SCAF Presentation

A Cost Analysis of Reusable and Disposable Deep Target Attack Weapon Delivery Systems

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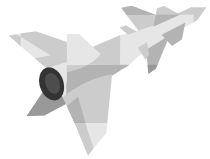
1 Introduction & MBDA Need

Introduction

MBDA called upon QinetiQ to help them understand the cost differences between using a reusable air vehicle and an expendable air vehicle to deliver deep target attack capability

Deep Target Attack Options Overview

+ Periodic testing



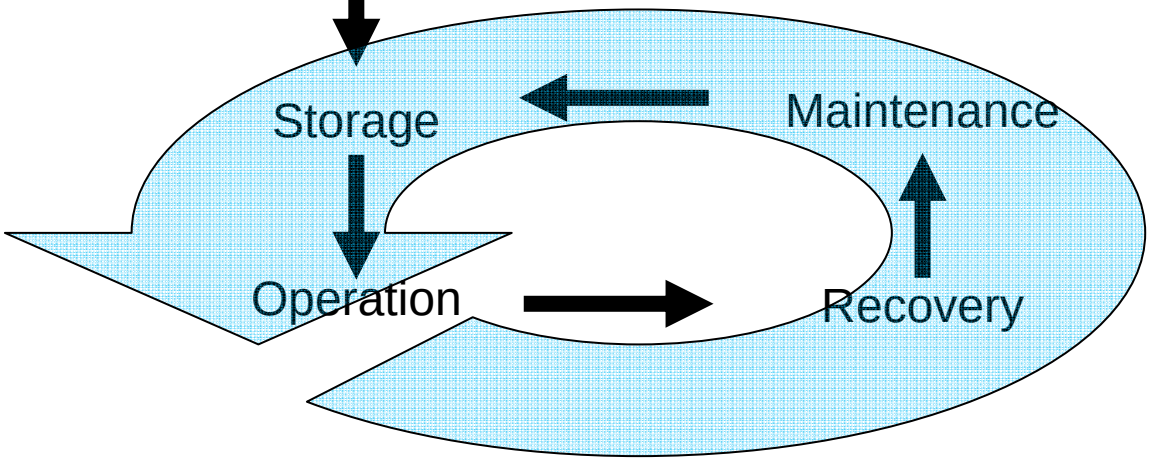
Factory

Storage

Operation

Expendable

Factory



Reusable

+ Development
+ Certification
+ Capture system
+ Structural integrity
+ Maintenance Facilities
+ Spares
+ Attrition (number of iterations?

