Cost Engineering Health Check - how good are your numbers?

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1. KBE unique to QinetiQ Cost Modelling Team

Knowledge Based Estimating (KBE)

Knowledge

Skills

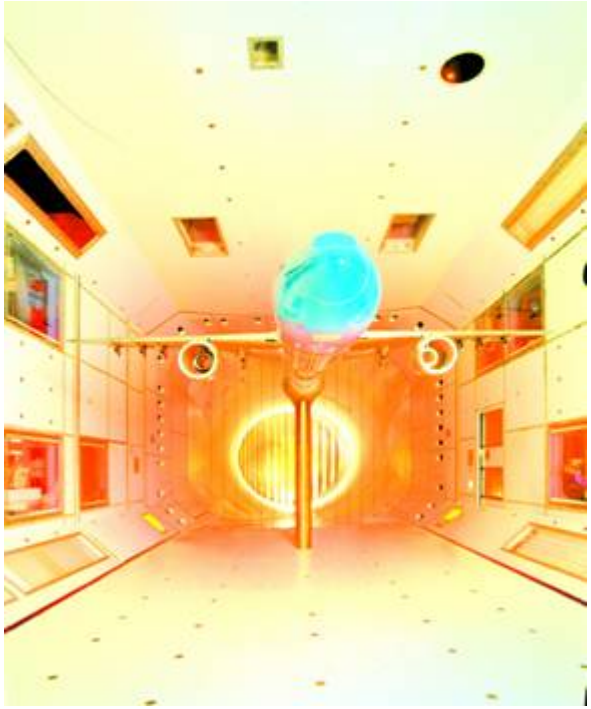
Knowledge Based Estimating (KBE) is the fusion of Consultants certified in the discipline of Cost Engineering and Forecasting together with QinetiQ's understanding of science and technology needed to deliver the project capabilities of today and tomorrow

1. QinetiQ Cost Estimating Philosophy

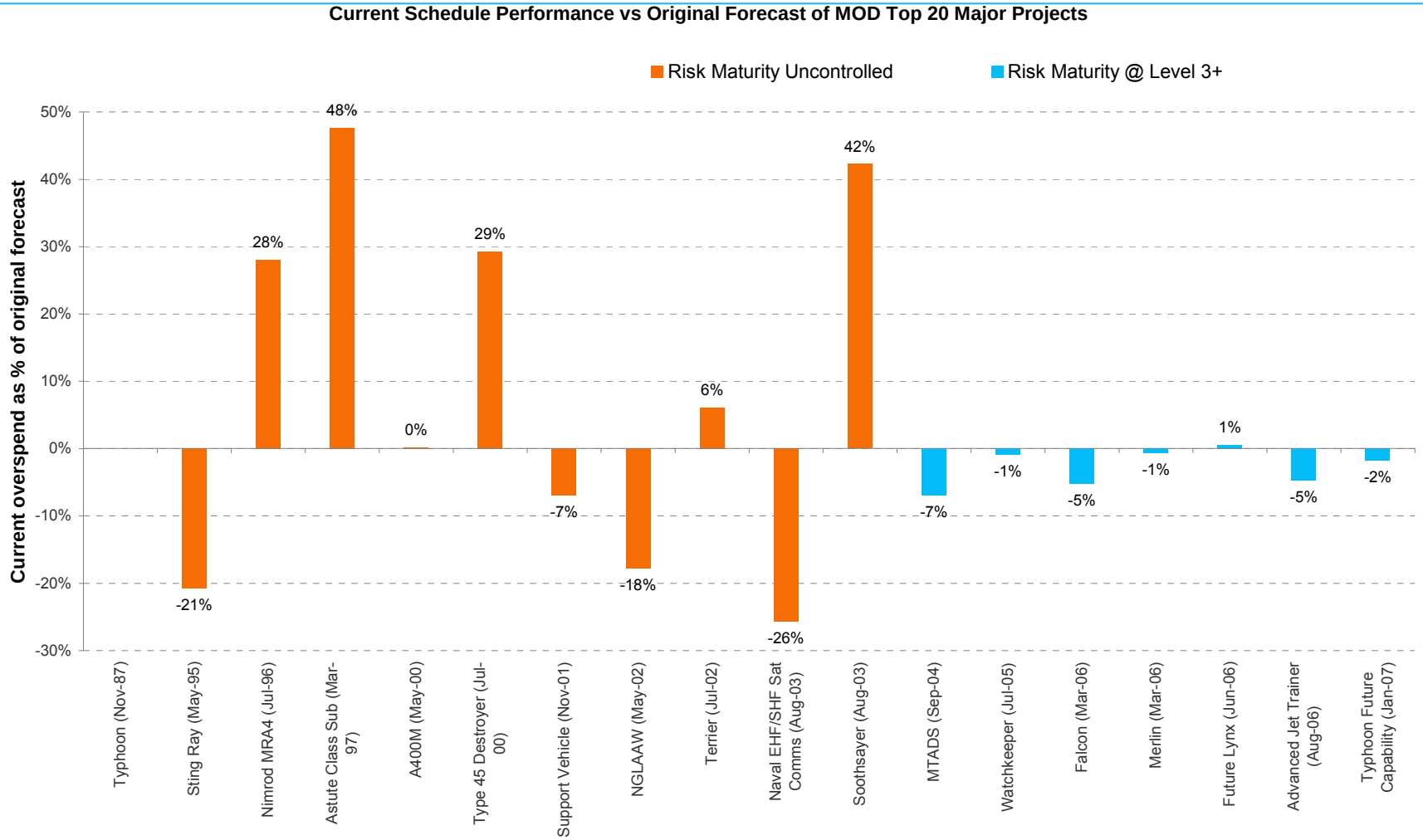
Knowledge Based Estimating (KBE) is the philosophy that underpins the QinetiQ approach to Cost Forecasting. The building blocks of all good cost forecasts combine:

- **Data** – understanding the current project in the context of past projects
- **Tools** – the analytical and forecasting capabilities
- **People** – proactive staff certified and trained, looking to add value
- **Process** – structured approach to the task

2. What is the Cost Engineering Health Check (CEHC)?

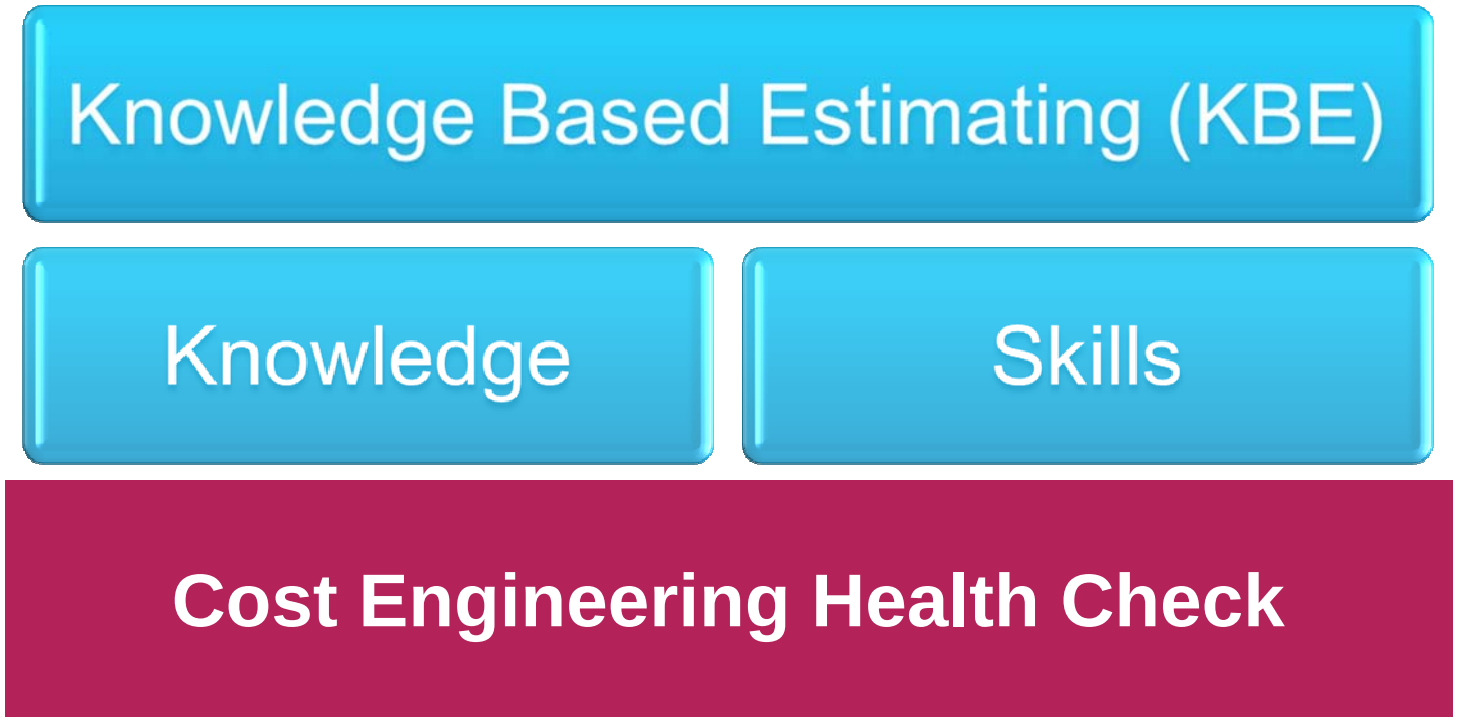


2. Better Risk Management Reduces Overspend …



Source: NAO Major Projects Report

2. Cost Engineering Health Check (CEHC)



2. The Cost Engineering Health Check – What is it?

- A standardised competency assessment framework, based on our Knowledge Based Estimating Philosophy, that considers all aspects of cost estimating capability including:
  - Data
  - Tools
  - People
  - Processes
  - **Culture**
  - **Stakeholder**
- Provides an objective assessment against both best practice and the industry standard.

2. Why Conduct a Cost Engineering Health Check?

- How good are your estimates?
  - Realise tangible benefits in forecasting capability acquisition and support costs
- How good is your estimating capability?
  - Assess the quality and consistency of cost engineering implementation
  - Understand costs and their impacts across the enterprise. The interaction between customer and supplier.
- How do you compare with your peers?
  - Improve cost forecasting to inform decision-making across the organisation
- How can you improve?
  - Improve communications, where common issues are identified
  - Reduce duplication of effort, across organisations
- What does good look like?
  - Improve coherency and alignment, and share good practice

