



Project Controls
E X P O

Project Controls Expo – 18th Nov 2014

Emirates Stadium, London

Benchmarking Project Health: Enhancing Confidence, Assuring Delivery

An exploration of the practical application of Risk and Cost audit models to benchmark project (and business) health and improve forecast cost and schedule out-turn

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Steve is a highly experienced director who has built a strong reputation for implementing complex programmes that involve significant change. He has considerable defence acquisition experience, having managed programmes across a range of industries. He specialises in development of output-based models and economic modelling solutions focused on continuous performance improvement.



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Head of Profession (Risk & Programme Assurance): Strategic Advisory Services

Mark's risk and project management experience spans Maritime, Air, Land and Weapons. His career has taken him across Europe and as far afield as Canada, India and Australia. Mark leads a team of risk, project and programme management specialists and is QinetiQ's lead practitioner in Risk Maturity Assessment.



1. Introduce the principles of risk and cost maturity assessment

- Why a mature approach is important to cost (and schedule) control

2. Explore and explain the QinetiQ Maturity Models

- Context and history: development of the models
- Construct and scope
- Why these particular models offers advantage to projects and businesses
- How they are applied in practice to benchmark projects and organisations



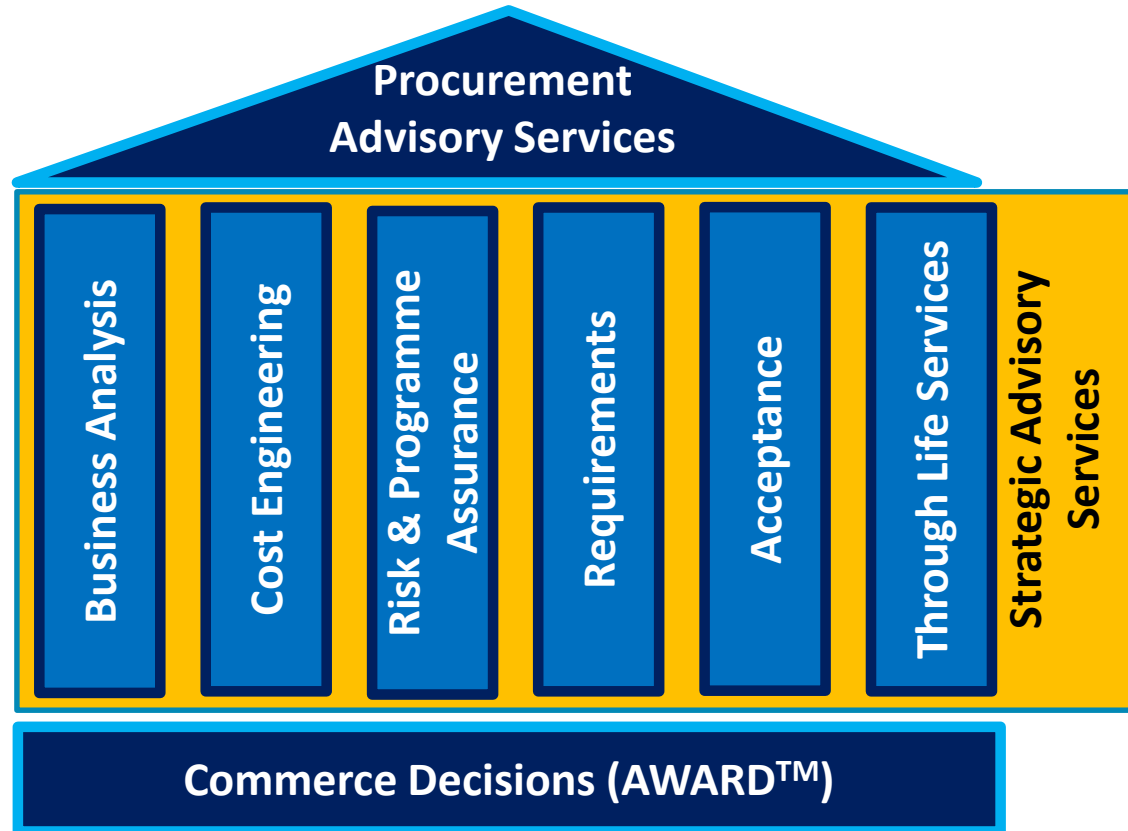
3. Demonstrate the value of QinetiQ's Maturity Models in application

- Summary case examples from Defence and Oil & Gas



- Formed in **2001** from Defence Evaluation and Research Agency (DERA)
- FTSE **250** - **£1.3bn** market capitalisation
- **6,233** people worldwide, with **~1,100** specialists in weapons and testing
- Member of The **5% Club** – investing in graduates and apprentices
- **37** sites across the UK – from Cape Wrath to Shoeburyness
- **95%** of QinetiQ’s UK employees hold national security clearance
- **25** year Long Term Partnering Agreement (LTPA) with MOD, signed in **2006**
- Empire Test Pilots’ School (ETPS) – training flight test professionals for **70** years
- More than **1,500** patents granted, **1,000** patents pending
- **75** years of test and evaluation at Aberporth, Wales





Why is Risk and Cost Maturity Important?

