- Workshop Q&A set
- Documentary evidence
- CEHC analysis SQEP
- Industry CEHC Benchmarks

Analyse and Report Results

CEHC Benchmark

(Level 1 to 5)

Enablers include …

- Cost Engineering Improvement Action Plan
- SQEP stakeholder personnel

Implement Improvement Plan

Periodic re-assessment against current benchmark

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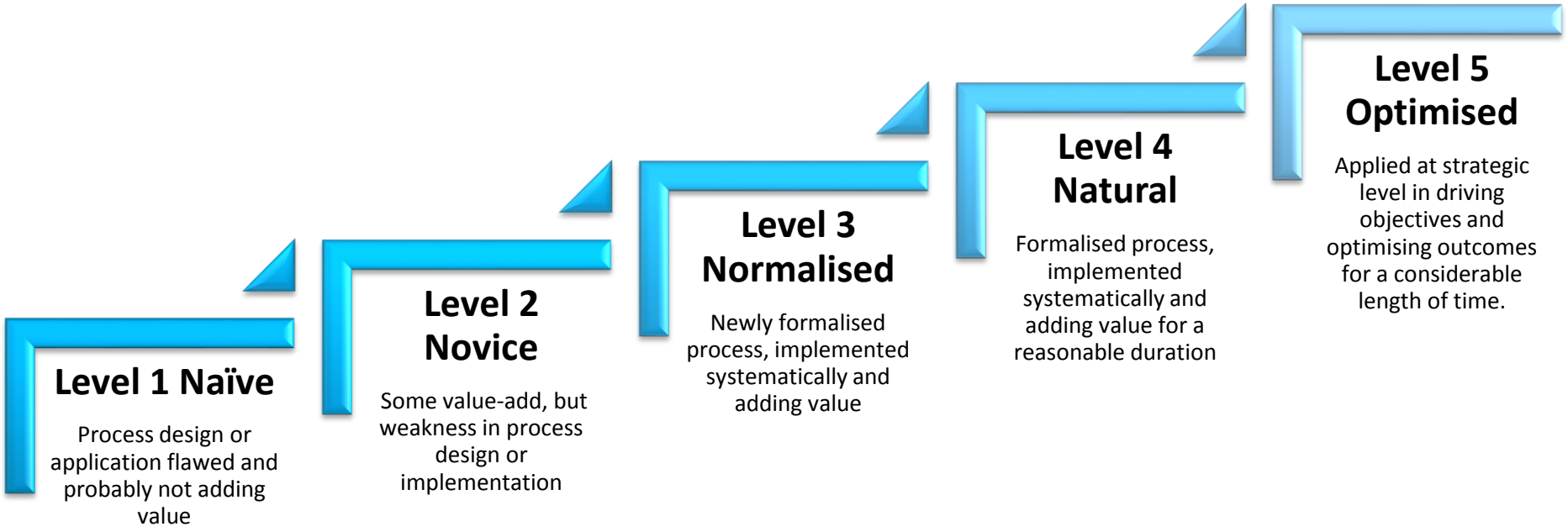
How is it measured? - Maturity Levels



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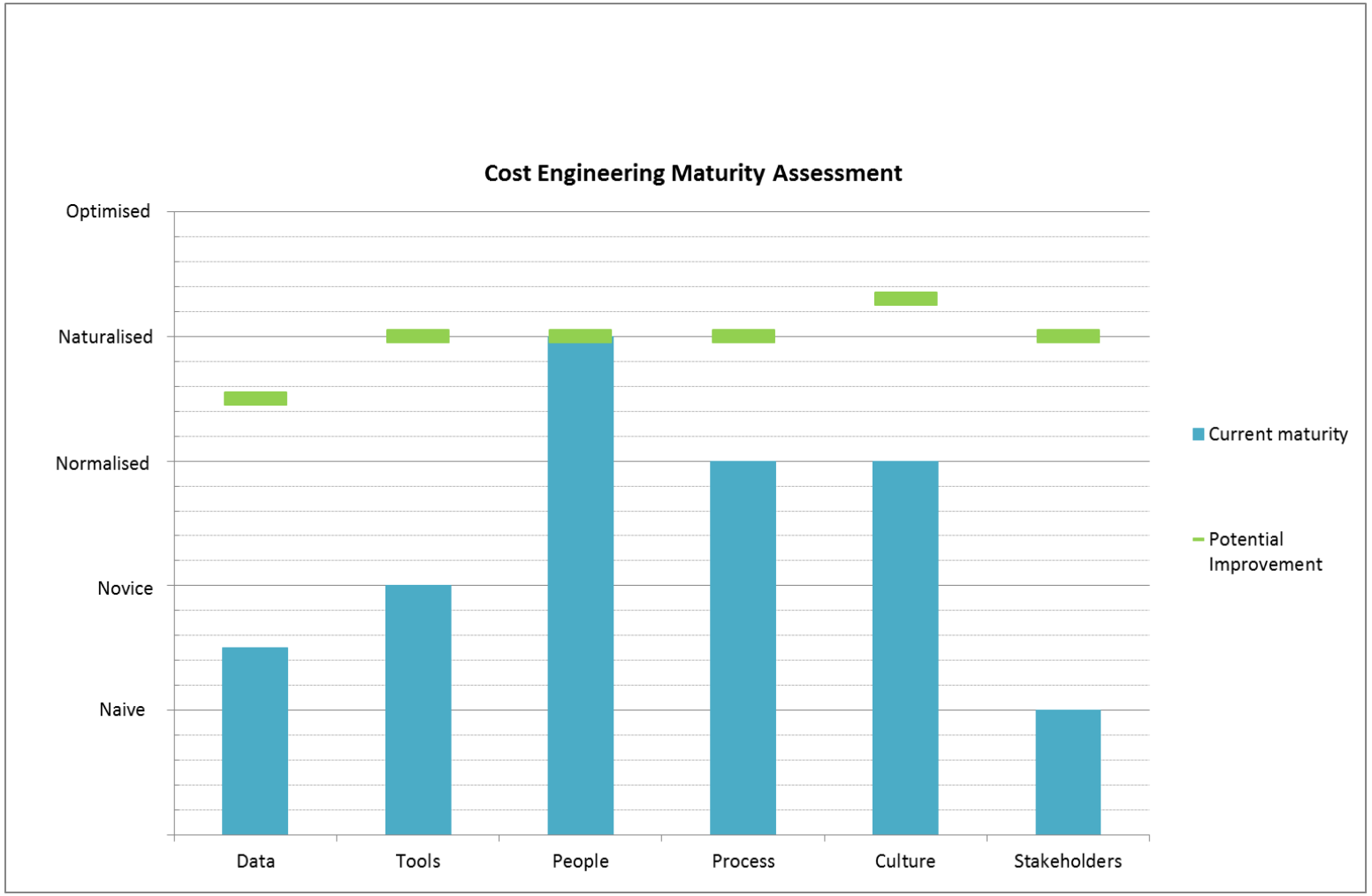
Example Output



"An organisation is only as strong as its weakest element"

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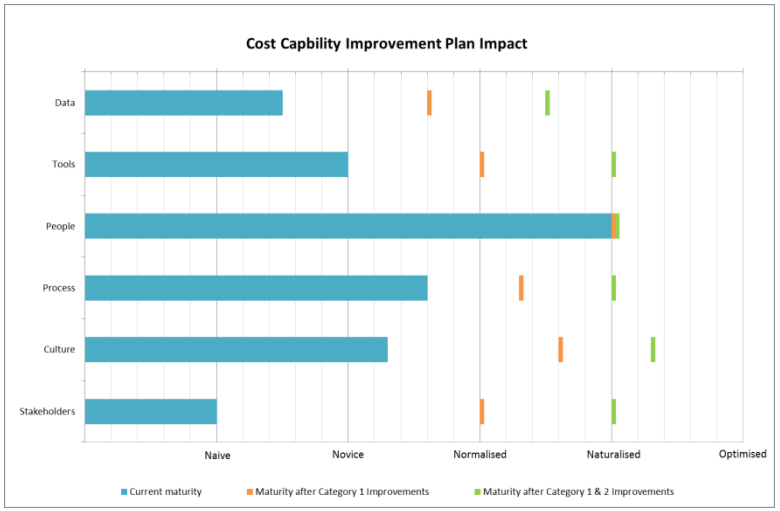
Organisational Maturity Assessment Cost Engineering Improvement Action Plan