3. The CEHC Process

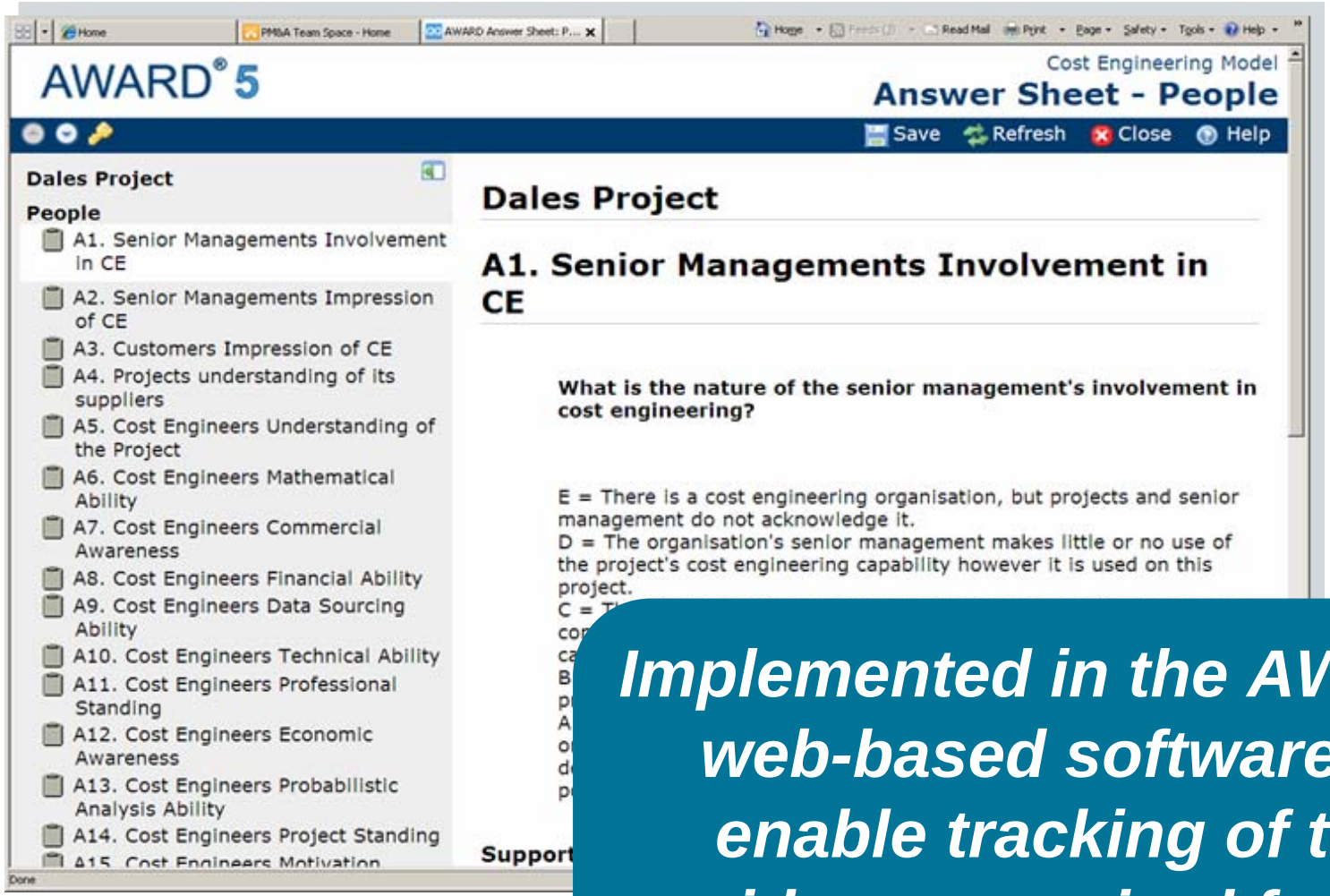
3. What's The Process? – Electronic Voting

- Well-established method of Group Decision Support
- Used to elicit opinion:
  - Votes are anonymous
  - Primarily interested in the reasons for the votes
- Provides a framework to consider arguments before expressing opinion
- Discussion is limited to clarification before voting:
  - Understand the question and supporting narrative, in relation to Cost Engineering
  - Understand how the question and context relate to the organisation
- Divergence in votes may provide additional insight

3. What's The Process? – Delphi Technique

1. Question is posed
2. Think!
   - Consider the question and context
3. Vote
4. Facilitated discussion:
   - Live voting results presented
   - Salient points recorded for analysis/reporting
   - Record the consensus view
5. Re-vote (as necessary)
   - Record the consensus view

3. Cost Engineering Heath Check (CEHC)



Implemented in the AWARD web-based software to enable tracking of the evidence required for the analysis