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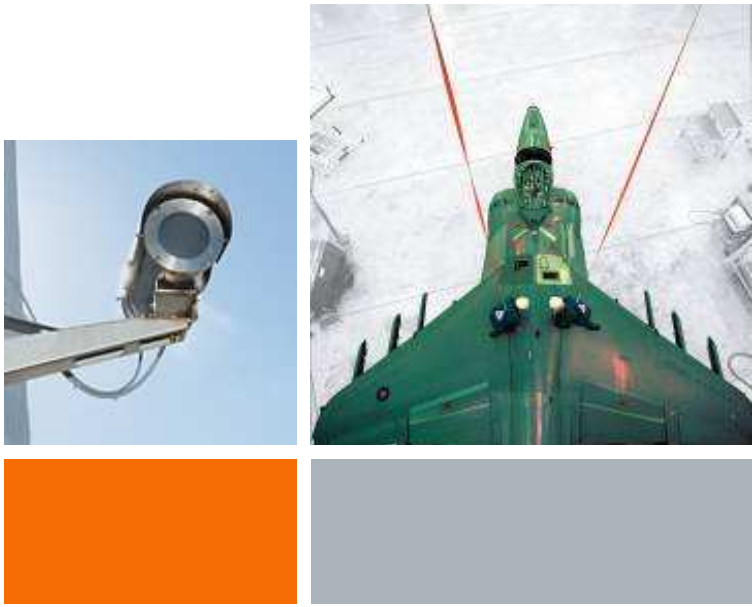
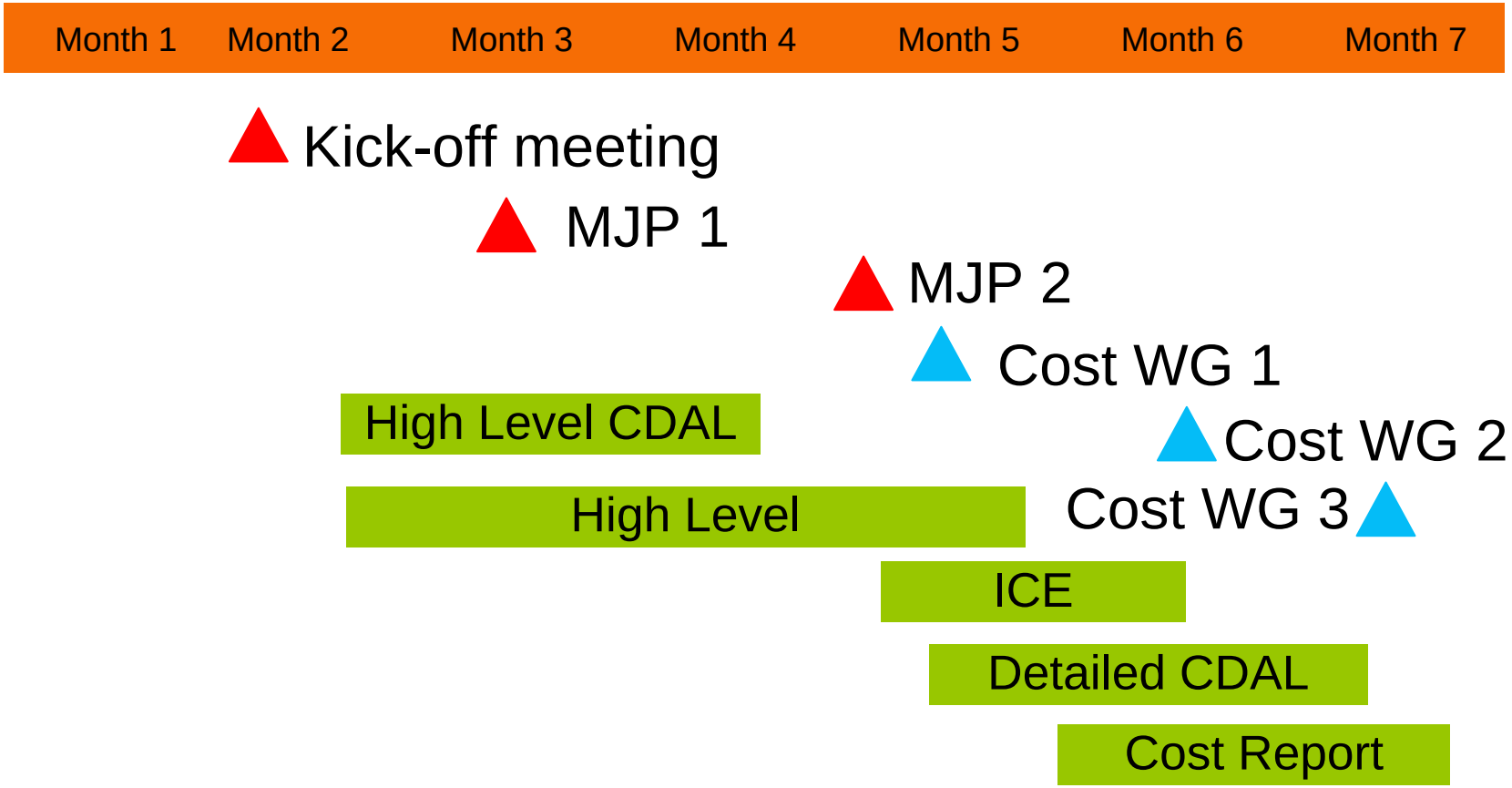
Deep Target Attack Options Design Variables

	Expendable System Assumptions	Reusable System Assumptions
Vehicle/ System Class	Cruise Missile	Unmanned Aerial Vehicle
Take-Off Mass (kg)	xxxx	xxxx
Basic Mass Empty (kg)	-	xxxx
Range (km)	xxxx	xxxx
In-service Profile	Modelled as a Cruise Missile (Wooden Round): 1) Used once 2) Is destroyed during it's mission 3) Requires typical missile in-service maintenance and support	Modelled as a UAV: 1) Used multiple times 2) Returns to point of launch 3) Requires typical UAV ground support in preparation for re-use
Production Quantity	Baseline: xxx	Baseline: xxxx