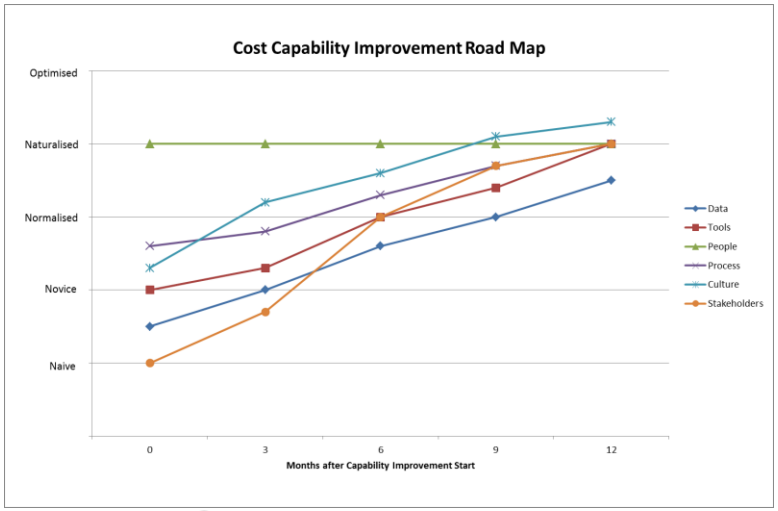
Category 1 Recommendations - these will act to support a Cost Engineering Capability that's enables the development and generation of credible estimates

ID	Recommendation	Difficulty to Implement	Impact on Capability
R1.2	Provide staff access and training to commercial parametric models	Medium	High
R1.2	The organisation should mandate a consistent approach for including of cost and schedule risk within their cost estimates	Easy	High
R4.3	The organisation should develop a data dictionary for use in archiving historic costs and technical information	Easy	High
R3.1	The organisation should recommend an authoritative source for escalation rates (or develop their own authoritative source).	Easy	High
R1.4	The organisation should create an independent cost model verification and validation cell for the review of all costs being provided to management	Medium	High

Category 2 Recommendations – these will act to support a Cost Engineering Capability that enables the development and generation of credible estimates, has the confidence of management and wider stakeholders and is posed to avail of best in class engineering approaches and new evolving principles.

ID	Recommendation	Difficulty to Implement	Impact on Capability
R3.2	Expose key customer to cost approach and methodologies	Medium	Medium
R1.6	Encourage staff to participate in professional costing organisations conferences and international conferences	Medium	Medium
R2.3	Ensure interfaces between the organisational cost analysis process and other analysis process are clear and sufficient for the transfer of information	Easy	High
R1.1	Stakeholders should be engaged to understand to fully understand the types of decisions that they are using cost information to inform, and costing outputs should be aligned to these.	Easy	High





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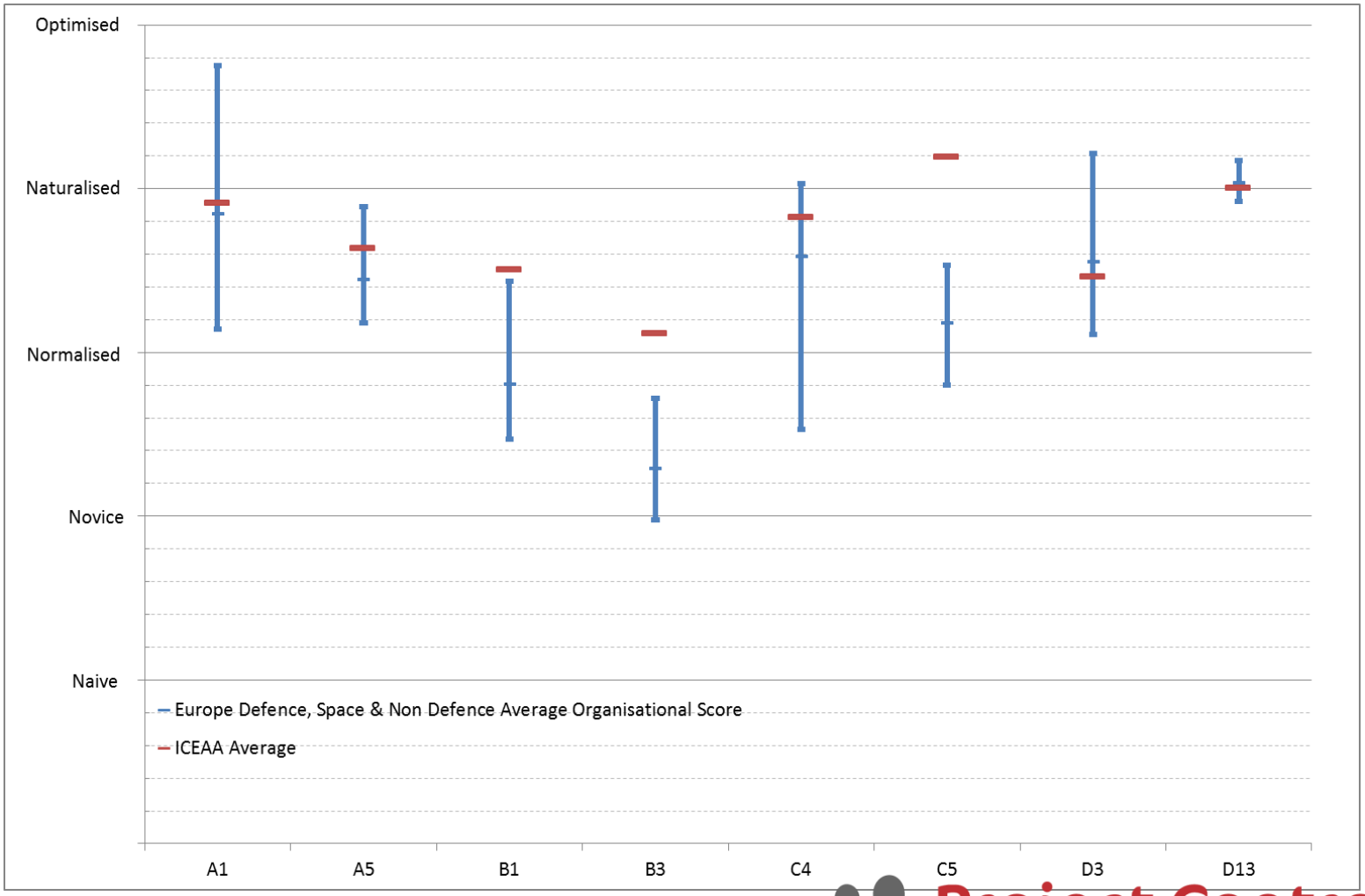
Summary – USA compared to UK

Average Organisational Maturity Assessments



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Data gathering, normalisation and application

Dale Shermon | QinetiQ Fellow

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Data rich

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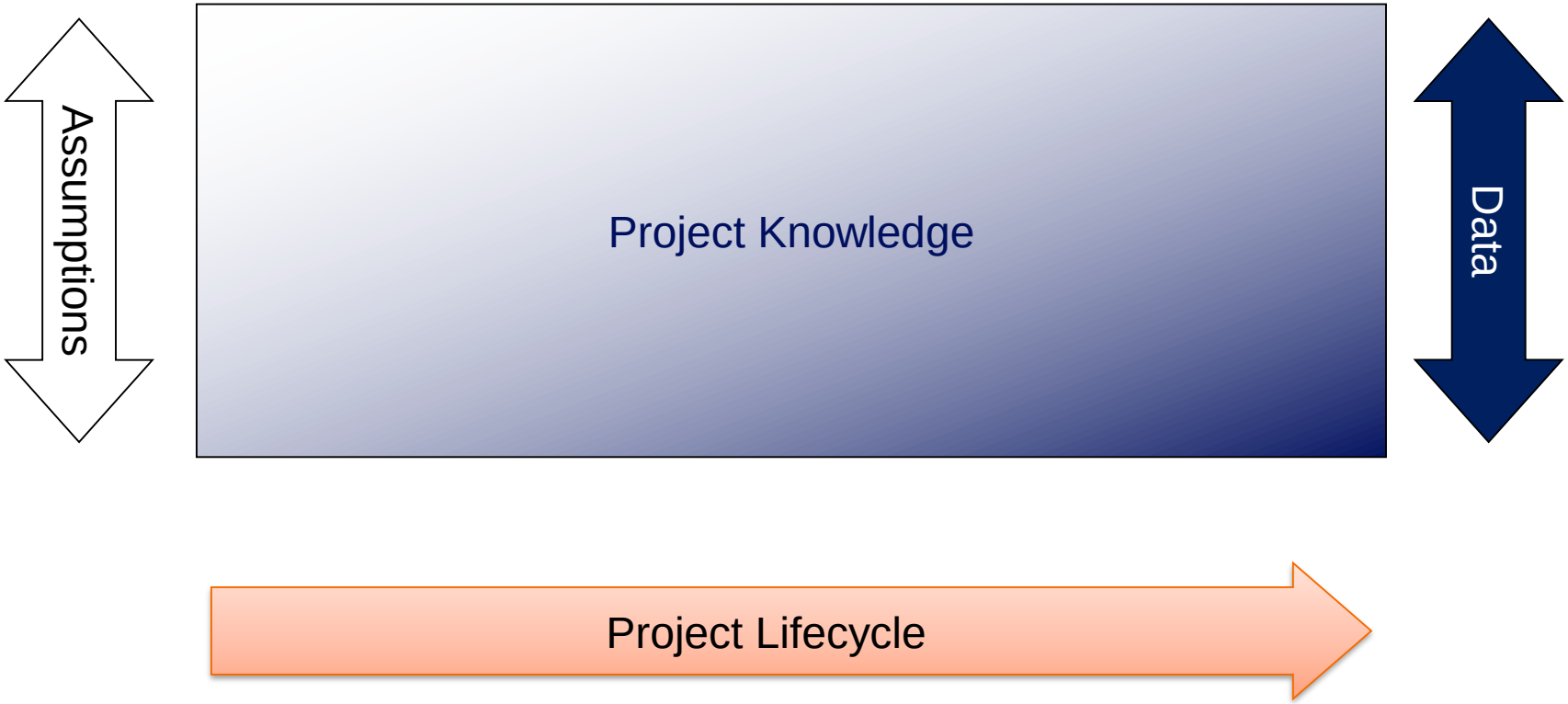
Data poor!



