

SCAF 'Costing in Concept and Assessment Phase' 6 February 2007

Is Monte Carlo Simulation a Religion?

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Before we begin.....

Health Warning: Views are those of the presenter and must not be taken as MoD Policy



Objective

Provide a Consumer's view of
project cost estimates in Business
Case decision making



What does DG(S&A) do?

- Provide independent technical/scientific advice and judgements to CSA.
- Scrutiny of proposals on technical content and operational analysis including risk, uncertainty and technology maturity.
- Advise the Approving Authority on the acceptability of the case (Principally but not exclusively Technical and OA)
- Approve of Concepts of Analysis
- Approve: Equipment, Business IS projects, and Works at 2* and 1* level in line with delegations.



Business Case Fundamentals **(Including Information & Review Notes)**

- **What are you trying to do?**
- **What exactly is the decision being sought?**
- **Which key factors influence that decision?**
- **How much (effect) is enough?**
- **How will you know when you've got it?**

Presented as a Robust Proposition



How compelling is your case?

Clear proposal

Complexity
End-to-end view
Effectiveness
Risks/TRLs
Options
PCT envelope

Procedures & controls

AMS process
3 point estimates
Stakeholder buy in
OA
MDAL
Risk Maturity Model

Evidence

Specialists/Peers
Independent advice
International
Market
ARP
Tests/Trials



First Questions

- What is the need/capability gap?
- How does it relate to policy?
- What are the options?
- How much is needed?
- Is it worth doing?
- What are the key drivers?
- How will you decide?
- Will it be Value for Money?
- Why now?

**Ruthless
Objectivity**



Next Questions

- How was the programme put together?
- Are sufficient resources being sought?
- Are resources correctly targeted?
- Are time scales achievable?
- Key drivers (again!)
- How will it be accepted?
- Are principal dependencies being addressed?
- Is the way forwards robust?
- Why should the case be believed?

**Evidence
Maturity**



Performance

Technical excellence

- ❖ describes use
- ❖ is absolute
- ❖ measured v technical spec
- ❖ measures of performance
 - velocity
 - sensor resolution