3. Context – Definition and Scope

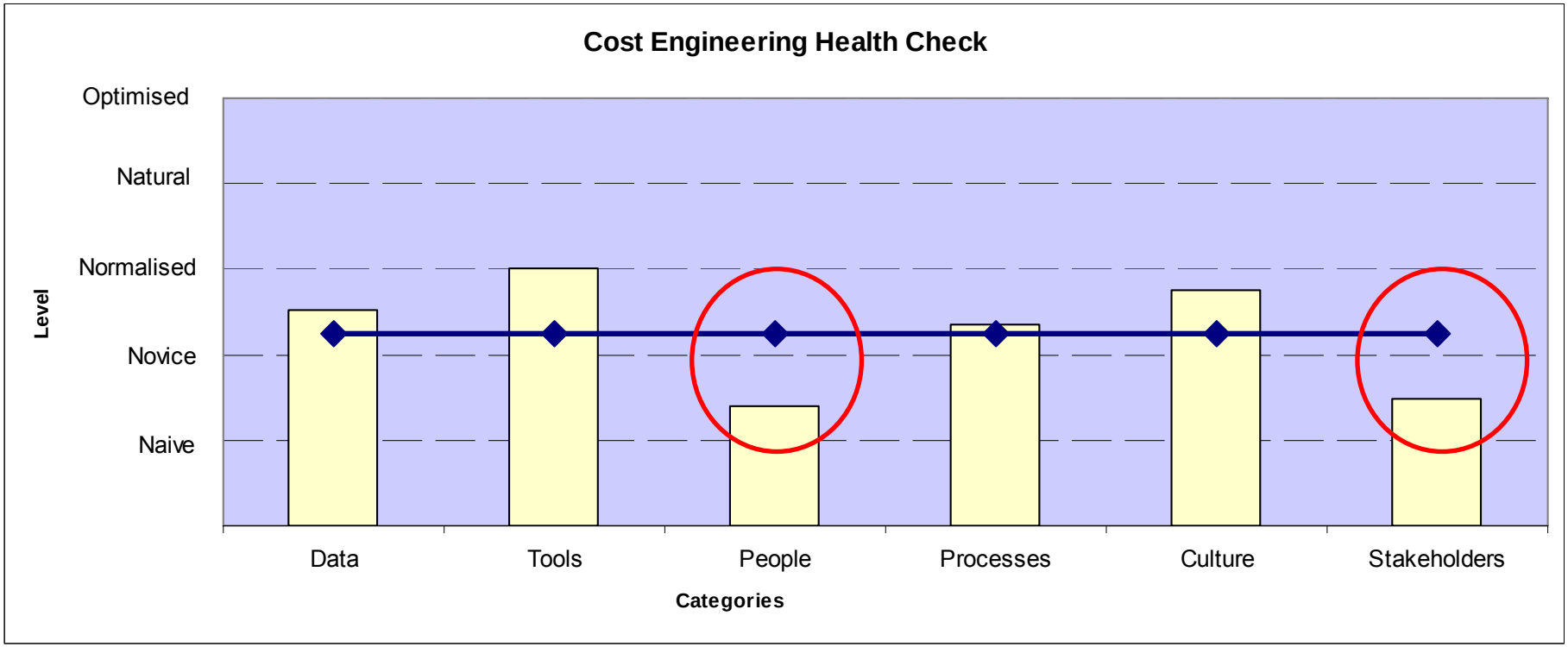
- 'Owning Organisation'
  - Who are you conducting the CEHC for?
  - Might not be the same as the organisation conducting the estimates
- 'The Project'
  - What is the project or programme focus?
- 'End Users', 'External Customers' or 'Lead Customer'
  - Who is the ultimate customer organisation for this project or programme?
- 'Main Estimators', 'Cost Analysts' or 'Cost Forecasters'
  - Who is the provider of these cost forecasts or estimates?
- 'Stakeholders'
  - Which are the public and private organisations involved?
- 'Senior Management'
  - Who is the named internal customer receiving this financial information?

4. The CEHC results

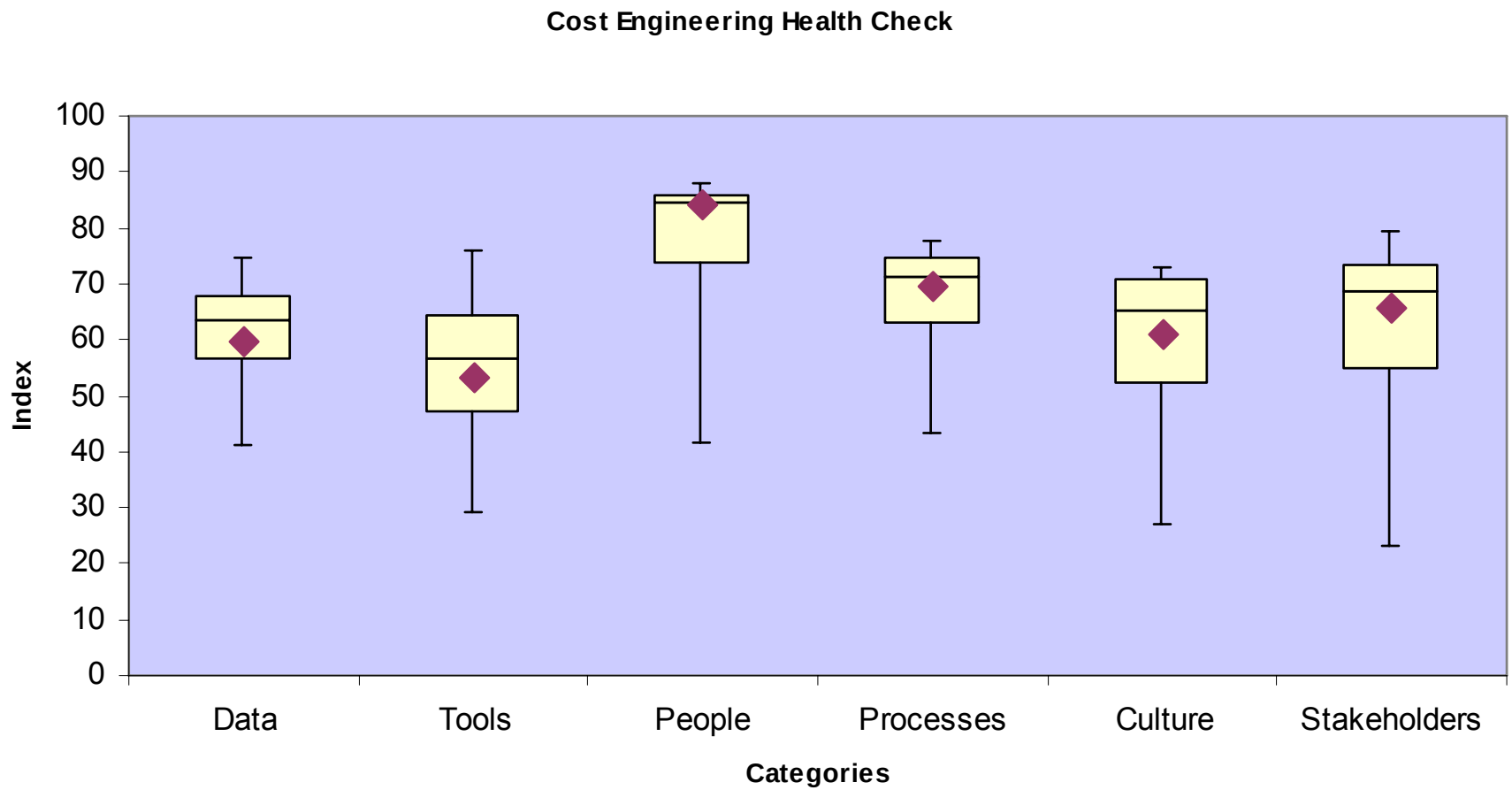
4. Cost Engineering Health Check (CEHC) results