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Data normalisation

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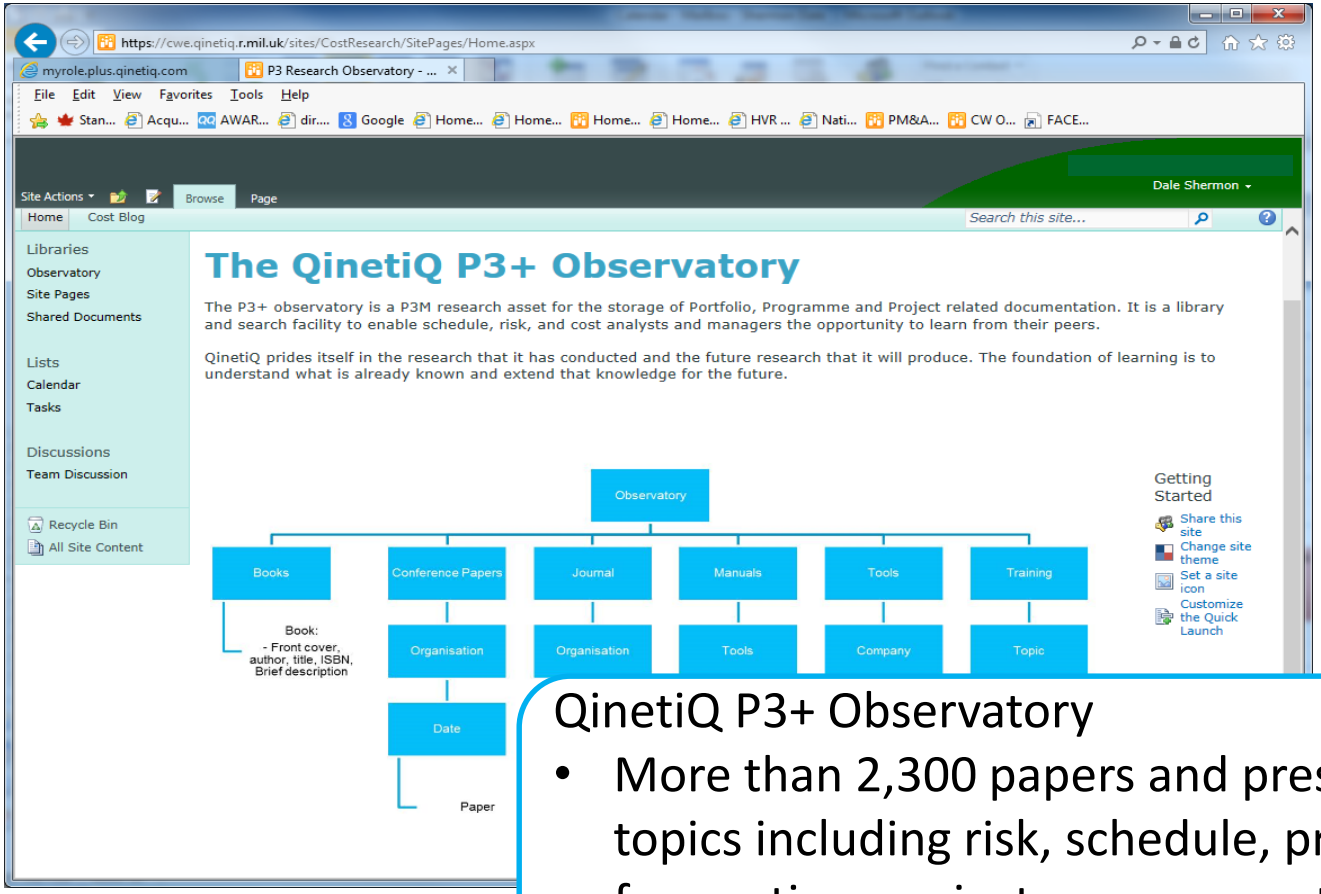
QinetiQ P3+ Observatory



QinetiQ P3+ Observatory

- More than 2,300 papers and presentations on P3M topics including risk, schedule, project control, cost forecasting, project management, benefits and so forth.
- Full literature search capability
- Knowledge Manager ensuring quality of content
- Structured searching or key word searching
- Web access

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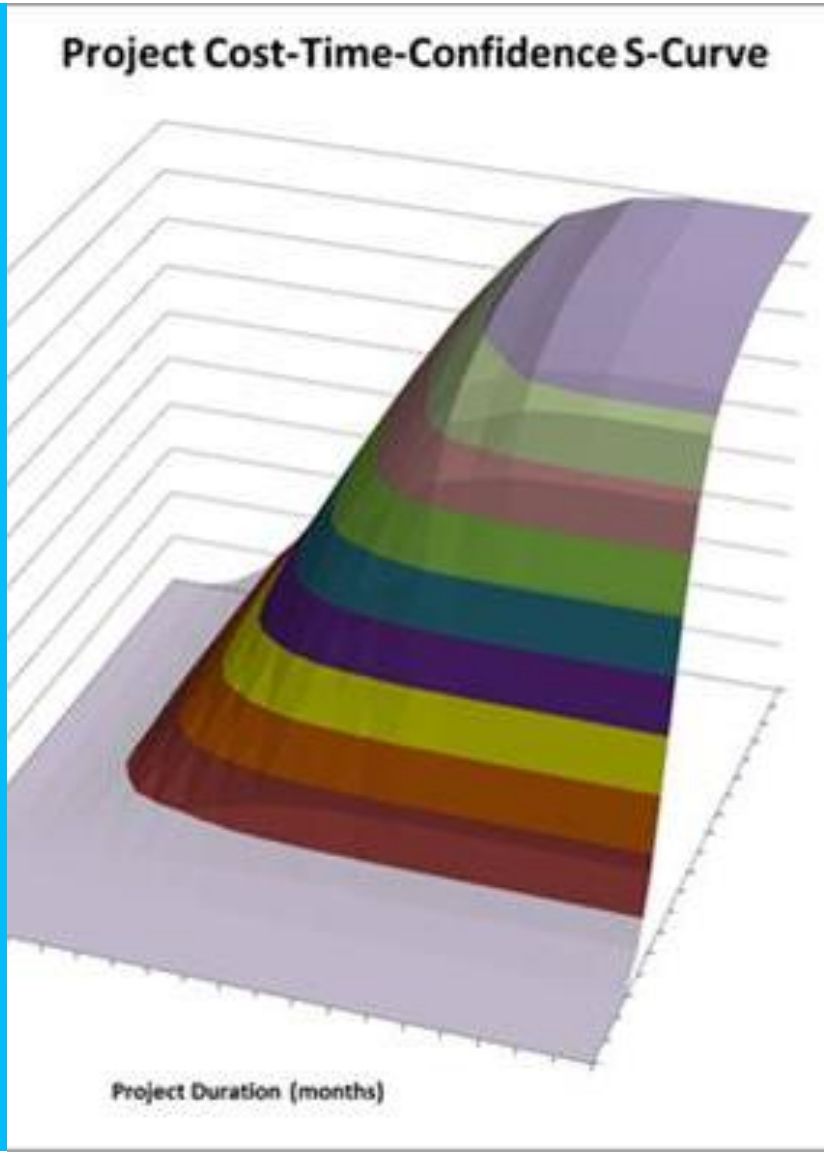
Tool development and usage