Effectiveness

Fitness for purpose

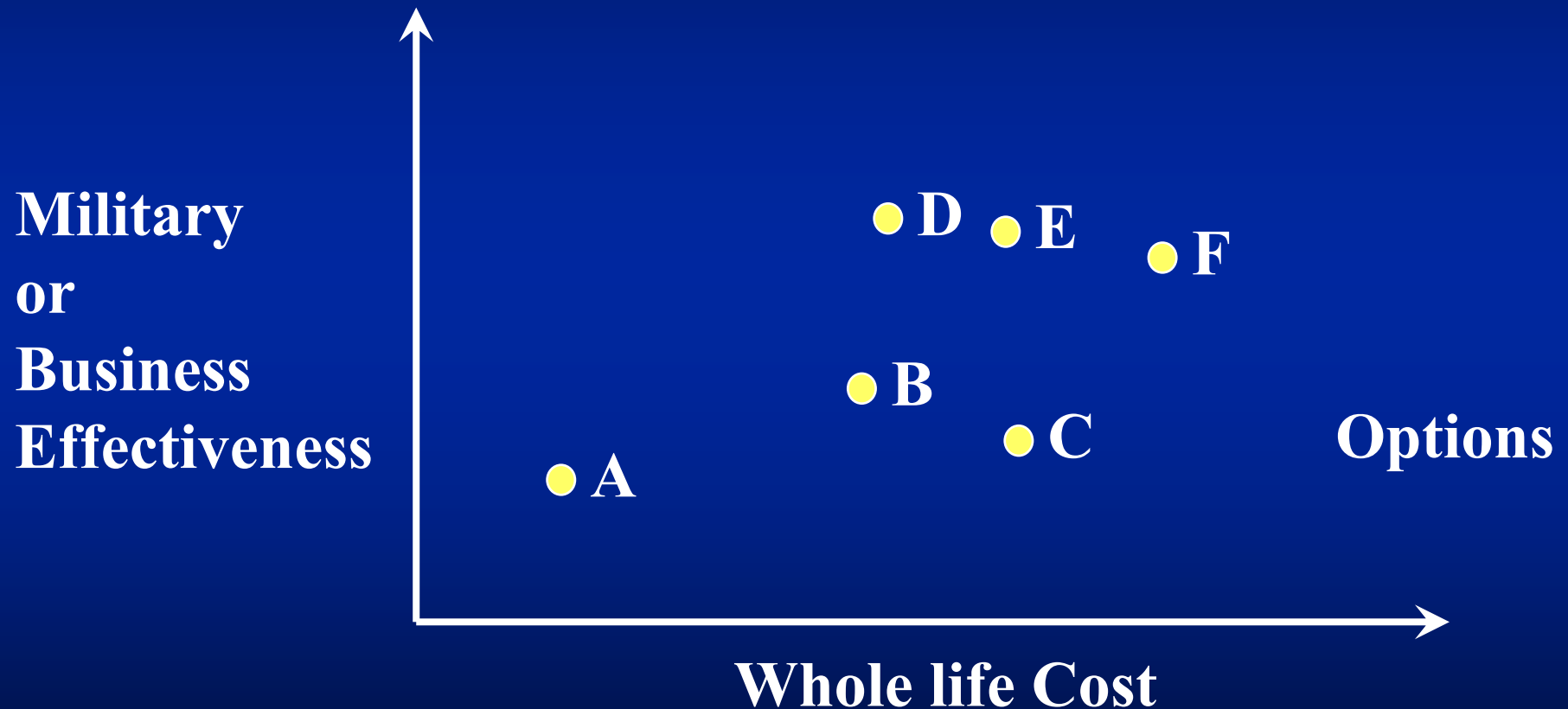
- ❖ examines military worth
- ❖ depends on scenario
- ❖ measured v mission goals
- ❖ measures of effectiveness
 - probability of kill
 - ability to identify target