Examples of 'Failed' Commercial Projects



Source: Wikimedia.org

Scottish Parliament

Forecast: £10-40m and 2001 opening

Actual: £414m and 2004 opening



Source: Wikipedia.org

Thermae Bath Spa

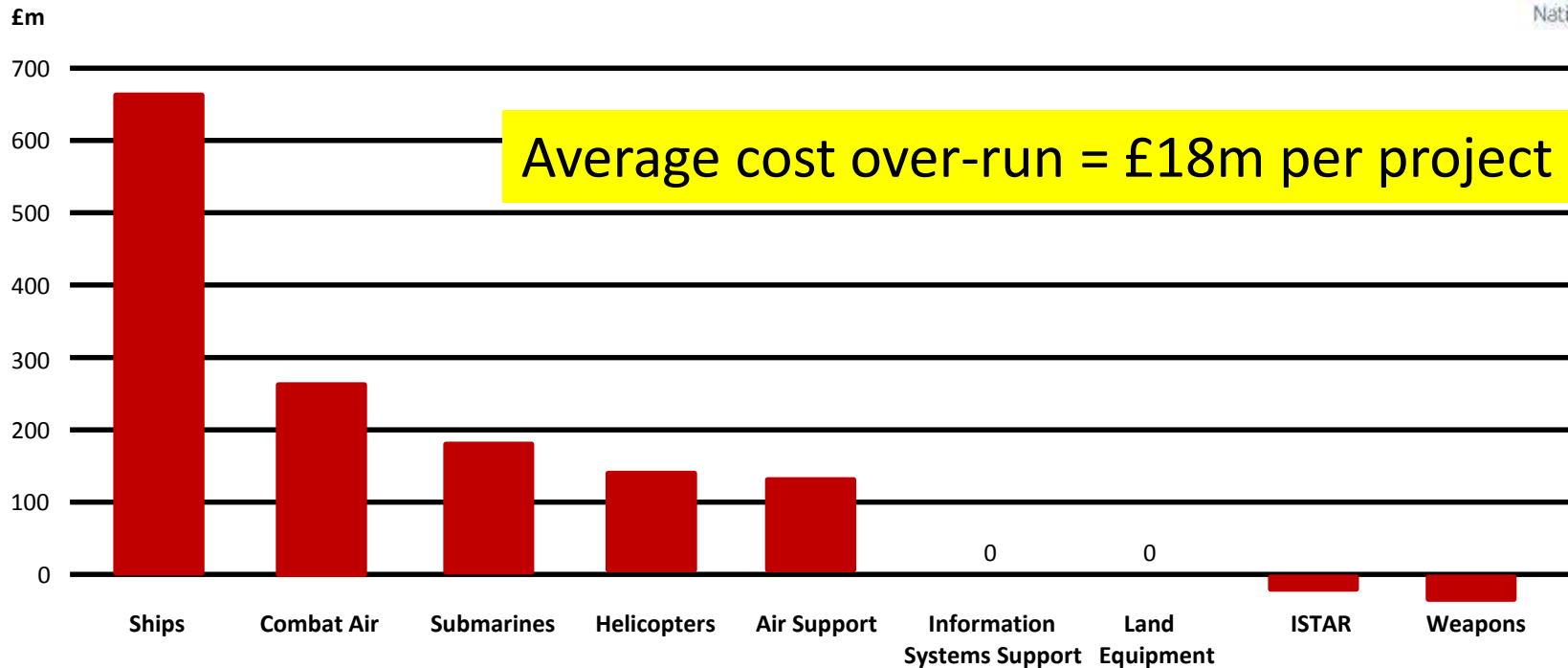
Forecast: £13m and 2002 opening

Actual: £45m and 2006 opening

Why is Risk and Cost Maturity Important?

Audit Evidence from Defence

Defence – average cost growth across all 73 projects in the ships, combat air and submarine sectors



Source data: NAO Major Projects Report 2013

Why is Risk and Cost Maturity Important?

Avoiding the News Headlines!

“A major £12m scheme to digitise patient records has so far failed to deliver and is now expected to cost the Health Department double its original budget, according to the Public Accounts Committee”

“Canadian provincial health officials fire prime contractor after the firm missed 3 years of deadlines and failed to deliver the province’s flagship online medical registry”

“Sacked bursar loses claim for unfair dismissal over school’s £2.5m expansion project”

“Environment Minister demoted after bungled \$2.4bn home insulation fiasco”

“BBC Chief Technology Officer sacked over failed £100m Digital Media Initiative”



Source: Pressgazette.co.uk

Why Does This Happen?

Dealing with Uncertainty

All projects have **uncertainties** and changing variables, arising from ...

- Budget changes
- Schedule changes
- Requirement changes
- Omissions and errors
- Failure to tackle risk at source
- Things that “just go wrong”



Source: Wikimedia.org

“..... because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns - the ones we don't know we don't know”

Donald Rumsfeld

QinetiQ Risk Maturity Model (QRMM)

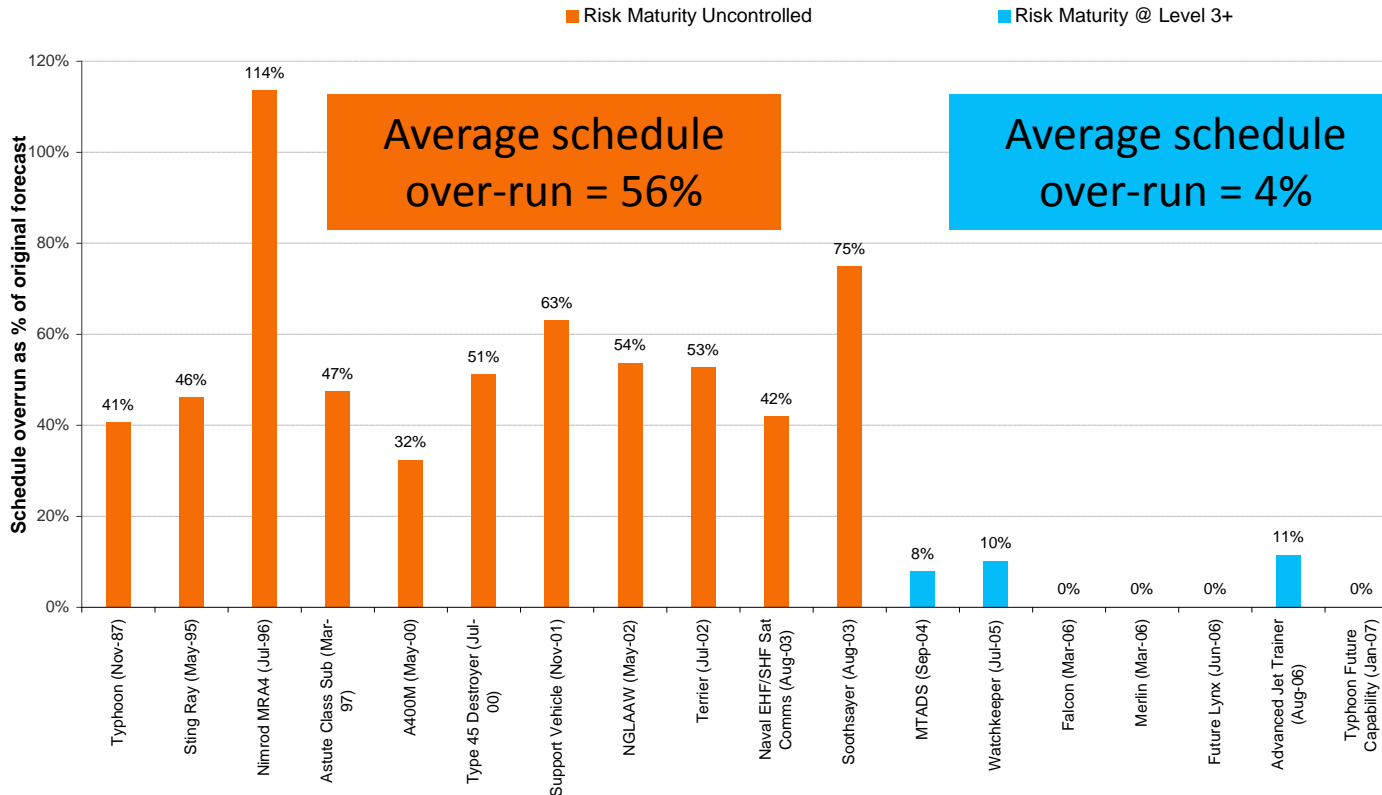
A Brief History ...

