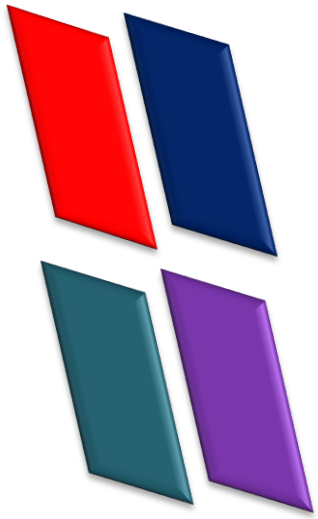


MOSAIC

ELS Task Acq 01 Cost of Open Systems Architectures

12th June 2012

perSideS

Arke Ltd

axotec sea

Introductions

- Chris Warfield, Arke
- Andy Mills, Arke
- Simon Brown, SEA

Background

- White Paper “Technology, Equipment & Support for UK Defence & Security”
- Incremental & Modular Acquisition based on OSA
- Issues poorly understood
- Research Goals: SEIG, Cap TA, Cap CI, wider DE&S, CSA
- A tool to assess OSA WLC to inform decision making

Objectives

- Consortium Approach – Best Athlete
- Phase 1
  - Define an Open System - SEA
  - Stakeholder review to Inform the Model on the Key Requirements - Arke
  - Provide Auditable Requirements and a Framework model to be developed into an OSA Cost Model – Arke
  - Exploitation assessment of OSA : Benefits & Disadvantages - Axotec
  - V&V WLC Specification and Framework to ensure Consistency with Requirements - Persides
- Phase 2
  - Model Development – Iterative Approach
  - 6001: basic capability
  - 6002: Initial Operating Capability
  - Testing and V&V
  - Roll-out (case studies)

Why build an Open System?

- Many reasons for Open systems (from the AoF)
  - Improved interoperability and agility
  - Reduced costs through access to mass market products and competitive sourcing
  - Increased access to COTS solutions
  - Cheaper and quicker updates and technology insertion.
  - Increased operational availability through greater flexibility in repair and upgrade.
  - Reduced reliance on specialised support equipment, resources and personal.

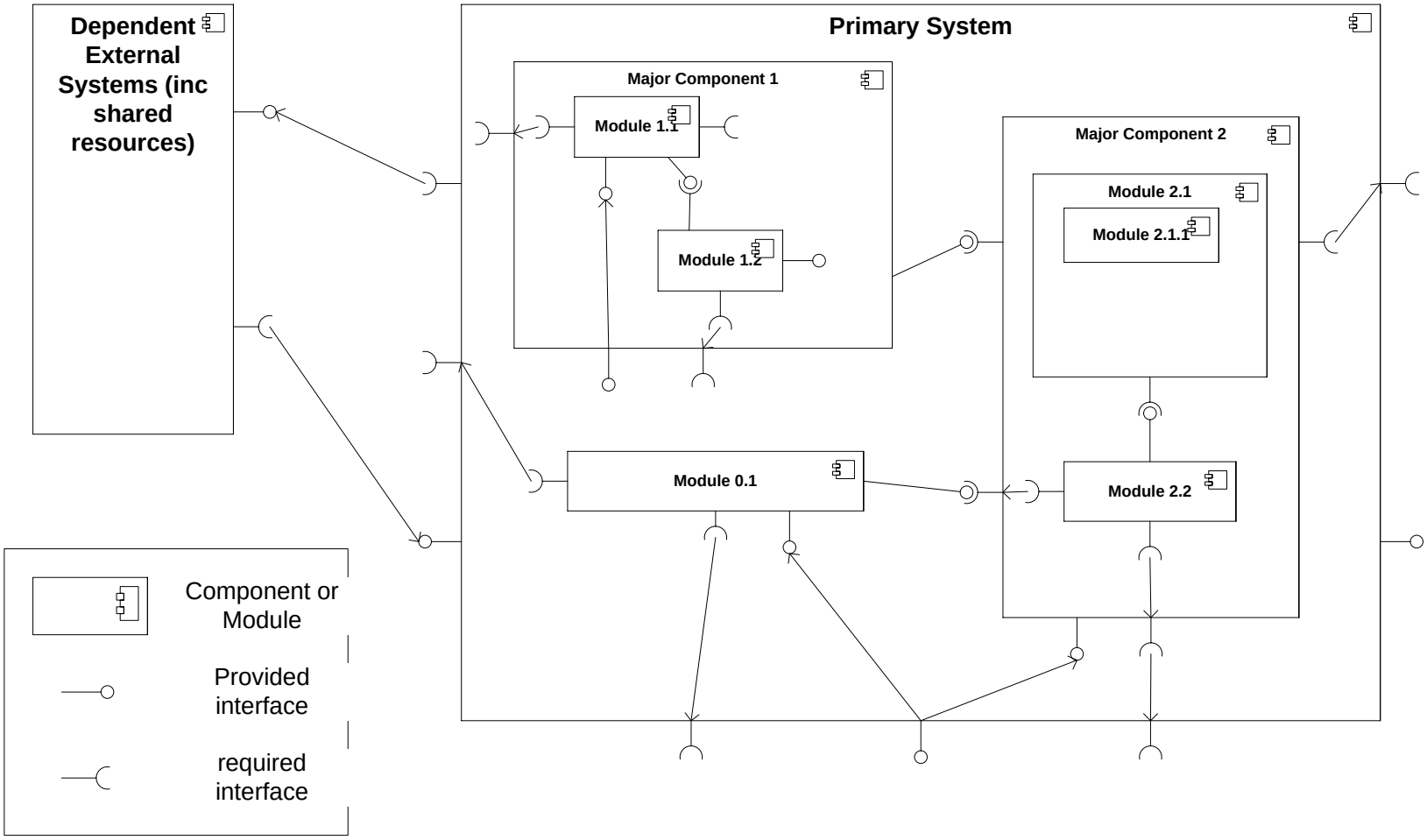
What is an Open System?