**Performance is often set as the goal but
Effectiveness expresses what is really needed.**



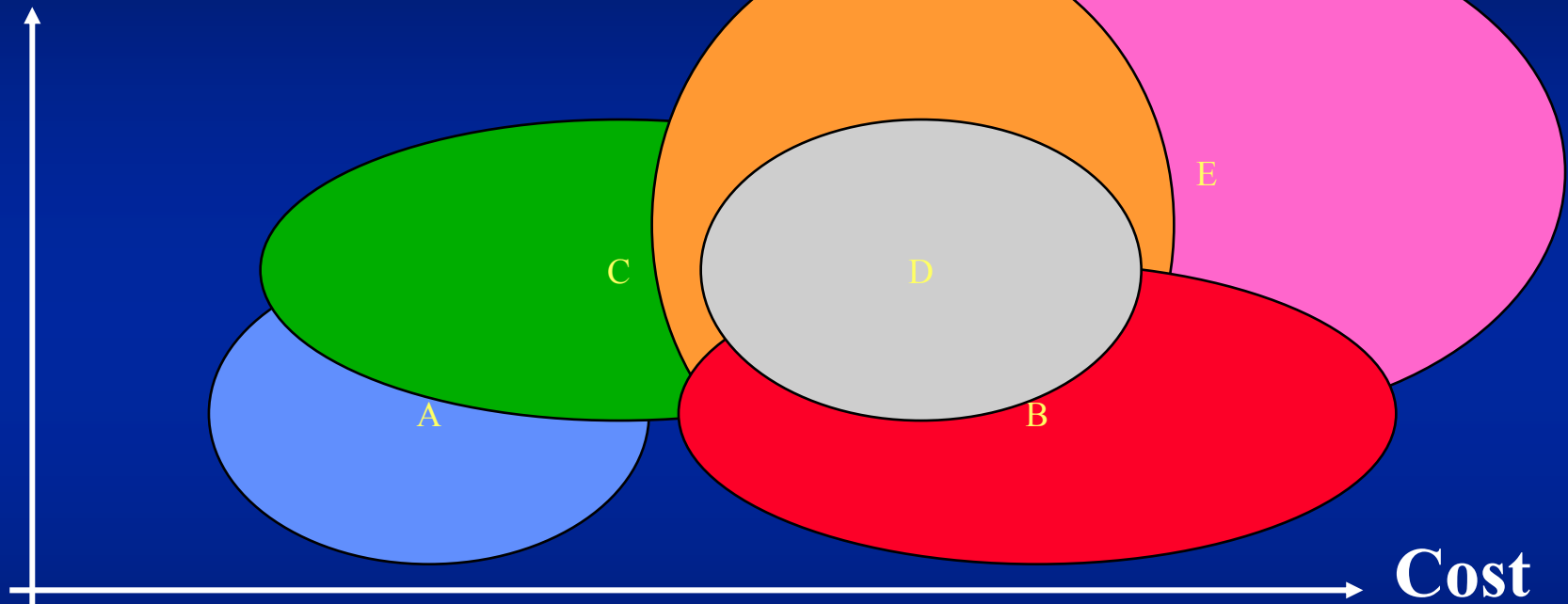
Cost Capability Trade Off

Combined Operational Effectiveness & Investment Appraisal (COEIA)