- Developed by QinetiQ (1999) to improve confidence by objectively assessing risk management maturity
- Referenced to and compliant with
 - MOD's Acquisition Operating Framework (AOF)
 - Project risk management best practice – APM Project Risk Analysis and Management (PRAM) Guide
 - Combined Code ('Turnbull Guidance') for UK Corporate Governance – Financial Reporting Council
- Proven capability and value in application over 15 years
 - Over **£75bn** of Defence projects/programmes (across all domains) assessed ... and counting
 - Also deployed in Oil & Gas (FTSE 100 multi-national), Rail and Manufacturing
- QinetiQ analysis of NAO Major Projects Reports has indicated that RMM can
 - Increase confidence in project success through improved cost/schedule adherence
 - Deliver forecast improvement in schedule and cost out-turn on major projects

Control of Risk Management Maturity

Schedule Impact – QinetiQ Analysis of NAO Data

Schedule Performance vs Original Forecast of MOD Major Projects



Forecast schedule overrun calculated from the summary of post-Main Gate projects in NAO Major Projects Reports

Many factors affect projects, but those with risk maturity applied at all CADMID stages are more aware of issues and have mitigations in place to respond to those risks

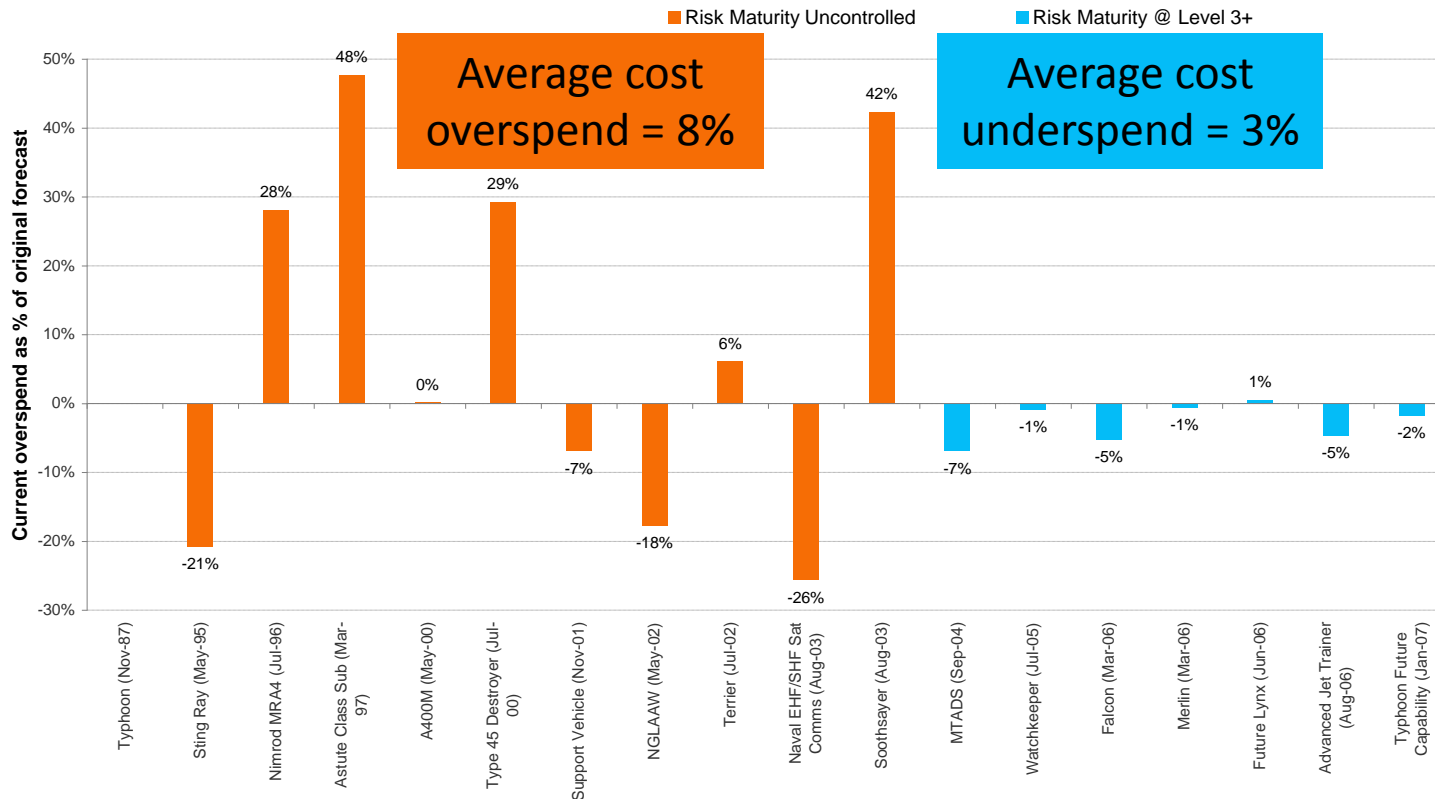
Major projects from the NAO reports with risk maturity applied are **statistically less likely to experience schedule overruns**

Source data: NAO Major Projects Reports

Control of Risk Management Maturity

Cost Impact – QinetiQ Analysis of NAO Data

Budget Performance vs Original Forecast of MOD Major Projects



Forecast cost overrun calculated from the summary of post-Main Gate projects in NAO Major Projects Reports

Projects with Risk Maturity applied experience **less budget volatility** (overspend or underspend), compared with projects whose level of risk maturity is uncontrolled