- Each CEHC capability area is scored:
  - **Naive** = process design or application flawed and probably not adding value
  - **Novice** = some value-add, but weakness in process design or implementation
  - **Normalised** = newly formalised process, implemented systematically and adding value
  - **Natural** = formalised process, implemented systematically and adding value for a reasonable duration
  - **Optimised** = applied at strategic level in driving objectives and optimising outcomes for a considerable length of time
- Exemplars relevant to the capability area are provided for context

4. Identification of weak areas

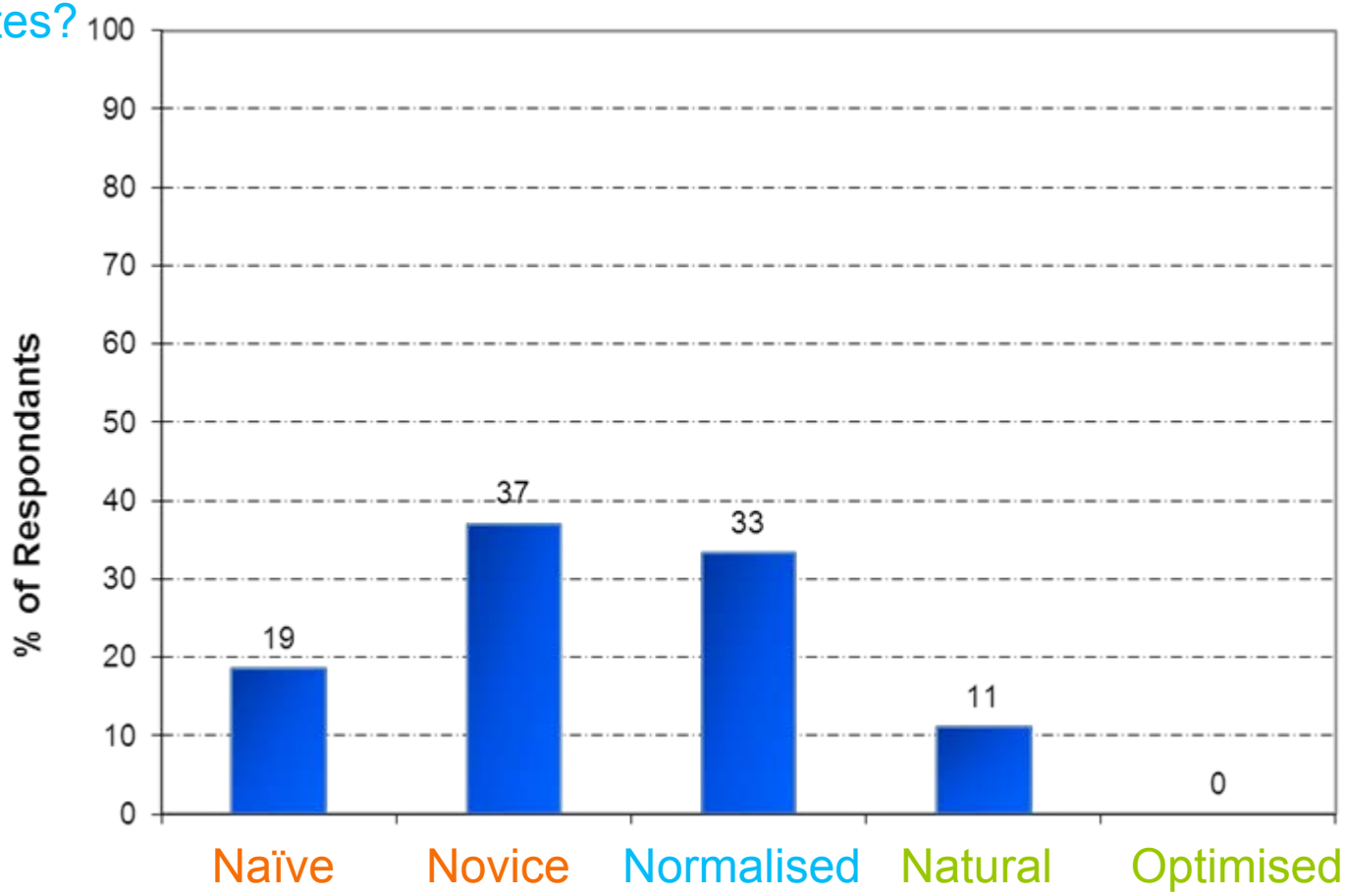


4. Comparison against peers

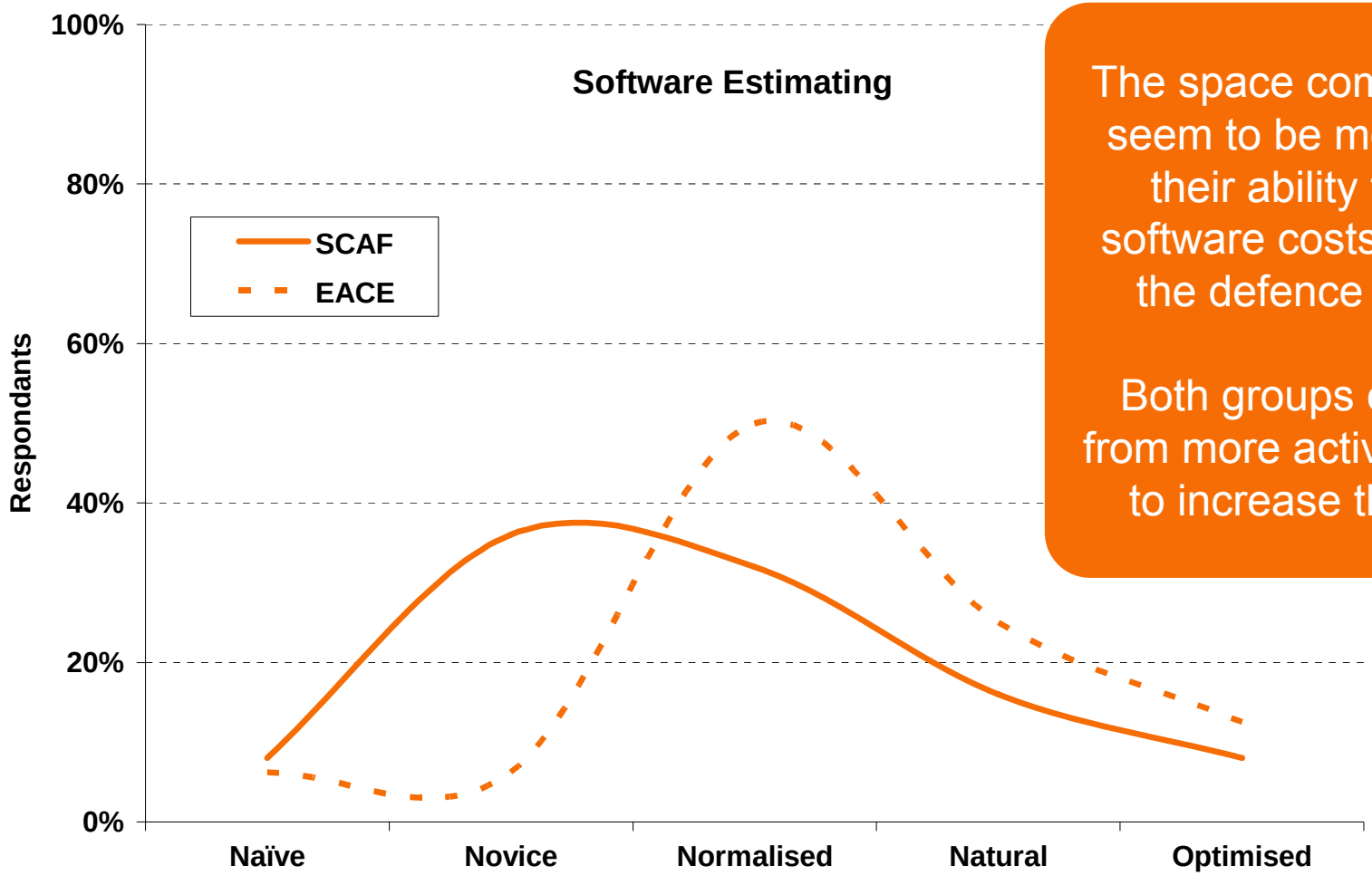


4. QinetiQ CEHC example capability area

Does the project store technical information for the purposes of future cost estimates?