Initial Gate - COEIA

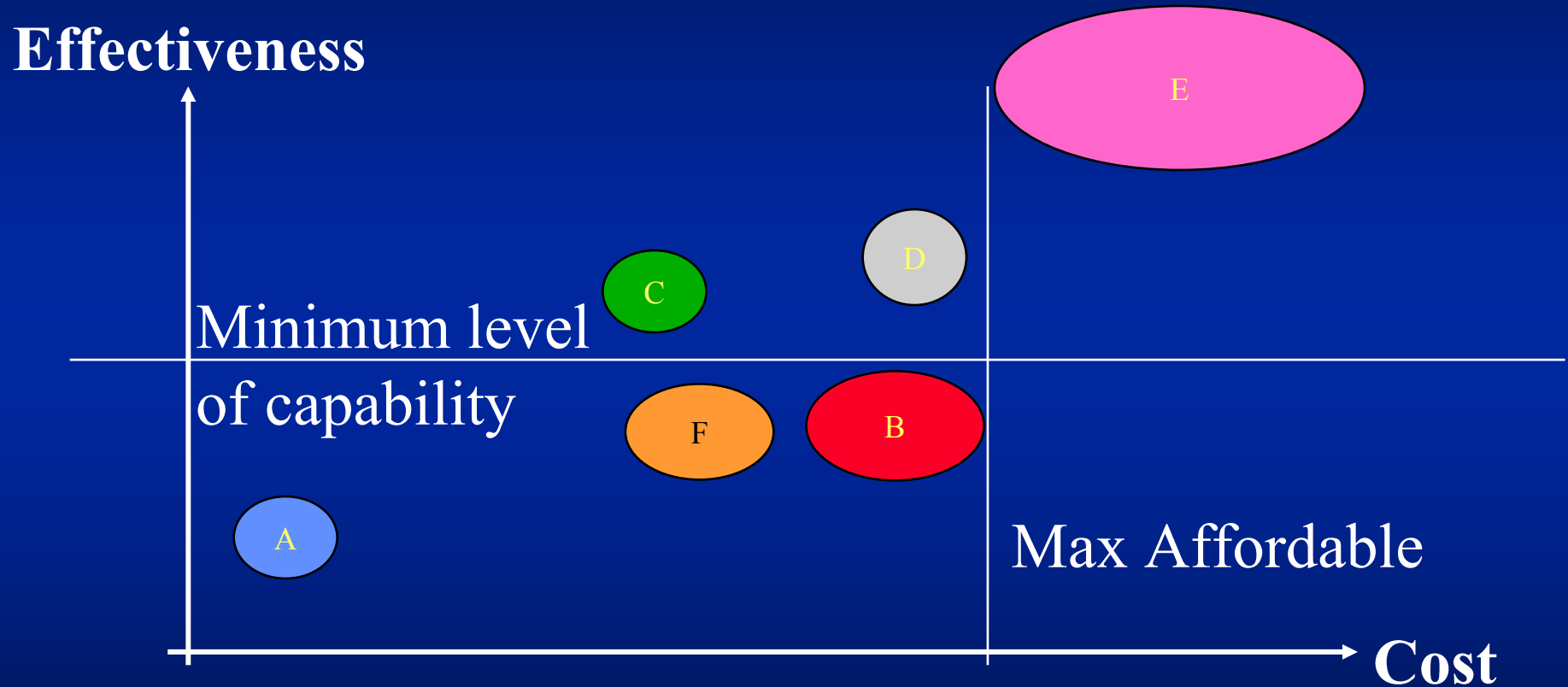
Effectiveness



So how much should we spend on Assessment?