Source data: NAO Major Projects Reports

QRMM as an Enabler to Better Project Management

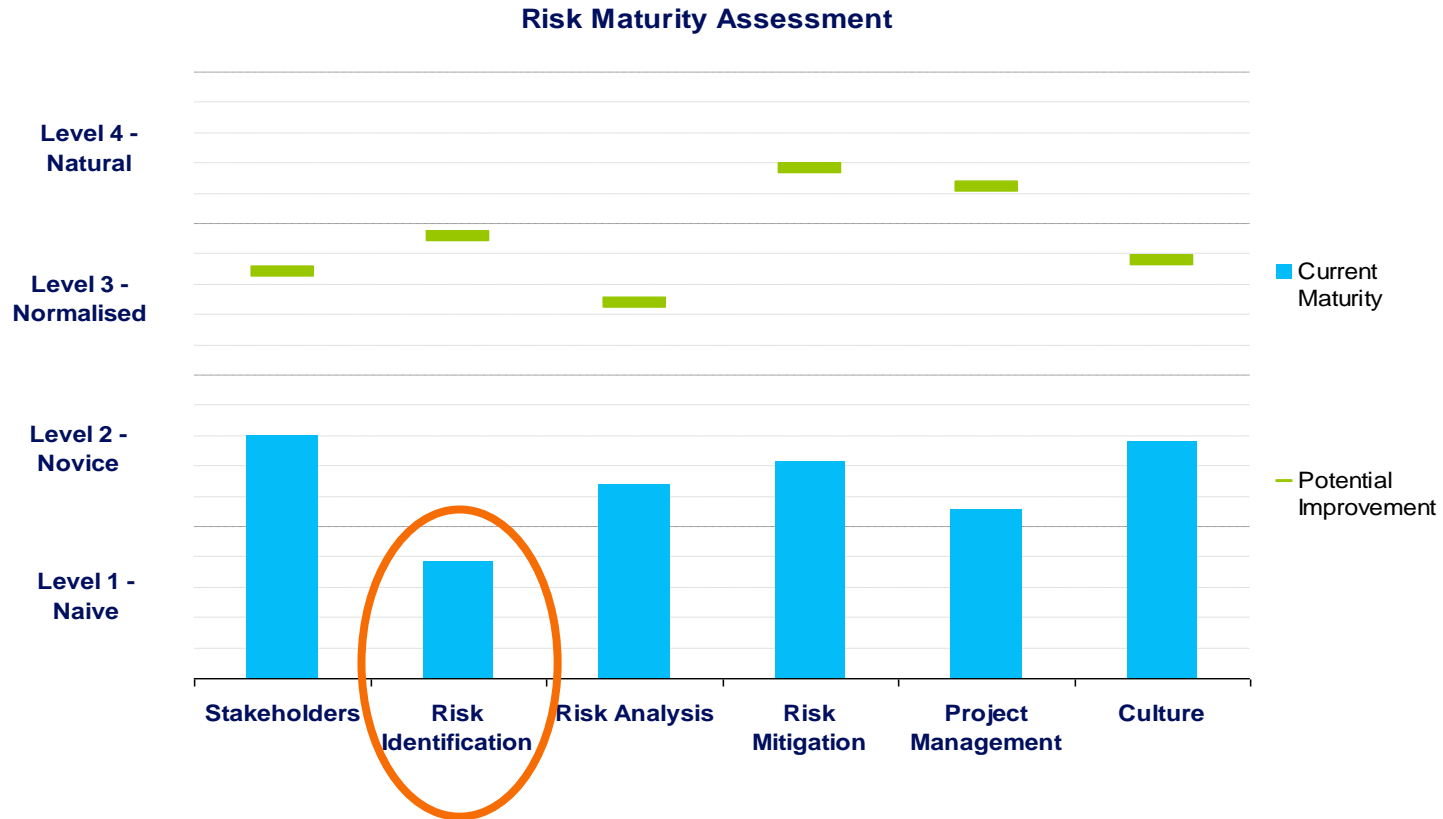
- Assesses and **benchmarks** the quality and consistency of risk management implementation
- Improves **confidence** in the ability to predict and deliver against schedule and cost
- Establishes an independent, **objective** and **evidence-based** baseline measure of risk maturity

- Identifies strengths and weaknesses in risk management process and its enablers
- Supports formulation of a prioritised 'roadmap' of improvement actions against the baseline
- Supports identification of common issues across projects, to help tackle risk at source
- Facilitates sharing of good practice within and across business units

- Builds confidence in the quality of underpinning data (e.g. for Business Cases)
- Scalable: applicable at all levels, at all points in the project/business lifecycle
- Can be used to support supplier assessment



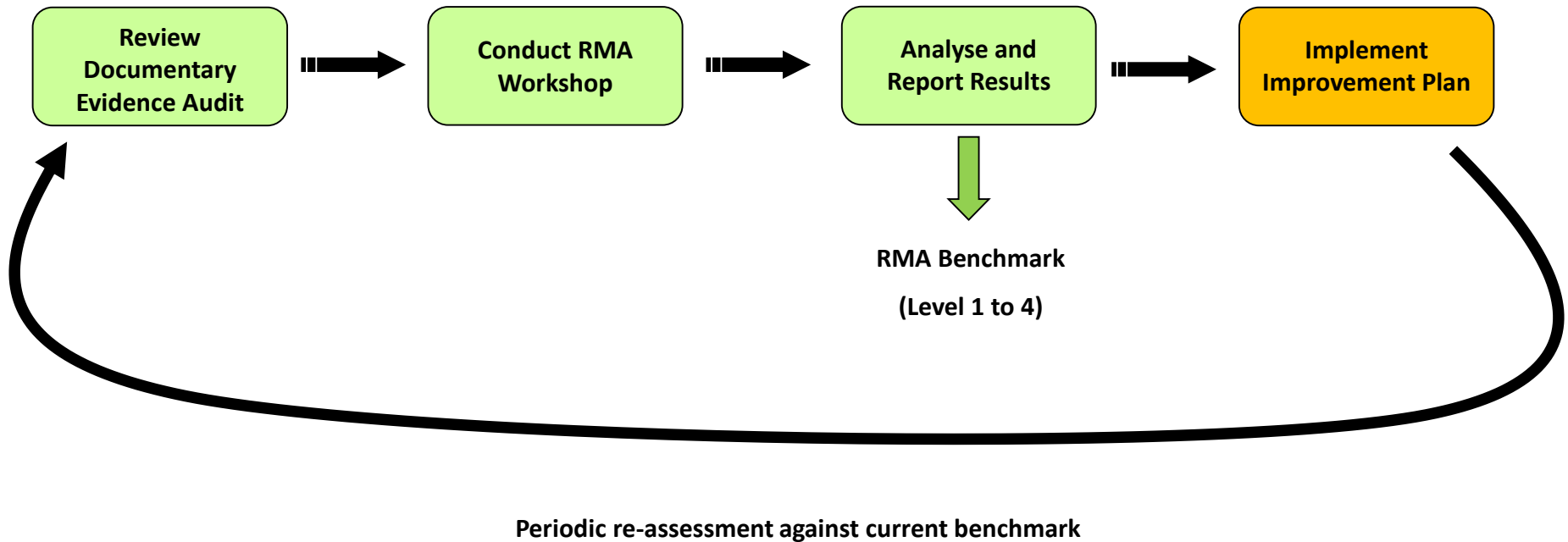
QRMM Construct – Top Level Output



“An organisation is only as strong as its weakest element”