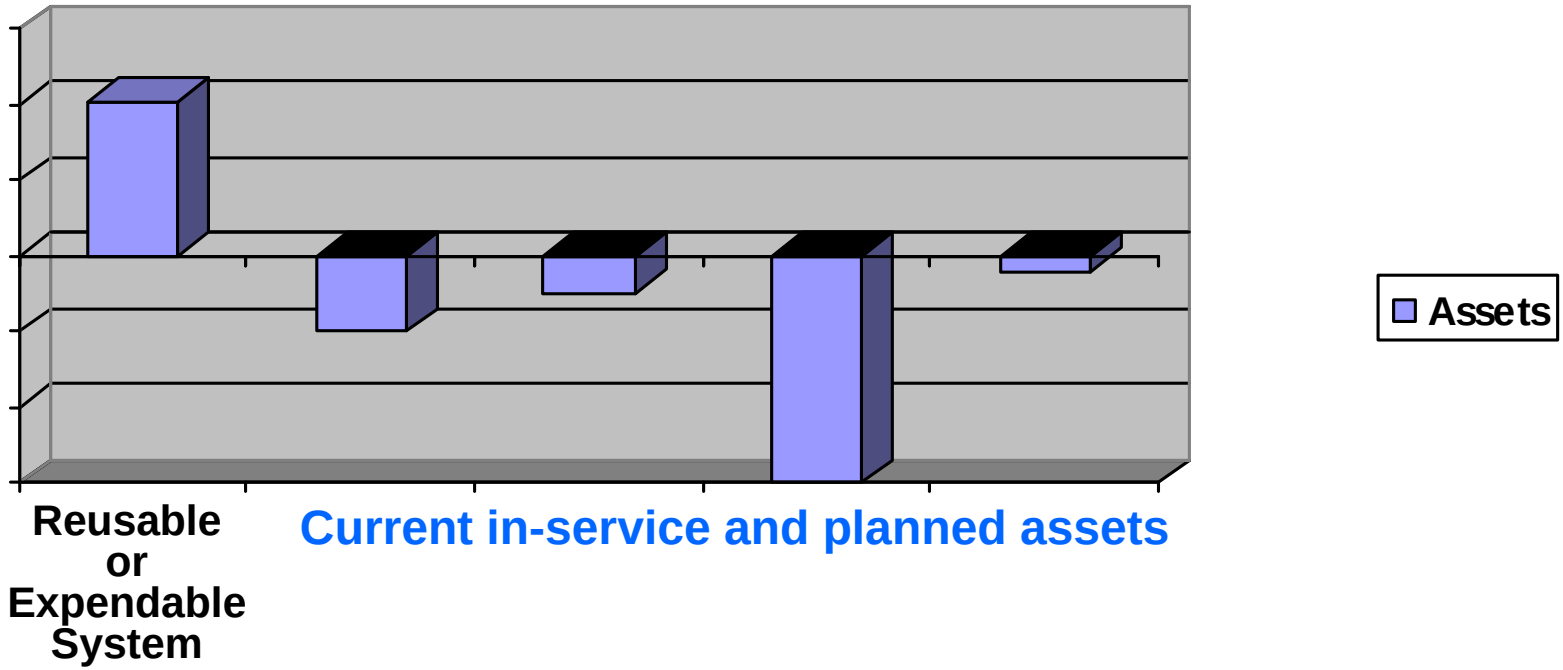
2 Analysis Approach



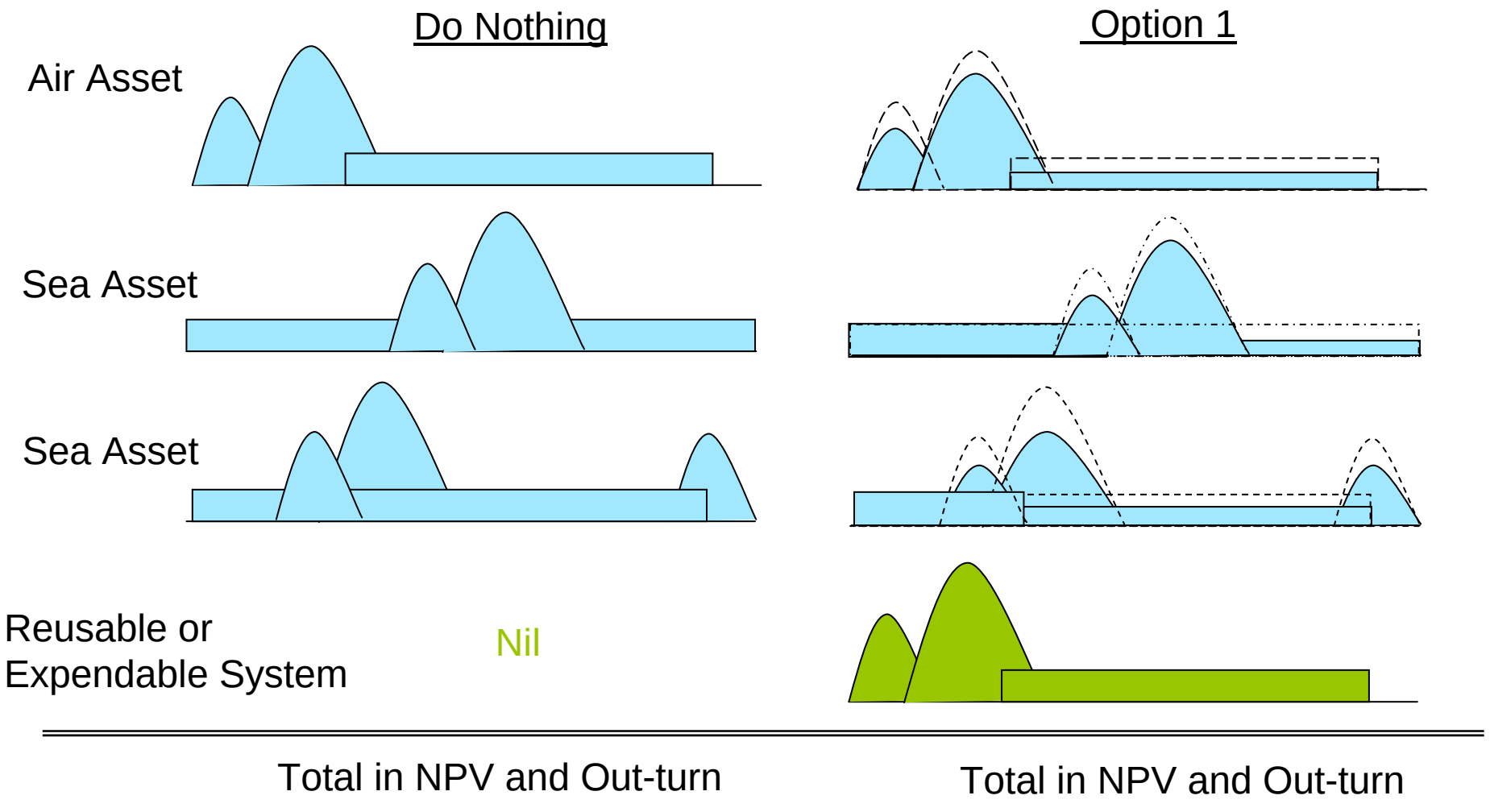
Task Overview