Dale Shermon | QinetiQ Fellow



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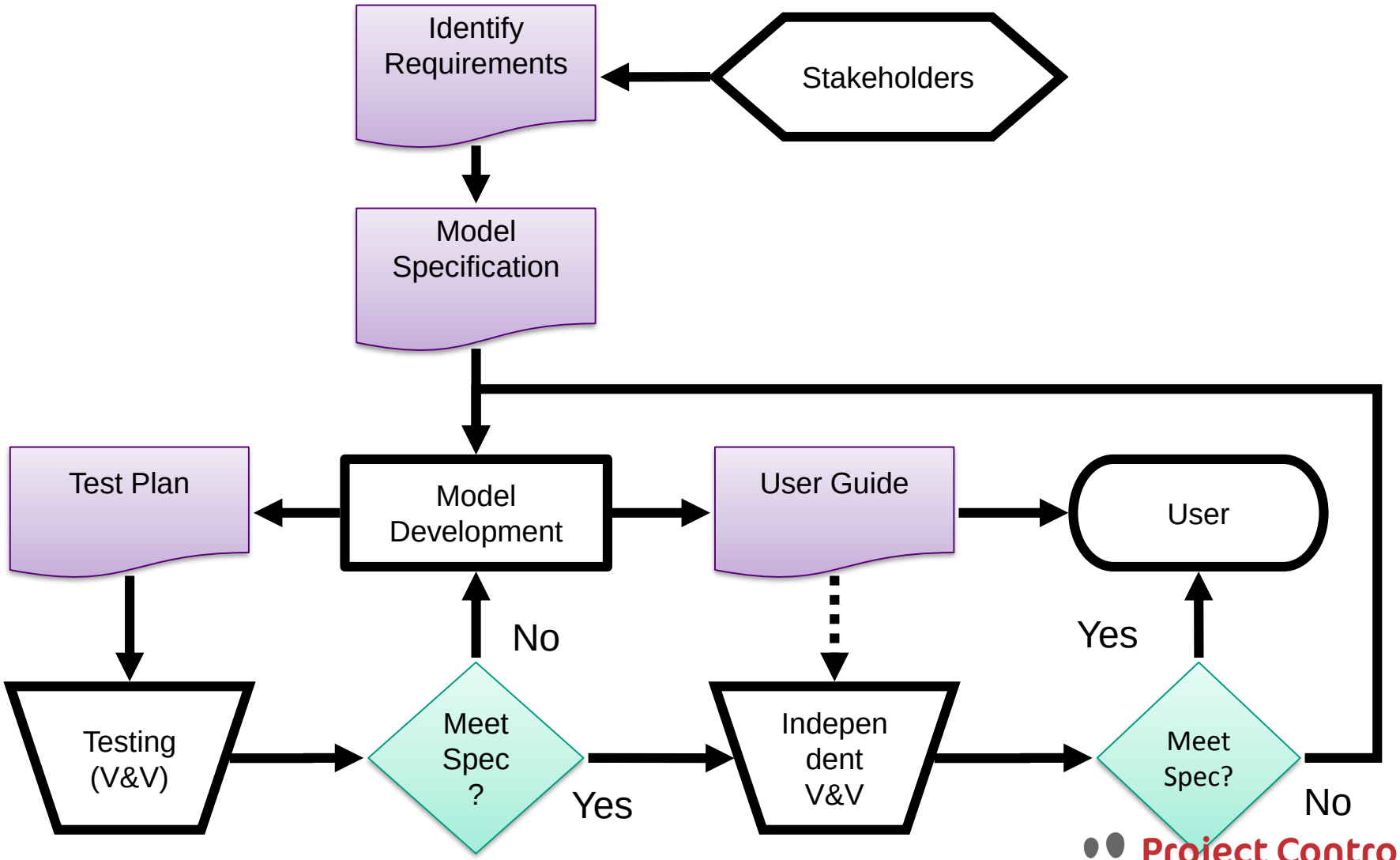
Not sexy, but essential



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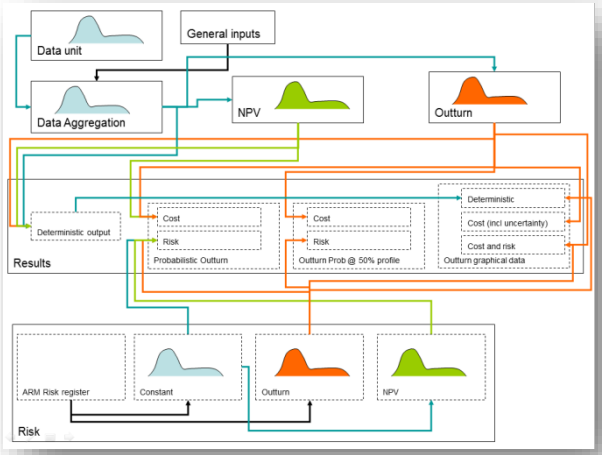
Cost Modelling

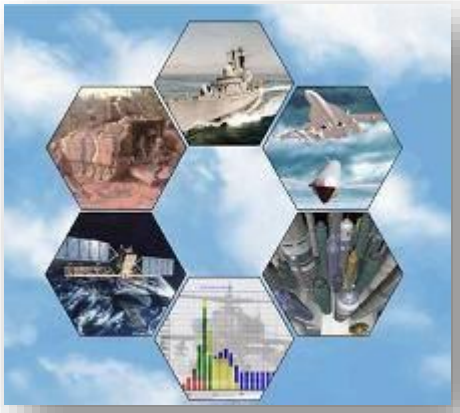
- Generic cost model



- **Generic Cost Model –** The generic cost model uses individual components to build options. It then calculates deterministic cost estimates for Whole Life Cost (WLC) covering all phases of the project lifecycle and the capability costs. This tool also aids the identification of cost drivers, performs cost trade-offs and captures procurement costs. With the addition of quantified risk register data the model is able to produce costs in Constant cost, Discounted cost and Then year cost.

- FACET

- **Family of Advanced Cost Estimating Tools (FACET)** – a primarily Defence-based parametric cost model. It rapidly enables economic decision makers to estimate the through life costs of procuring equipment, ensuring correct decisions are made very early on in the project life cycle. FACET is uniquely positioned to provide these estimates through its ability to use performance characteristics to calculate future costs.



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People's skills, professionalism and knowledge

Dale Shermon | QinetiQ Fellow

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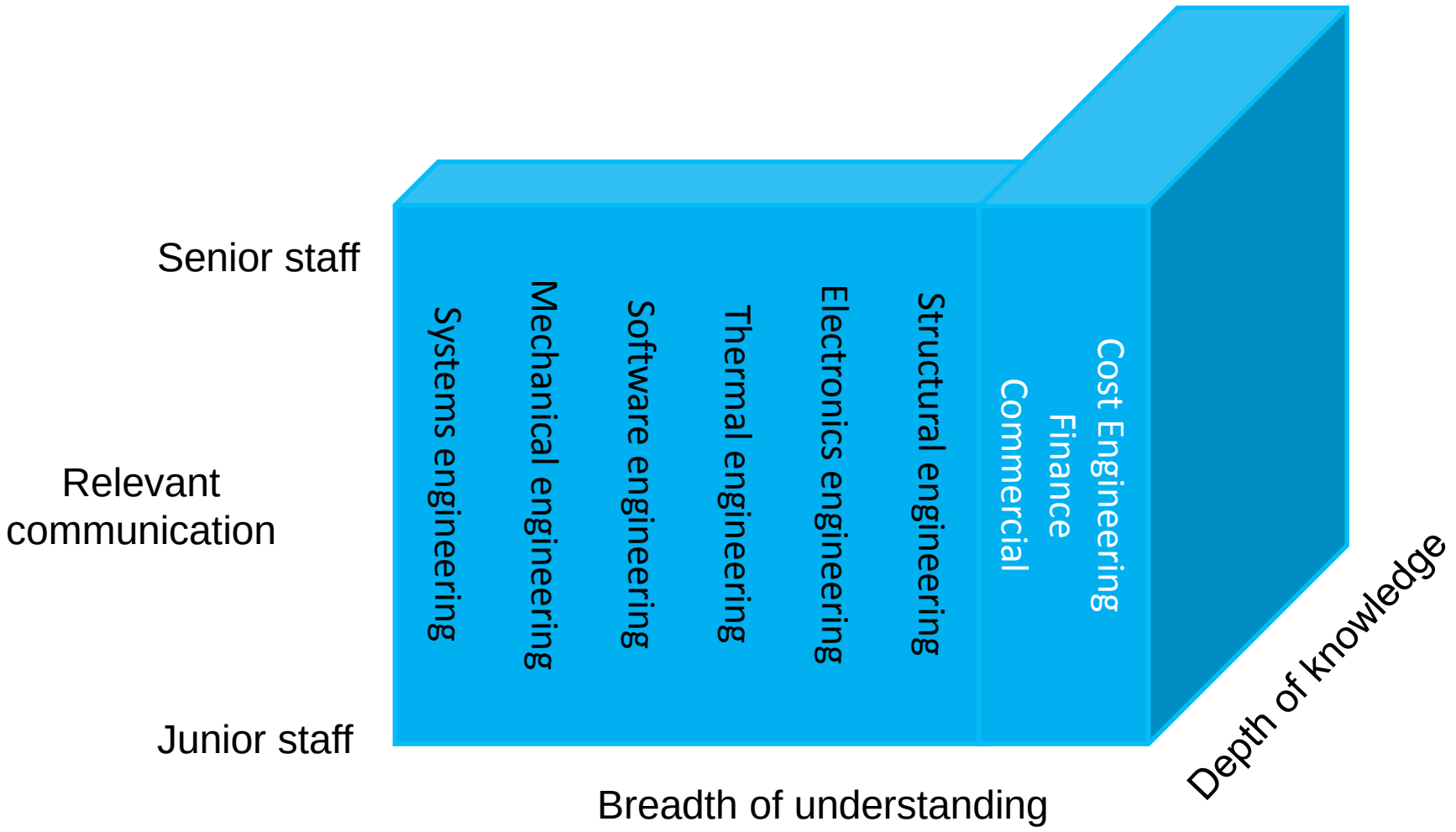
Knowledgeable



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Jack of all trades – Master of none!