Main Gate - COEIA



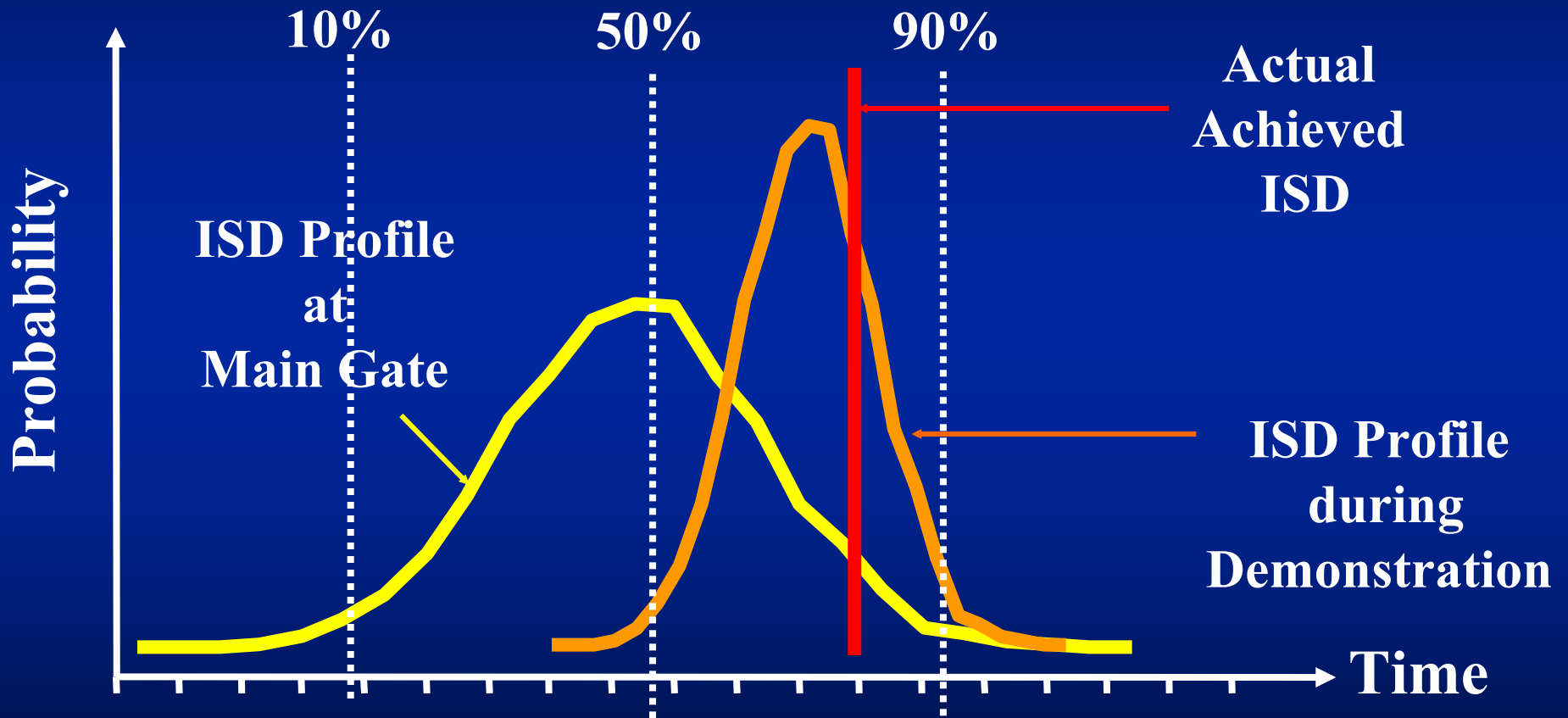
Risk and Risk Management

- Risk analysis & technology maturity have the potential to structure a better plan
- It is impossible to eliminate risk
- Look for sources of risk – interfaces and MDAL
- Ensure enough is being spent on risk reduction
- The purpose is to reduce risk not to manage a process
- Needs to be credible and joined up

Must we keep re-learning old lessons?