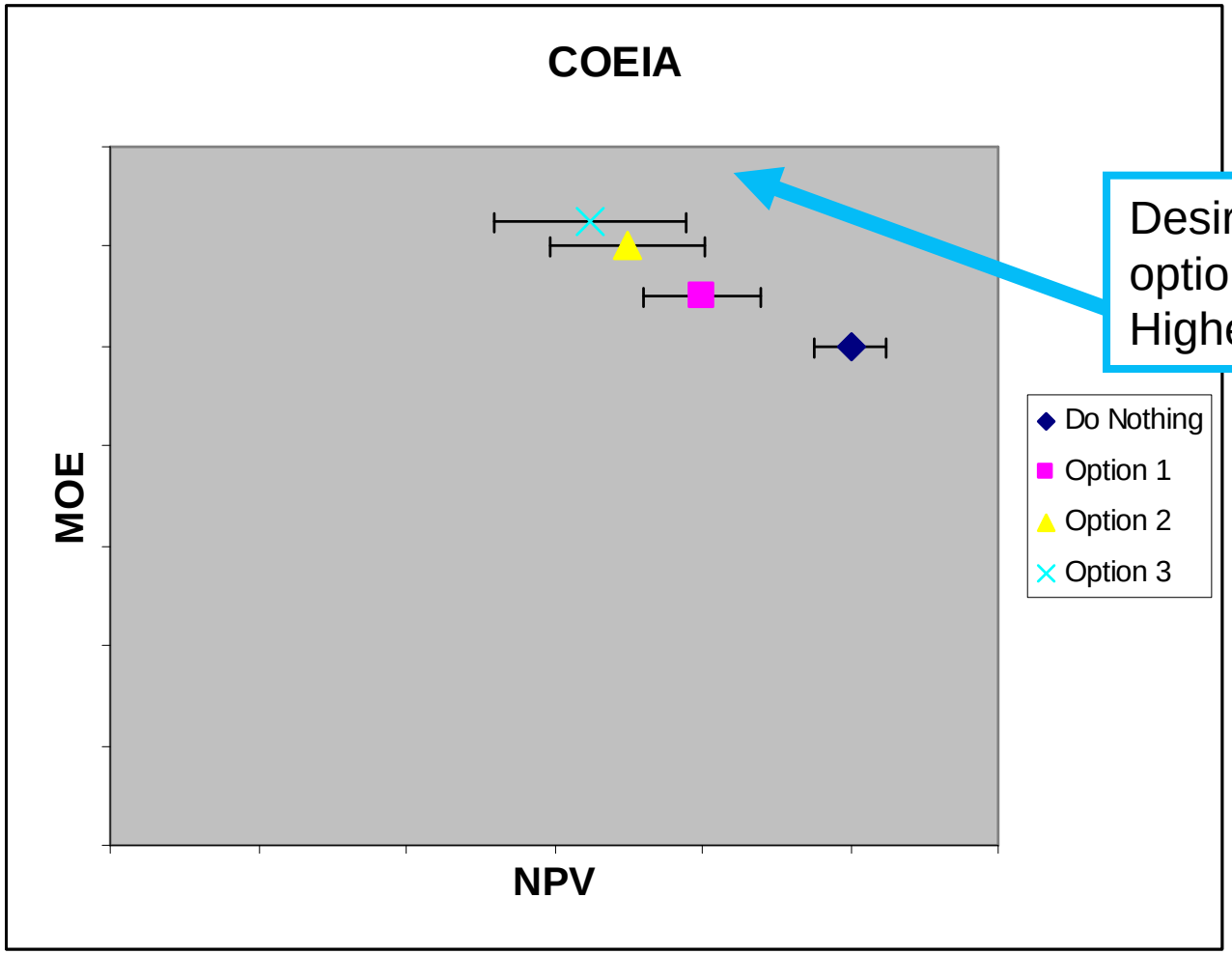
Financial Analysis - Affordability



Economic Analysis – Value for Money



Economic Analysis - Options Analysis