QRMM in Application

Empirical Assessment Process

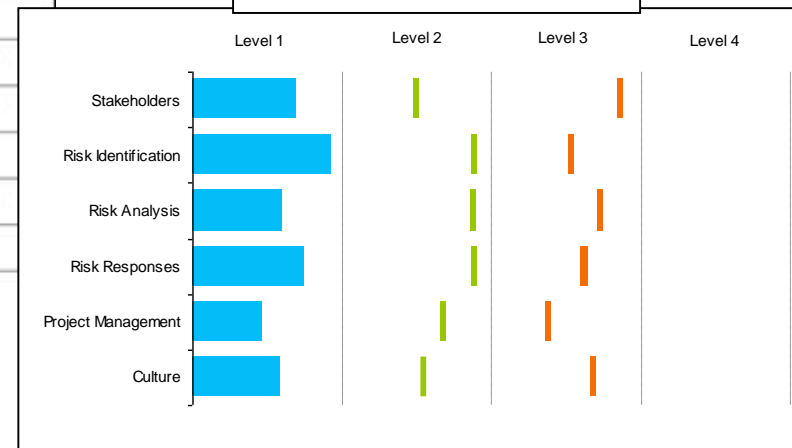
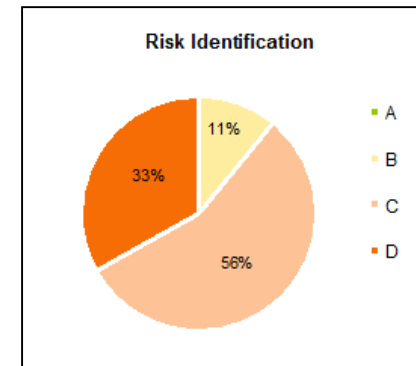


QRMM in Application

Example Analysis Outputs

Category 1
Recommendations to Establish a Basic Risk Management Regime that Supports Improvement of █████ Risk Capability to Level 2 Risk Maturity

Recommendation	Complexity	Value
R1.3 – Division of Responsibilities	Low	High
R1.1 – Confirmation of High Level Business Objectives	Low	Medium
R4.2 – Pre- and Post-Mitigation Assessment	Low	Medium
R4.1 – Risk Response Tracking	Medium	High
R4.4 – Use of Fallback Triggers	Medium	Medium
R3.3 – Secondary Risk Effects	Low	Low



Category 2
Recommendations to Establish an Enhanced Regime that Supports Formalised and Systematic Application of Risk Management Required for a Level 3 Risk Maturity

Recommendation	Complexity	Value
R3.6 – Risk Estimation		
R1.4 – Formal Risk Sharing with Equipment DLoD Stakeholders		
R5.7 – Review of Risk Process Effectiveness		
R4.7 – Use of Cost Benefit Comparisons		

	Recommendation	Rationale and Comments	Value
R2.11	XXX Issues Register Establish a separate XXX Issues Register to manage issues (impacted risks): i.e. those with a probability of 70% or greater	It is good practice (and DE&S policy) to manage high probability risks as issues Separation of risks from issues will also focus risk management away from the 'fire-fighting' mentality that has prevailed	High

QRMM in Application

Case Examples from Defence – Case 1



- Portfolio of 4 projects, with QinetiQ contracted by MOD to
 - Formulate and deliver a formal Risk Improvement Programme: April-Aug 2011
 - Conduct a repeat RMA in February 2014 to identify current baseline and improvements
- April 2011 status of each project
 - Project A – in-service project undergoing contract change, with risk transfer to industry
 - Project B – mature equipment, in-service until ~2020, with industry managing risk
 - Project C – in Assessment Phase (AP) [due to be placed on contract in 2014]
 - Project D – complex international project, in AP [cleared MOD Main Gate in 2014]

Project	Measured RMA April 2011	Measured RMA July 2011	Measured RMA February 2014	Forecast RMA
Project A	Level 1	Level 2	Level 2	Level 3
Project B	Level 3	Level 3	Level 3	Level 4
Project C	Level 1	Level 2	Level 3	Level 3
Project D	Level 1	Level 2	Level 4	Level 4

QRMM in Application

Case Examples from Defence – Case 1

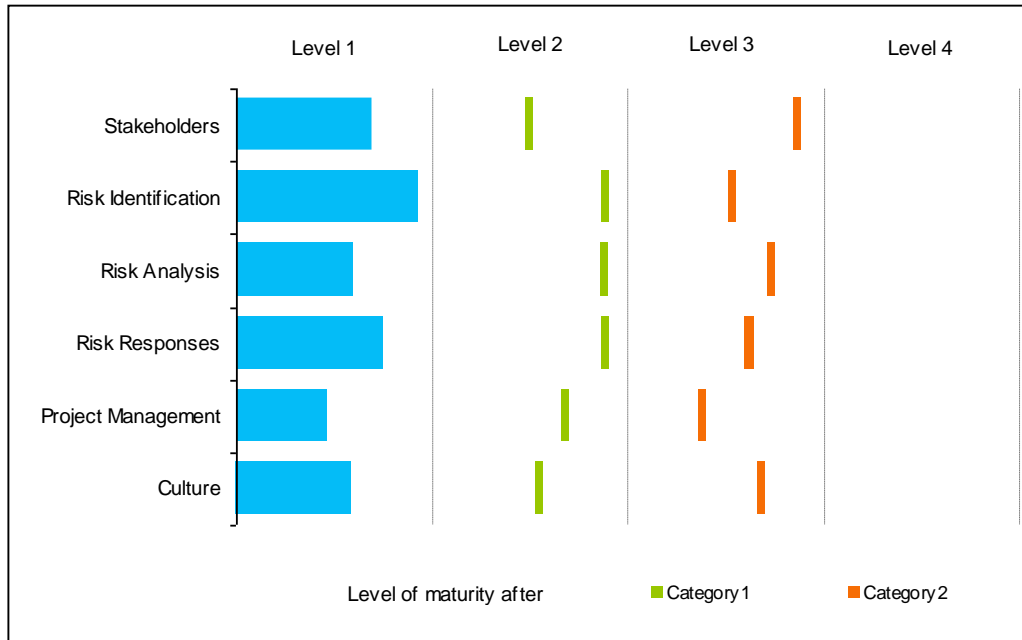


Perspective	Number of Projects at Each Level – Feb '14		
	Level 2	Level 3	Level 4
Stakeholders		√	√√√
Risk Identification		√√	√√
Risk Analysis	√	√√	√
Risk Responses		√√	√√
Project Management		√	√√√
Culture		√	√√√