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Cost Engineering - *Science and art!*

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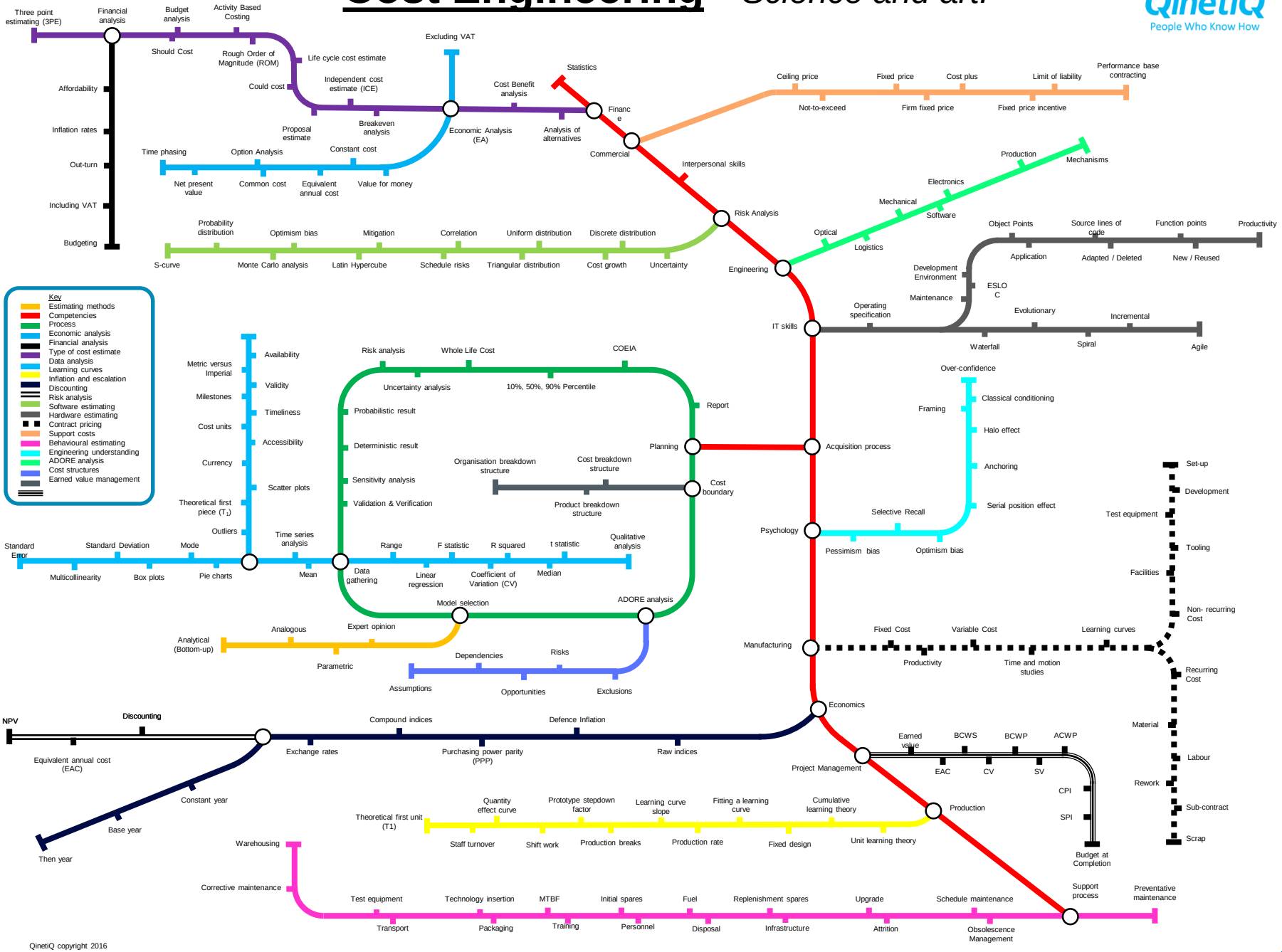
People Who Know How



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Process existence and utilisation

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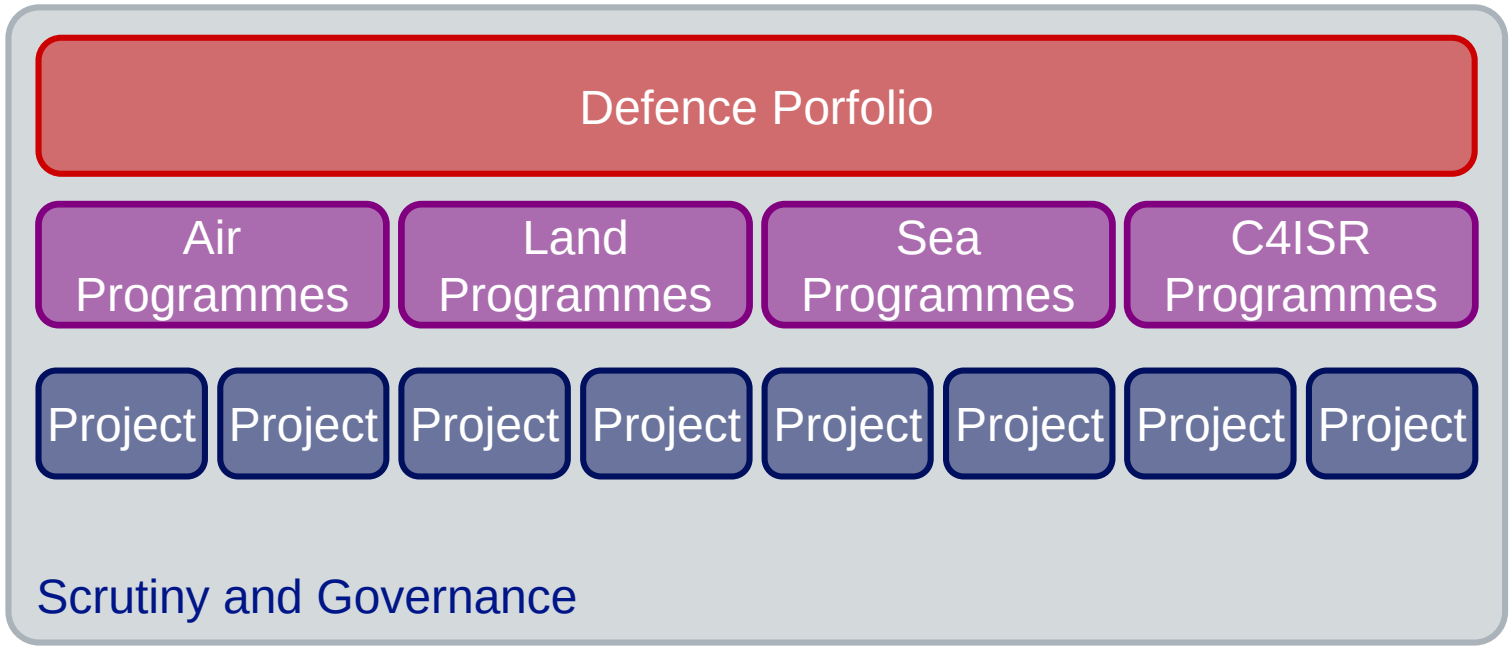
Analysis process