Parametrics - Continuum of Complexity

Increasing Complexity of Method / Relationship

Macro-parametrics

Micro-parametrics

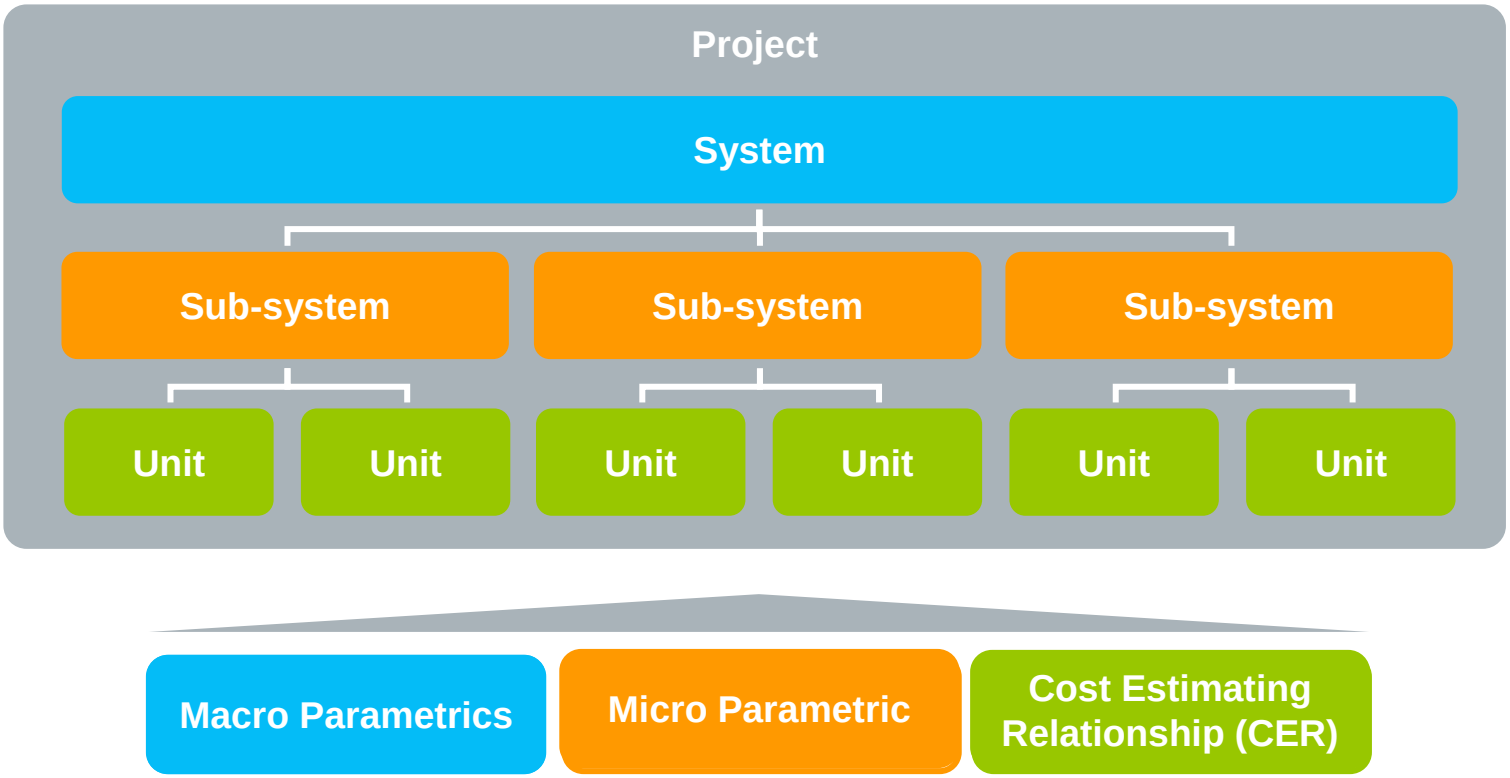
Cost Estimating Relationship (CER)

Parametrics – are all models the same?