- February 2014 forward improvement plans, focused to achieve
 - Project A: from high L2 (almost L3) to weak L3 in 3 months, consolidating to a firm L3
 - Project B: from high L3 to a weak L4, consolidating to a firm L4 through secondary actions
 - Project C: from weak L3 (with risk of slipping back to L2) to a firm L3
 - Project D: from weak L4 (risk of slipping back to L3) to a firm L4
- A good example of where focused MOD effort, and periodic RMA, can enhance risk execution

QRMM in Application

Case Examples from Defence – Case 2 (MOD 1*)



- Level 1 across all 6 perspectives – the worst ever RMA score recorded by QinetiQ!
- Risk improvement roadmap established to target
 - Level 2 in 3 months (22 actions)
 - Level 3 in a further 9 months (16 actions)

QRMM in Application

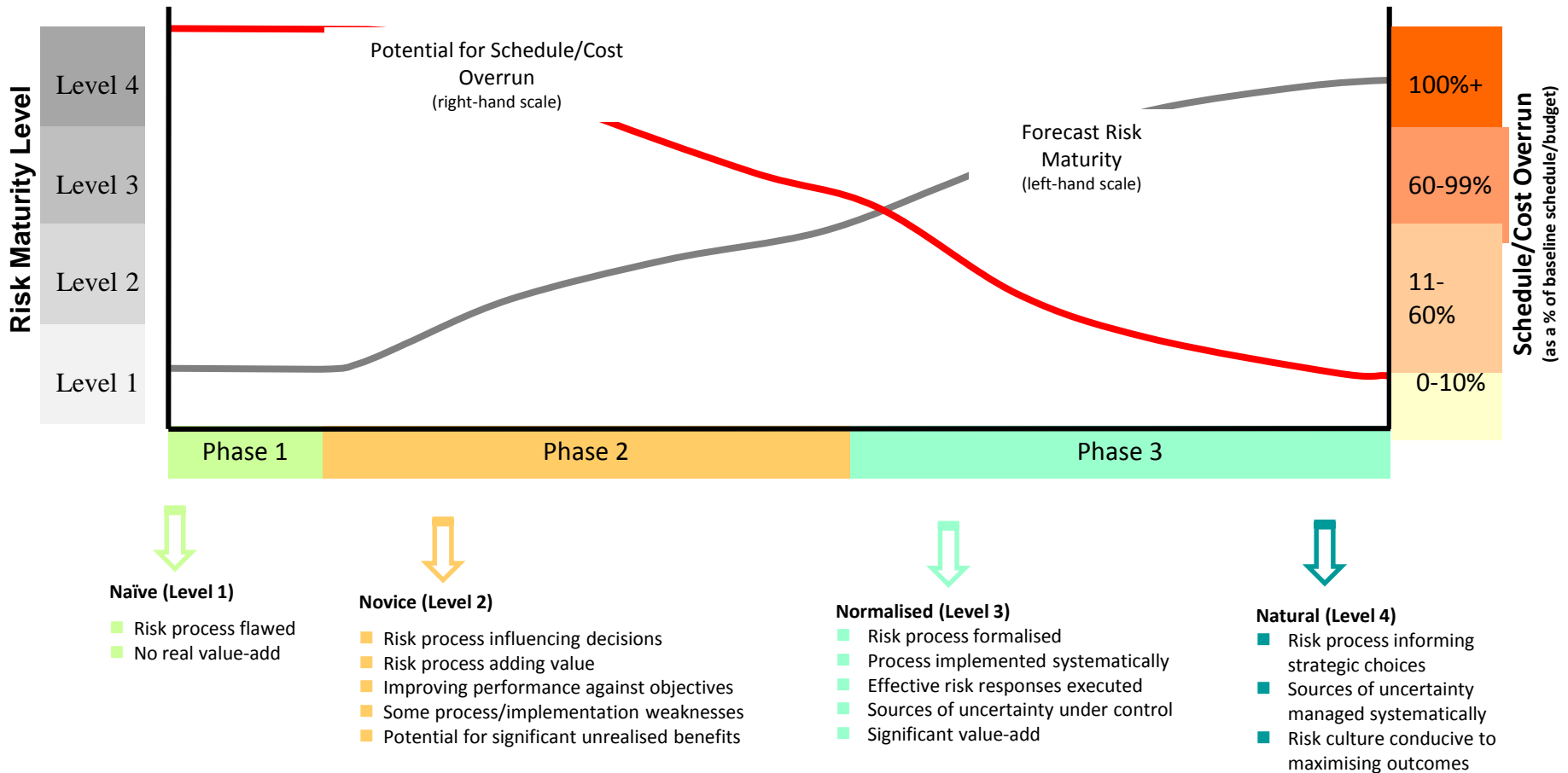
Case Examples from Defence – Case 2 (MOD 1*)



- Improvements were not implemented, due to
 - Lack of capacity within MOD to implement the plan
 - Conflicting demands and changing priorities
 - Ongoing organisational uncertainty
 - Realisation that implementation of improvements at 1* level would be insufficient
- QinetiQ was then requested to
 - Formulate a transformation programme covering the 2* group (4 x 1* units)
 - Develop and roll-out improvements to enhance risk and cost management and control
- What happened next?
 - MOD secured stakeholder buy-in to implement the ~18 month transformation programme
 - In-FY underspend was secured to fund the initial phase
 - Other areas developed an interest in improving their risk and cost maturity
- **A good example of where a localised RMA can uncover a need for wider risk/cost improvement**

QRMM in Application

Example Transformation Programme – Benefits Realisation



QRMM in Application

Case Example from Oil & Gas



- 2011: FTSE 100 Oil & Gas multi-national approached QinetiQ to pilot an RMA on a UK project
- QinetiQ amended the RMA framework Q&A set to reflect O&G-specific language
 - Underlying model and algorithms were unchanged
- The pilot was conducted on the UK project
 - Identified that lack of risk disclosure from the JV partner was a **significant** threat
 - RMA was extremely well received by the client organisation
 - Actions to address the shortfalls were apparently not progressed
 - There were serious repercussions for both JV partners
- **A good example where failure to address risk maturity shortfalls can impact business health**
- What happened next?
 - QinetiQ undertook a further RMA on an operation in Asia, on completion of the UK pilot
 - The Asia RMA identified significant pockets of good practice to share across the company
 - QinetiQ was requested to develop a new corporate Cost & Schedule Risk Analysis standard