4. Defence (SCAF) versus Space (EACE)



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

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

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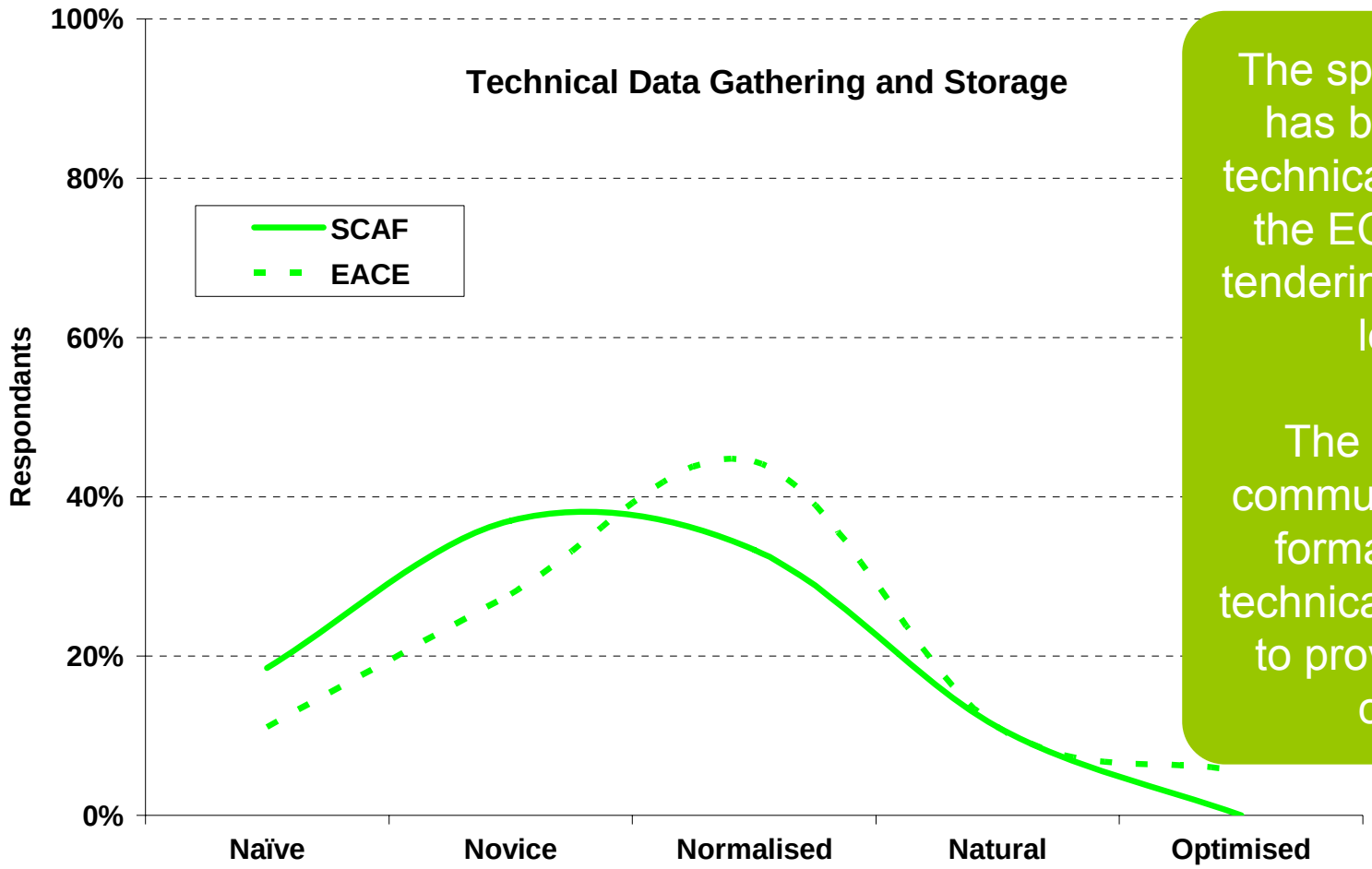
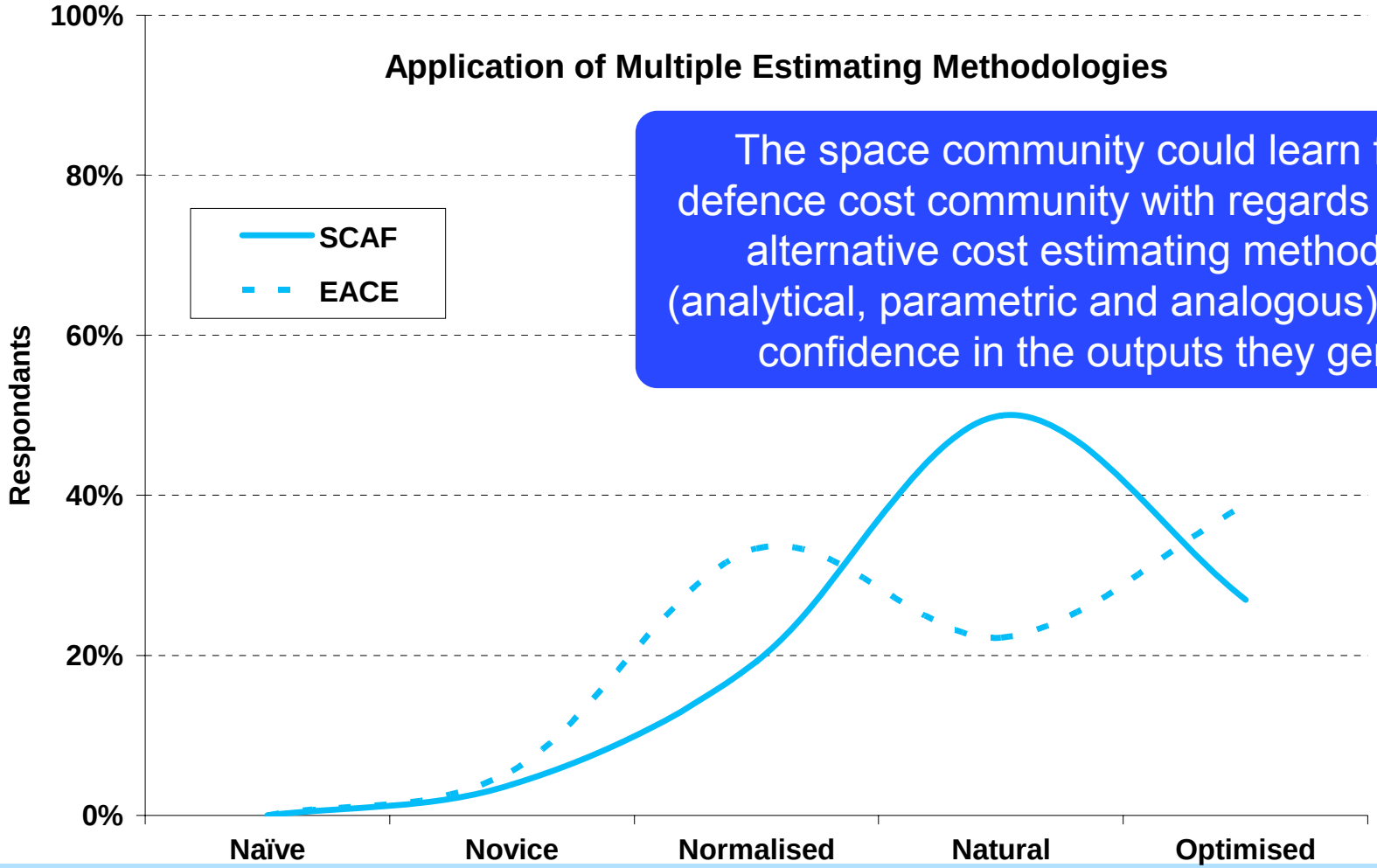


The space community has been gathering technical data - through the ECOS electronic tendering system - for a long time.