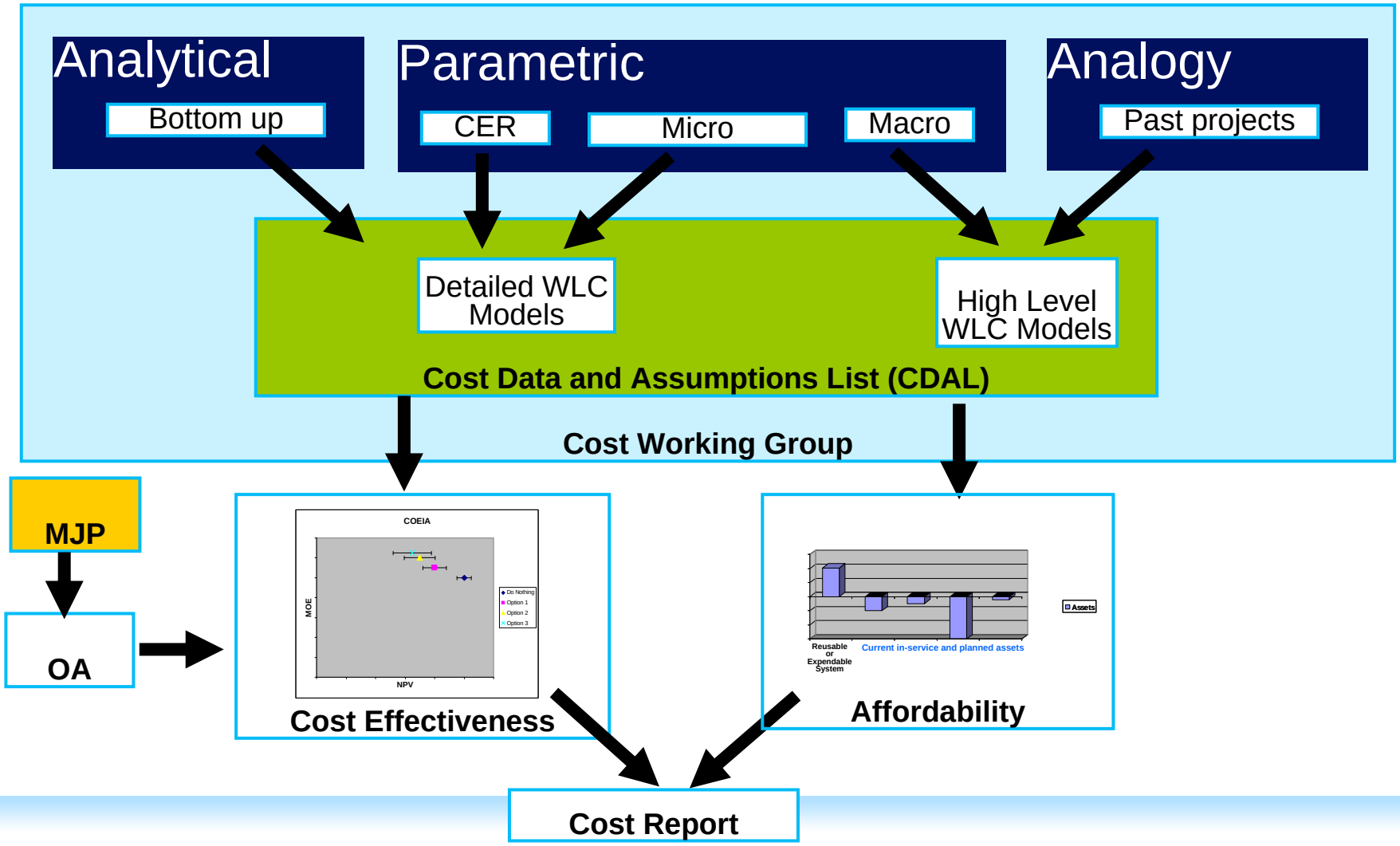
- Macro-parametrics – the application of a parametric model at the whole system level (e.g. FACET). Considers the big picture, with few cost drivers, but compromises the detail results.
- Micro-parametrics – the focus of parametrics at a lower level than system level (e.g. PRICE, SEER). Considers the system as a number of technologies; more cost drivers are required, but tolerance of the estimate is increased.
- Cost Estimating Relationships (CER) – the lowest level of mathematical algorithm, a single component of a parametric model (e.g. shipping x cost per container). Considers the services or units using a simple expression.