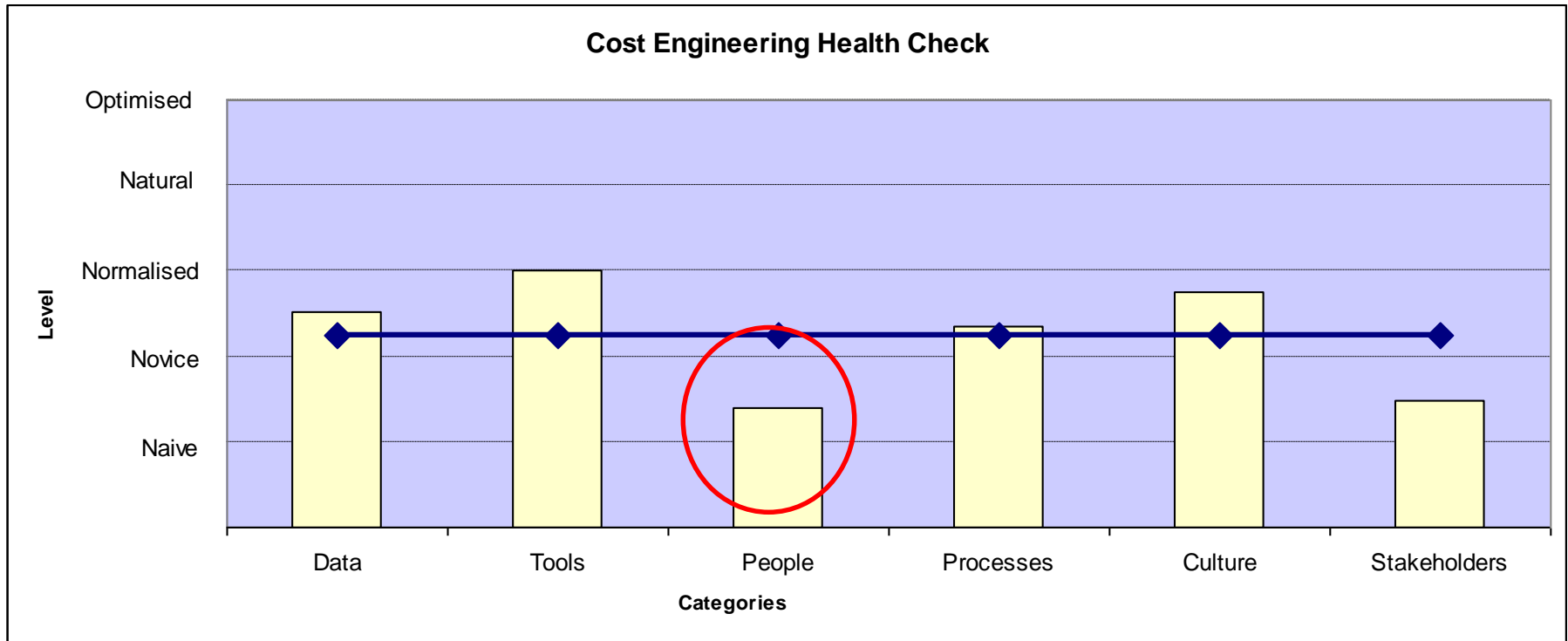
- Developed by QinetiQ as its second maturity assessment tool (following the success of the QRMM)
 - Reflecting the need to enhance **confidence** in the quality and accuracy of cost estimates
 - Recognising that poor quality cost estimates can undermine reasoned decision-making
 - Addressing the desire to benchmark cost engineering capability against peer organisations
 - Reflecting the increased emphasis on robust cost management in austerity

“The Cost Engineering Healthcheck (CEHC) was a professionally facilitated workshop and the results will guide the future direction of capability development for the cost community in the EACE Working Group”