ISD Through Project Life

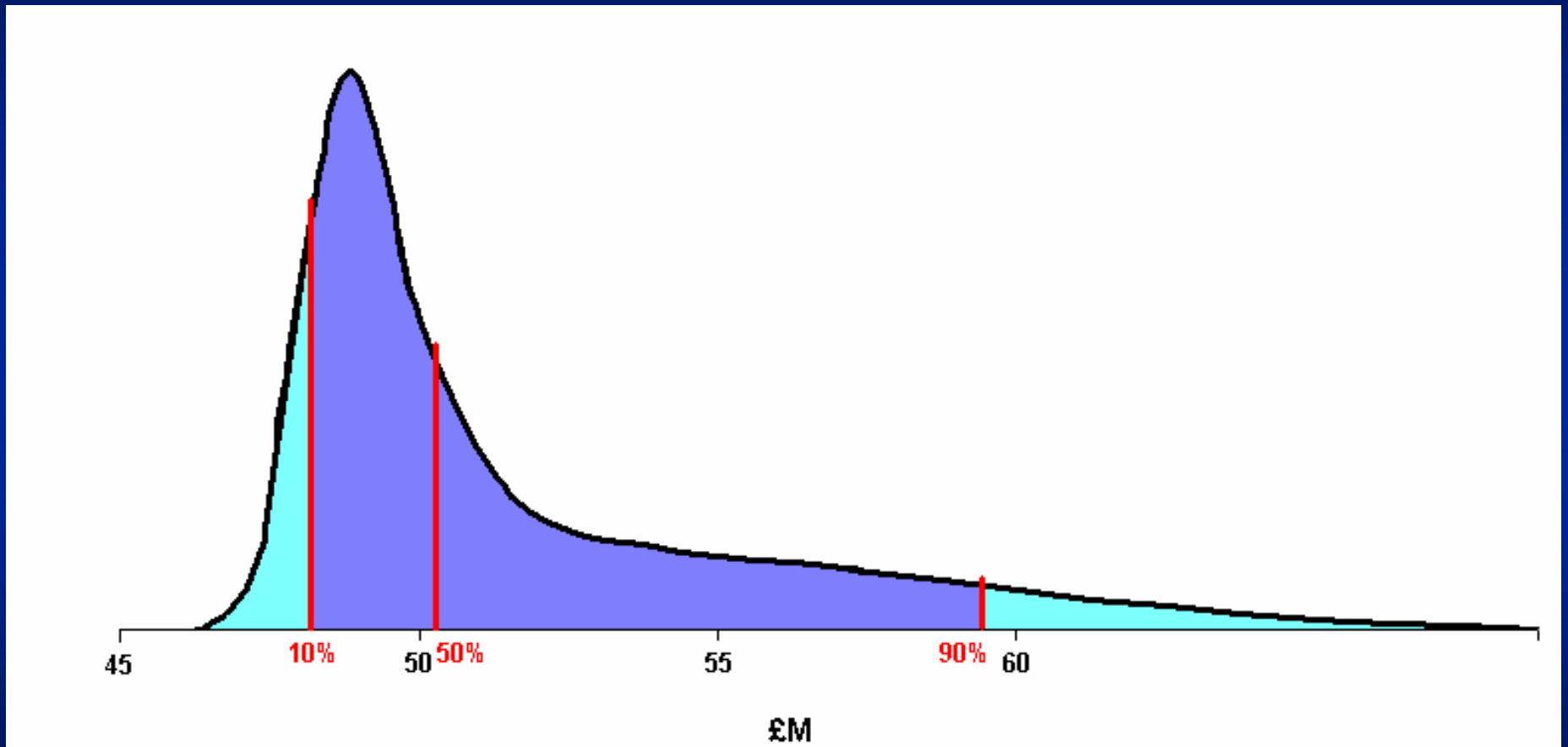


Simple Tests for Monte Carlo Outputs

- Where is the scope for improvement in the 50% value?
- How credible is the 10% value?
- What drives the step to 90%?
- Where does the contract value lie?



Not To Exceed (1)?