Parametrics – the right model at the right level

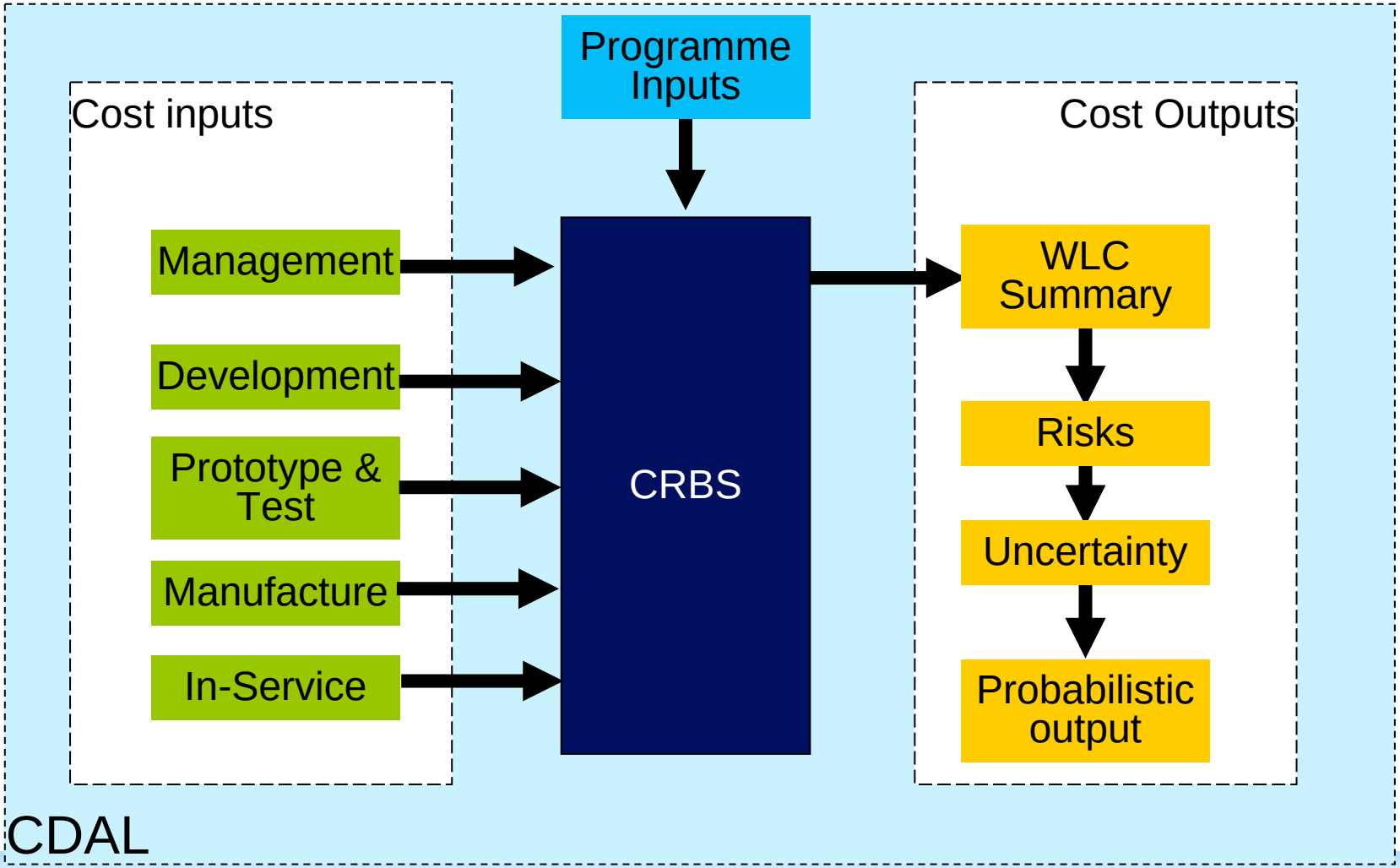
- QinetiQ applies the right estimating methodology at the right level…..



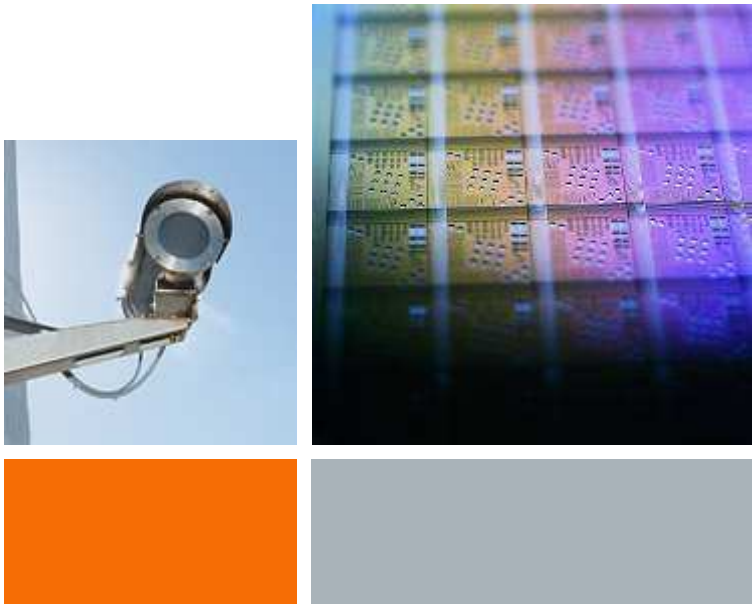
Data flow and analysis process



Cost Model



3 Conclusions



Conclusions

- QinetiQ provided a structured approach and independent view to the cost analysis
- Cost Drivers understood and analysed
- WLC analysis fed to MBDA for integration with OA
- Cost Work Group used to agree all assumptions and data
- Risk Management and Risk Analysis utilised for study
- MBDA moving forward regarding their understanding of reusable versus disposable cost drivers
- Multiple levels of parametrics utilised to accommodate various data availability
- Parametrics when combined with analogy and analytical techniques provides additional confidence in the cost forecasts

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