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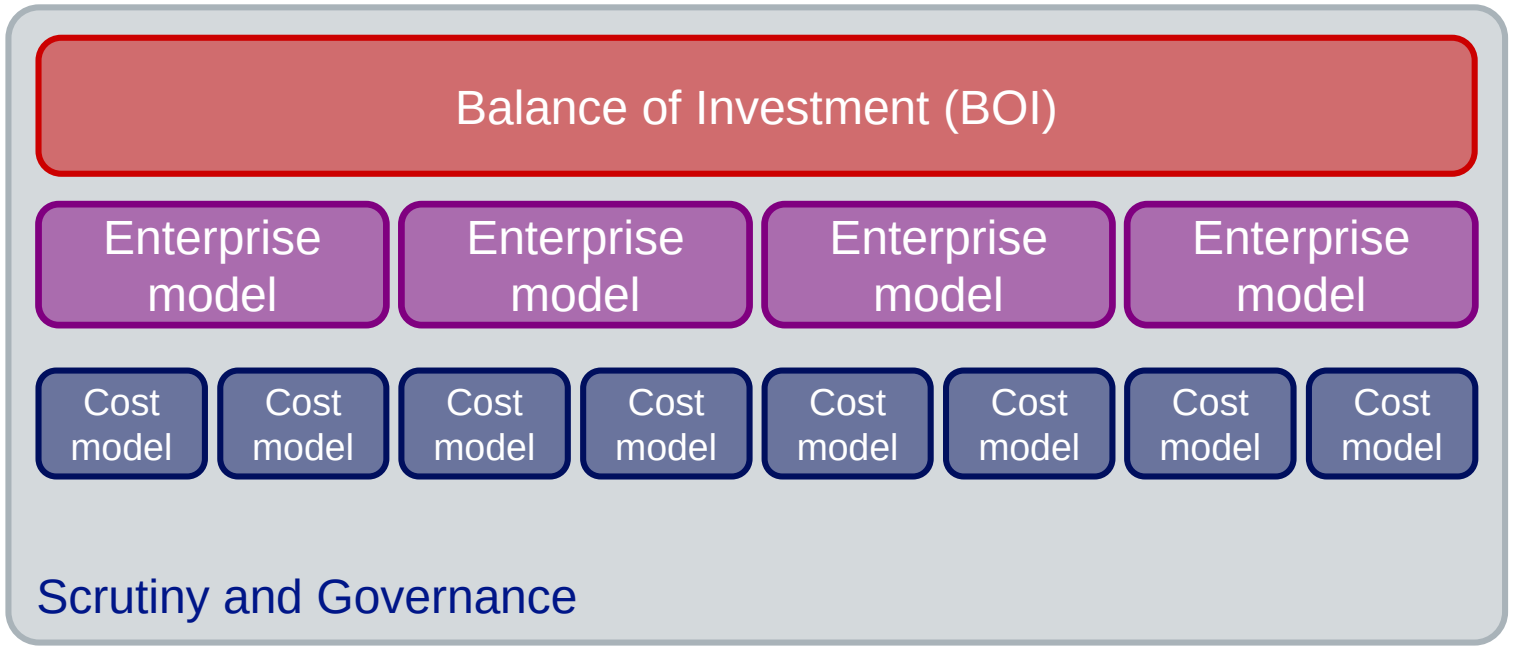
Analysis process



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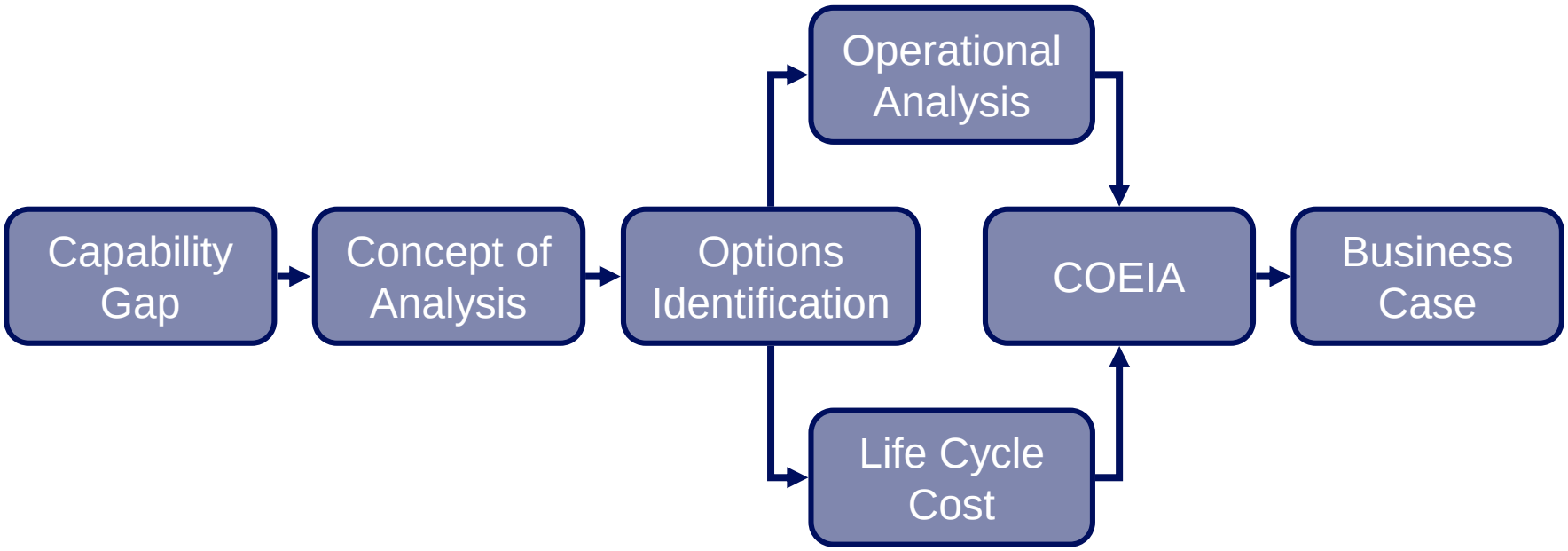
Decision making process



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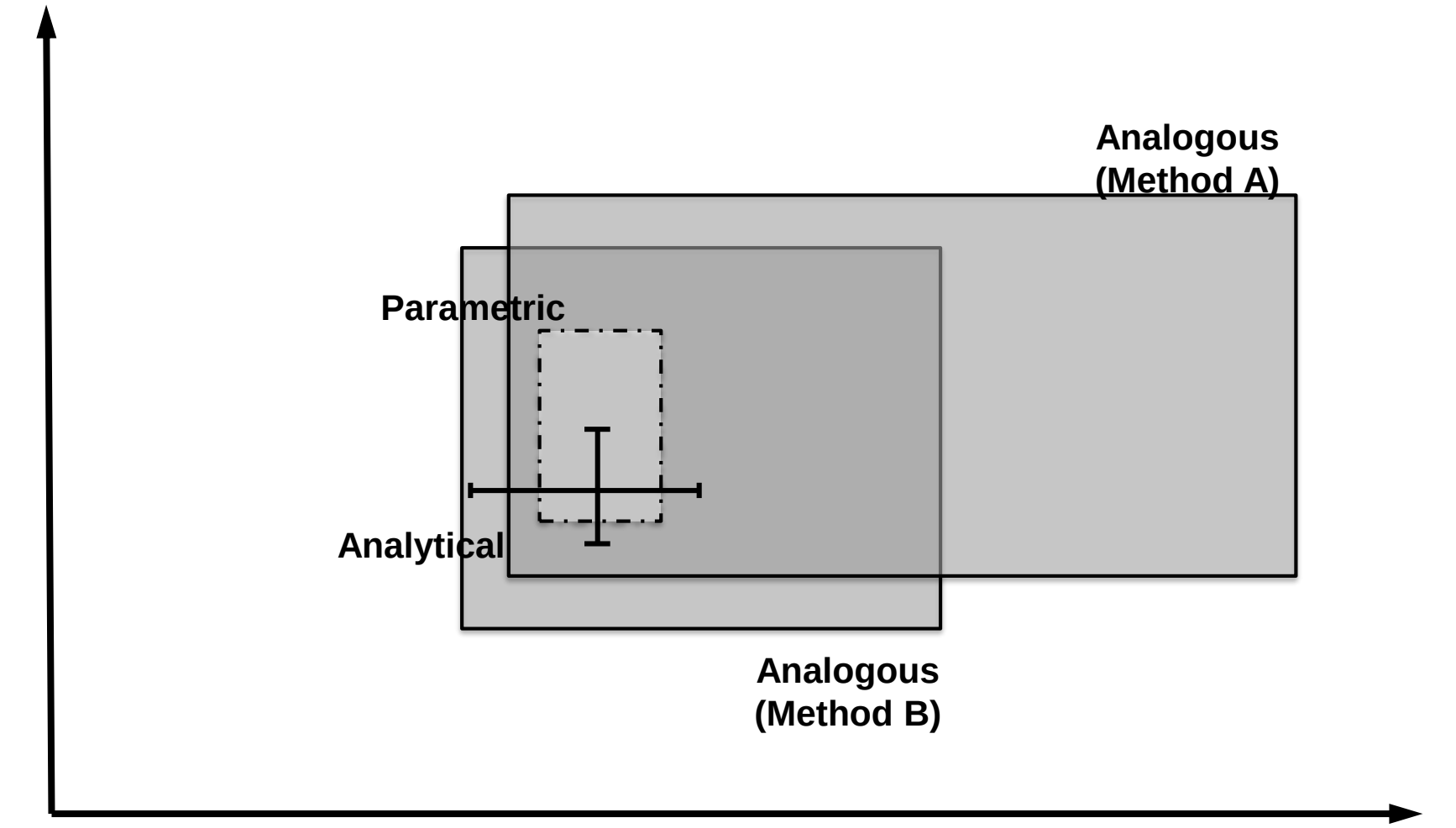
An analysis - not an opinion!