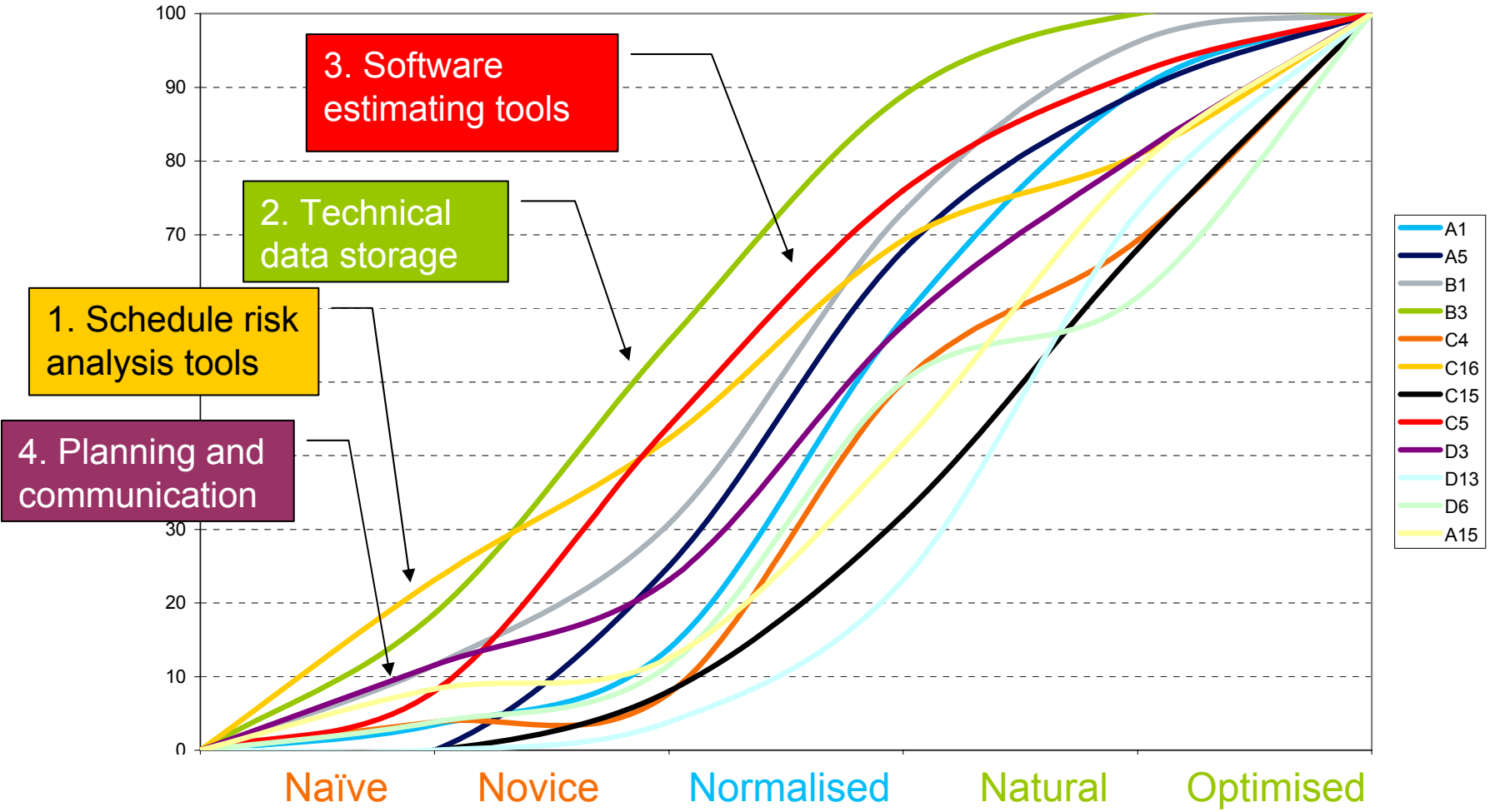
The defence cost community has had no formal initiative for technical data gathering to provide context to cost data.

4. Defence (SCAF) versus Space (EACE)



The space community could learn from the defence cost community with regards to applying alternative cost estimating methodologies (analytical, parametric and analogous) to increase confidence in the outputs they generate.

5. Cumulative result of SCAF CEHC workshop



5. Conclusions

5. Conclusions

- CEHC provides:
  - Evidence of weaknesses in the cost engineering capability of an organisation;
  - Focus for improvement programmes;
  - Greater confidence for decision makers that their decisions are made on credible and justified financial information.
- Observation from the SCAF and EACE assessment workshops:
  - Vote on each question: re-votes can be taken if necessary
  - Debate is very useful in exploring rationale behind assessments
  - Be honest and positive; differences of view are acceptable and helpful
  - Encourage open discussion with points non-attributable to any individual
- Greater confidence in cost estimates increase your competitive edge or fund more project within the same budget
- Austerity means that there is a bigger demand for good Cost Engineering - Begin the assessment today!

"The Cost Engineering Health Check (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."

Source: David Lewis, European Aerospace Cost Engineering (EACE) Chairman

Any Questions?

"Major projects that have used the QinetiQ benchmarking tool and subsequently improved their risk maturity have reduced overspend by an average of 20% of project value and schedule overrun by 41 months"

Source: NAO Major Projects Report

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