David Lewis – European Aerospace Cost Engineering (EACE) Chairman



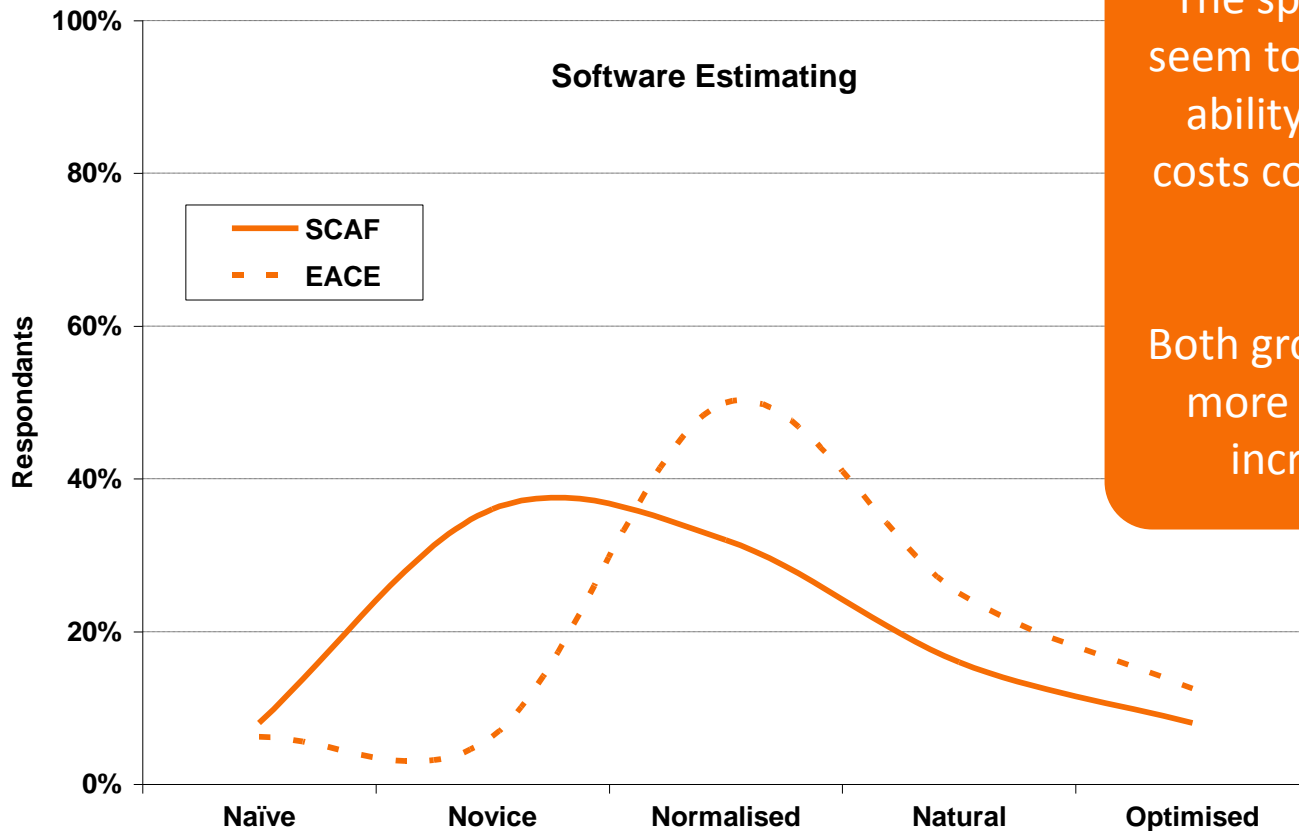
CEHC Construct – Top Level Output



Identification of weak categories

CEHC in Application

Case Example - Comparisons Between Defence and Space

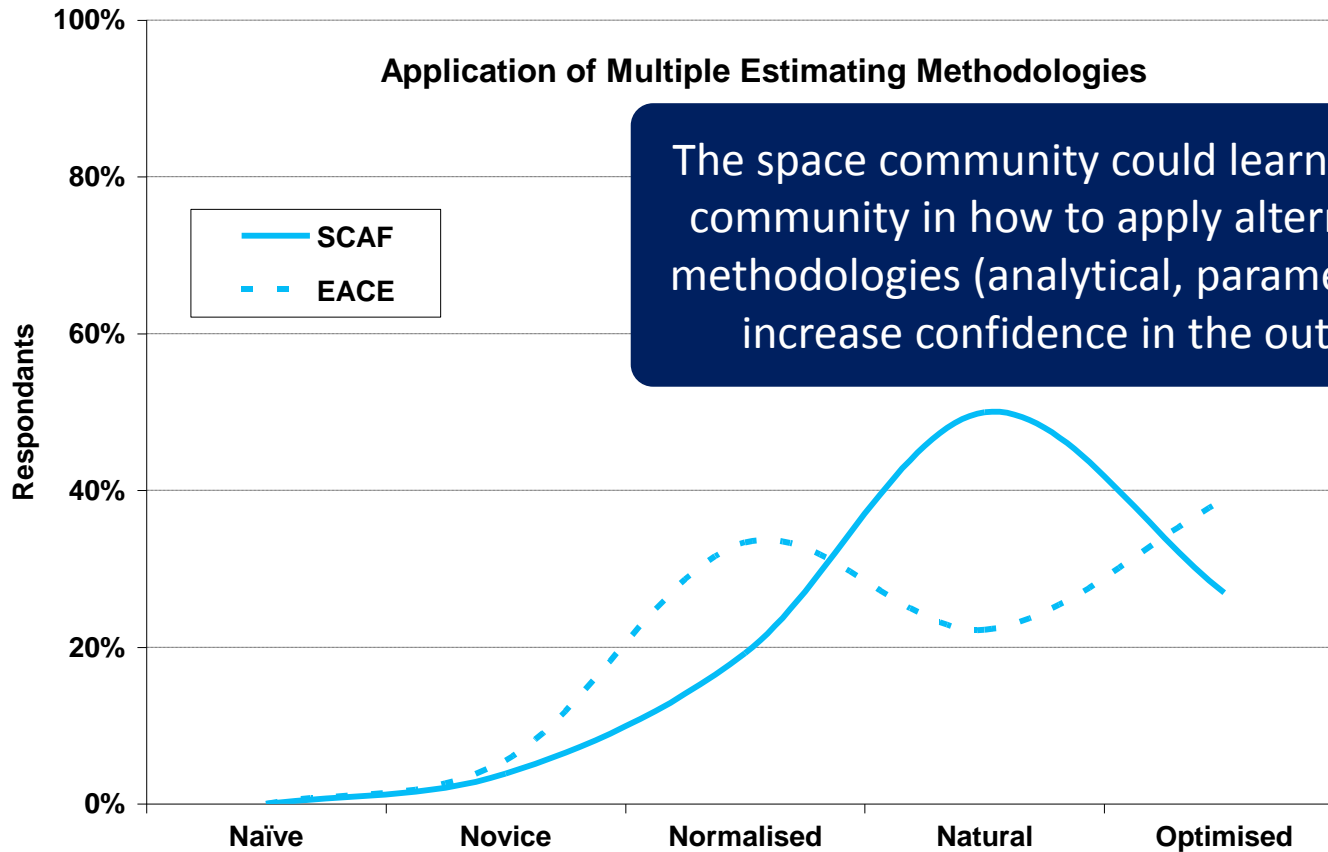


The space community would seem to be more mature in the ability to estimate software costs compared to the defence community

Both groups could benefit from more activity in this area to increase their maturity

CEHC in Application

Case Example - Comparisons Between Defence and Space



CEHC in Application

Benefits



- Assesses the quality and consistency of cost engineering implementation
- Provides evidence of weaknesses in the cost engineering capability of an organisation
- Establishes a focus for cost engineering improvement, either alone or as part of a wider change initiative
- Delivers improved capability in
 - The ability to forecast acquisition and support/ownership costs
 - The understanding of costs and their impact across the enterprise
 - Alignment and coherency ... and the ability to identify and share good practice
- Enhances confidence
 - For decision-makers, that their decisions are based on credible and justifiable financial information
 - In the robustness, accuracy and reliability of cost estimates
 - In the ability of cost estimates to withstand financial scrutiny and audit
 - In the potential for a project or business to increase its competitive edge and deliver more for less

Summary



Source: *Pressgazette.co.uk*

1. Introduce the principles and importance of risk and cost maturity assessment
 - There is inherent uncertainty in all projects, programmes and businesses
 - Formalised risk and cost management help us understand and respond to uncertainty
 - Control of risk and cost maturity is a key enabler to good project management
2. Explore QinetiQ Risk Maturity Model (QRMM) and Cost Engineering Healthcheck (CEHC)
 - Audits and benchmarks project health and focuses improvement initiatives
 - Enhances confidence in the likelihood of an out-turn to schedule and within budget
 - Enables us to more confidently establish our risk appetite and inform strategic choice
3. Demonstrate value of QRMM and CEHC in application
 - Case 1 – focused improvement and periodic re-assessment enhanced project control
 - Case 2 – localised RMA can trigger wider imperative to enhance risk management
 - Case 3 – failure to address risk maturity improvement can impact business health
 - Case 4 – use of CEHC to compare cost engineering maturity across industries



Project Controls

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