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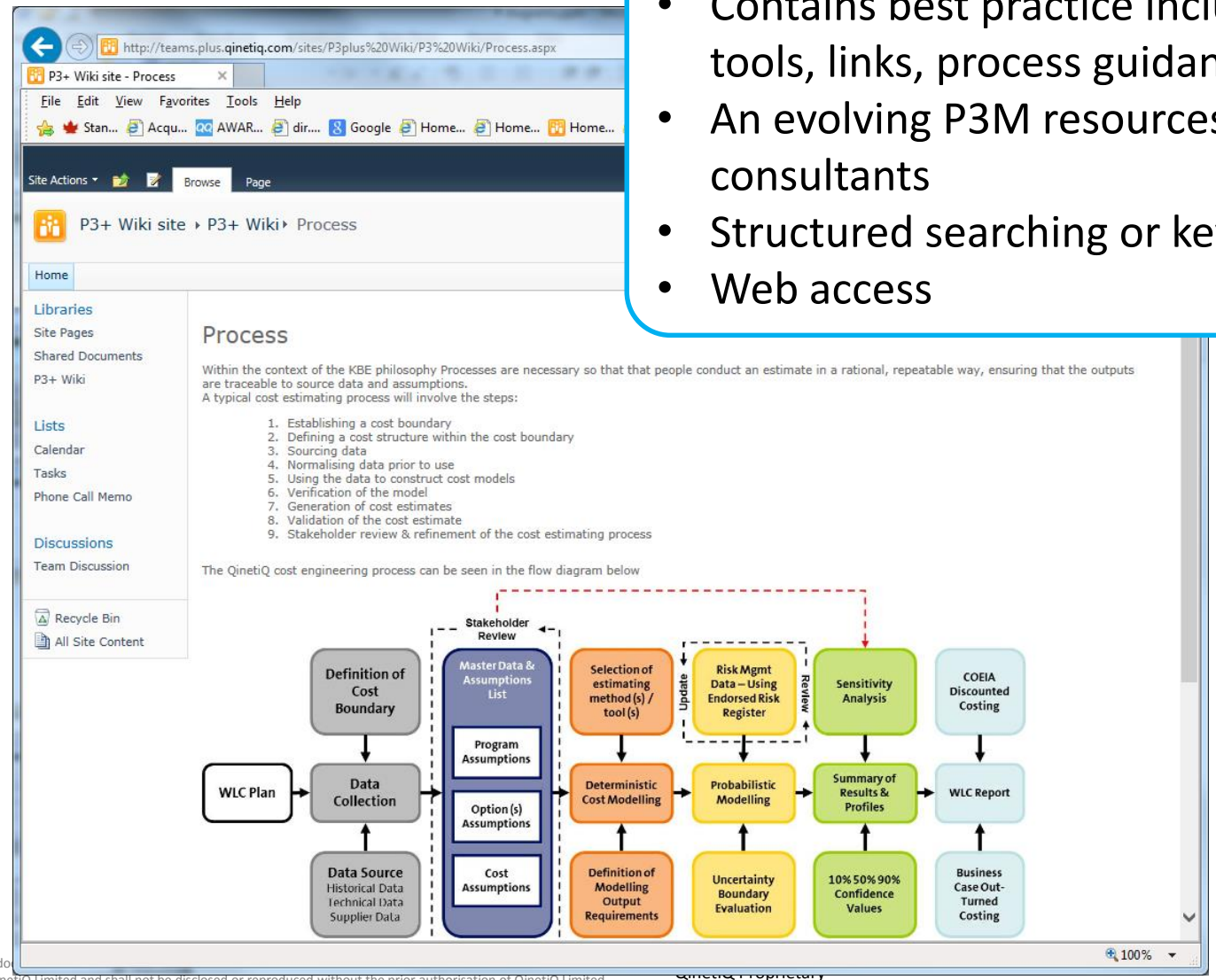
QinetiQ P3+ Wiki

QinetiQ P3+ Wiki

- Contains best practice including templates, tools, links, process guidance and so forth.
- An evolving P3M resources for QinetiQ consultants
- Structured searching or key word searching
- Web access



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Culture, leadership and management

Dale Shermon | QinetiQ Fellow

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Fully integrated

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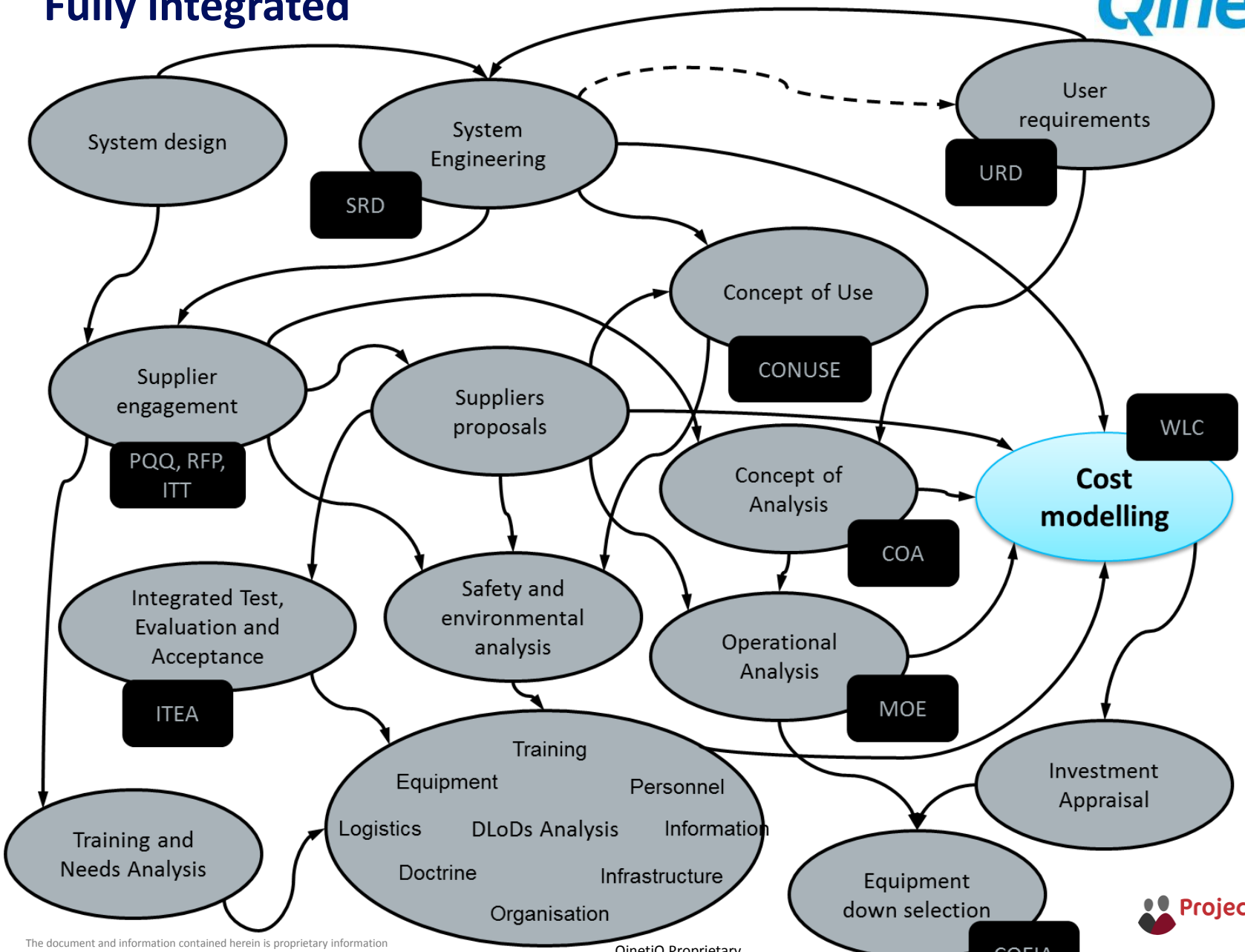