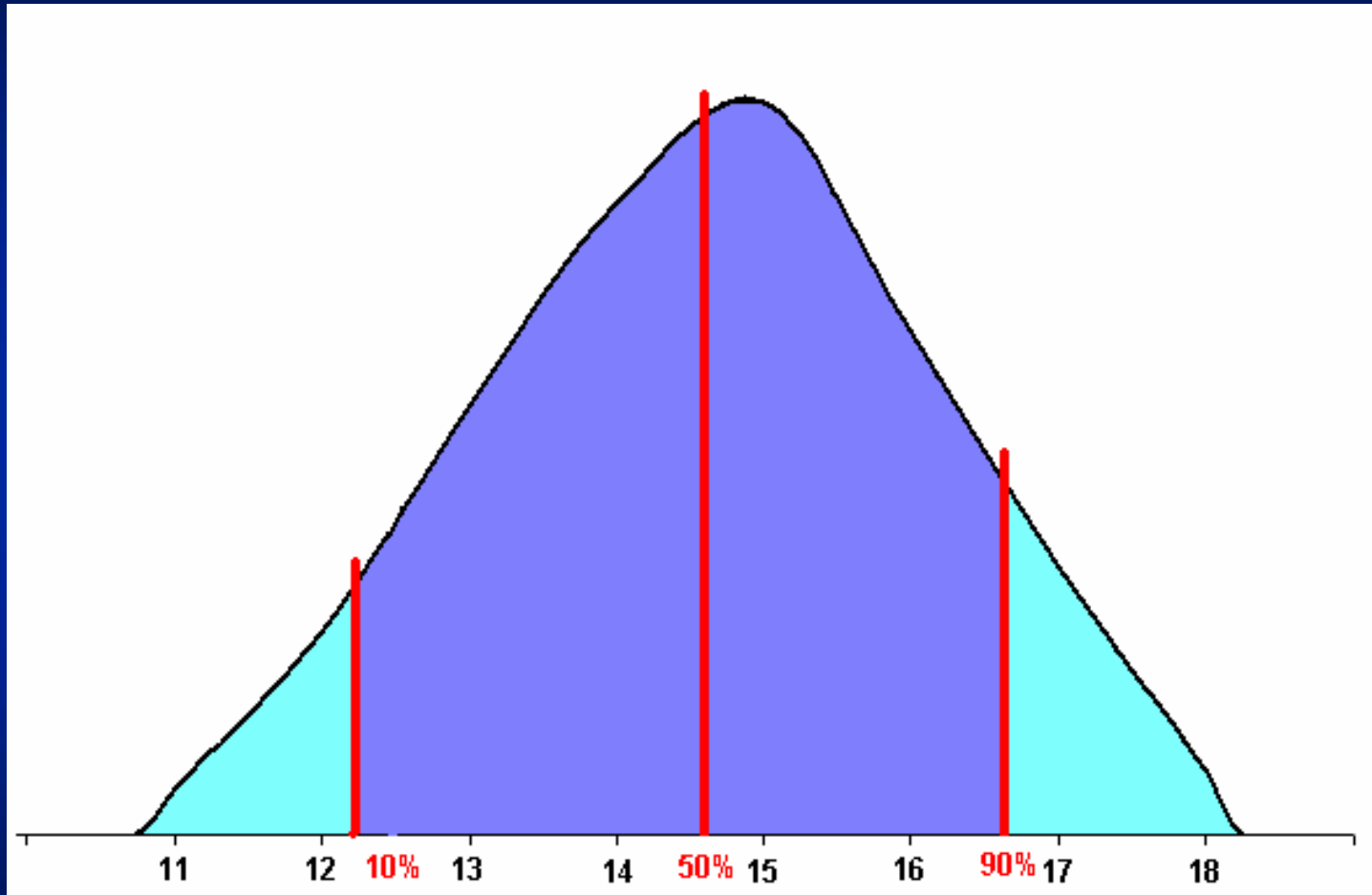


Extracted from a real case

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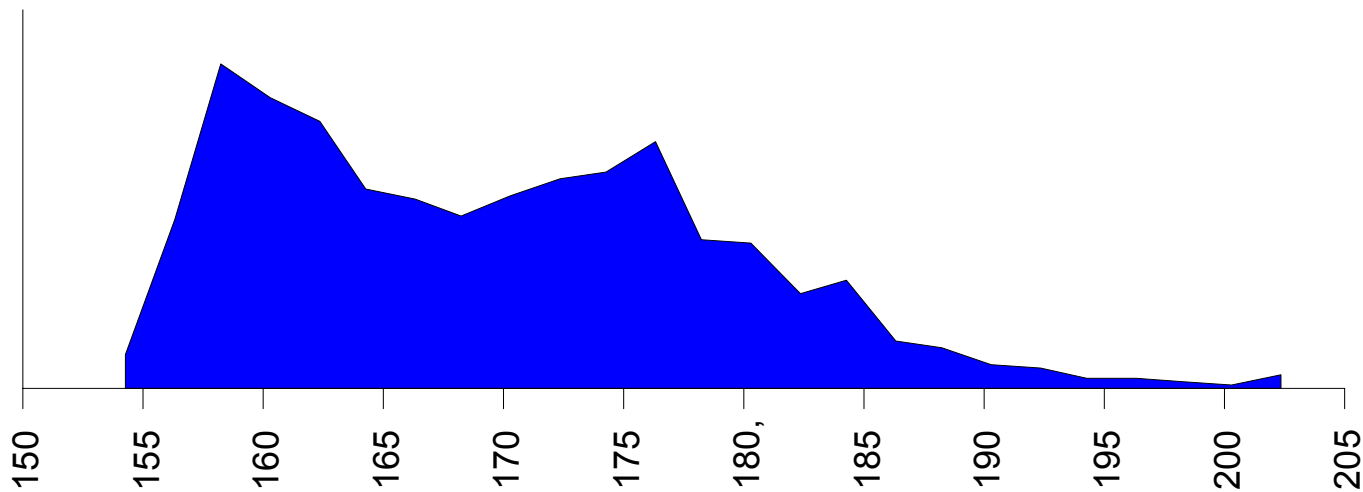
Not To Exceed (2)?



Extracted from a real case



Not To Exceed (3)?



Extracted from a real case

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Is 'Monte Carlo Simulation' a religion?



**Can I make approval
decisions on Monte Carlo
simulation outputs?**



**How do I know whether the
Monte Carlo simulation
outputs are fit for purpose?**



Where do we go from here?

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Questions?