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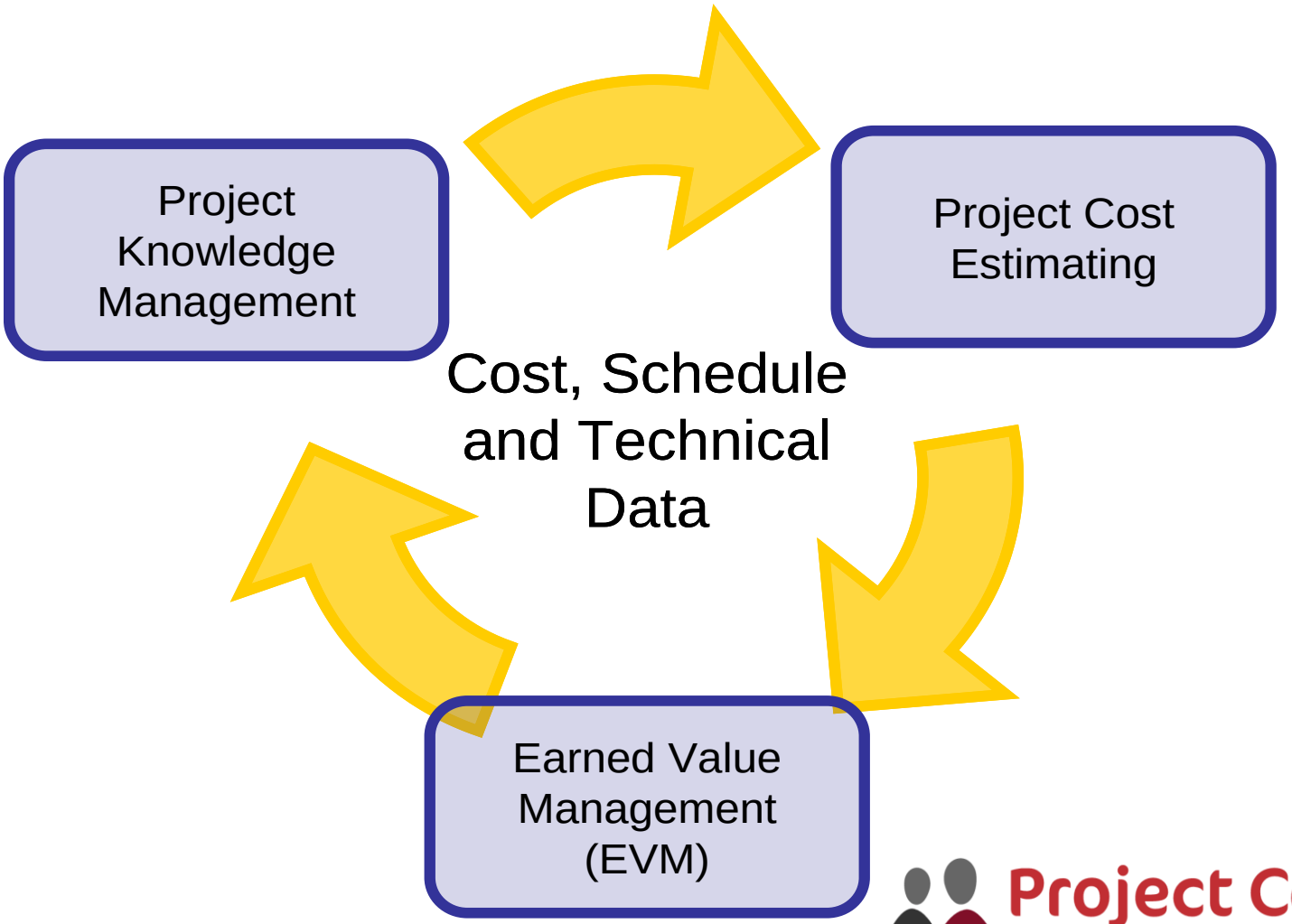
Managing learning and calibrating



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Summary

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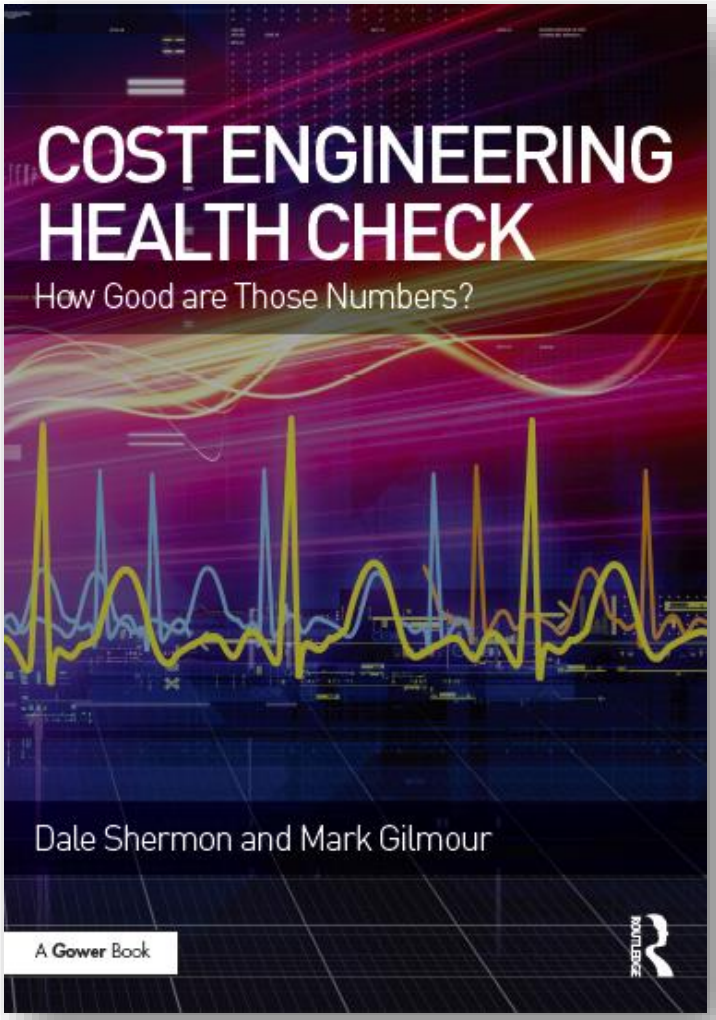
How mature is your cost organisation?

- **How good is your estimating capability?**
  - Benchmark against best practice
- **How do you compare with your peers?**
  - Benchmark against industry standards
- **How can you improve?**
  - Focus resources towards areas identified as weak
- **Many thanks for your time**
  - Any questions?



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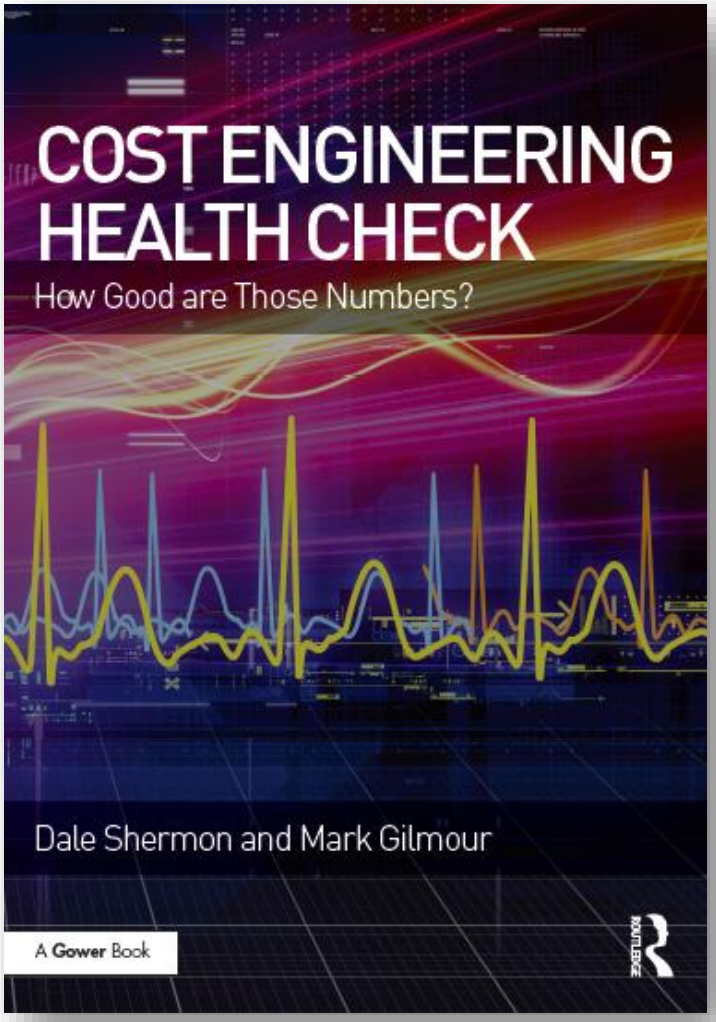

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