- "The term "Open System" refers to a system whose major components and interface specifications adhere to specific, freely-available standards"
- Considerations
  - Who is the system Open to?
  - How Open is the System?
  - To what level is the system Open?
- Most systems are partially Open
- Maintaining Openness is a through life consideration

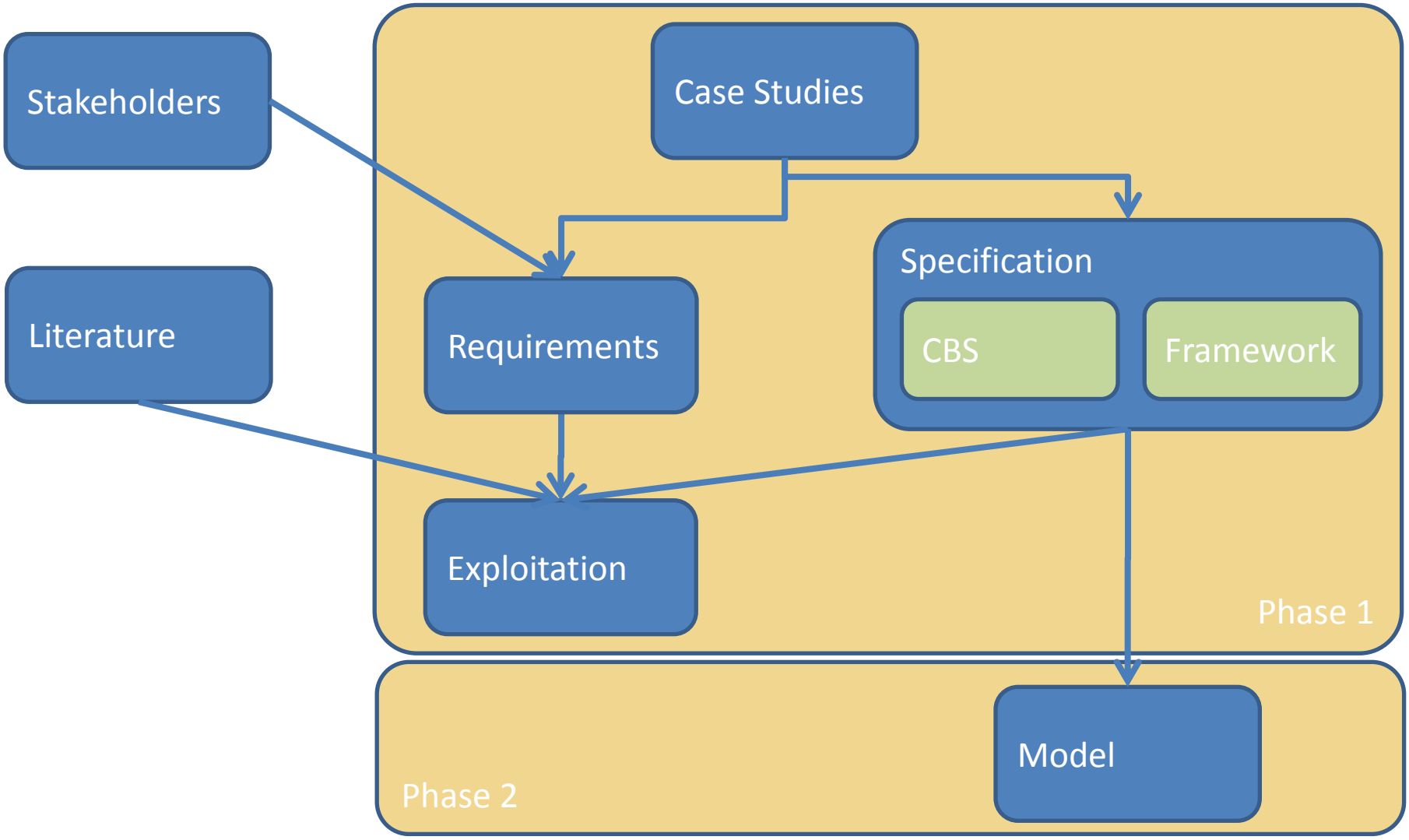
Building an Open Systems?

- Any system can be made Open
- Modular Open Systems
  - Modularity is a design decision where components are systematically broken down into smaller elements that can be treated separately and easily changed with minimal disruption
  - Modules can be Fully open, Partially open or Closed
- Consider what needs to be open
  - What is likely to change
  - What is likely to go obsolete
  - How may the external systems change

Describing an (Modular Open) System



Approach

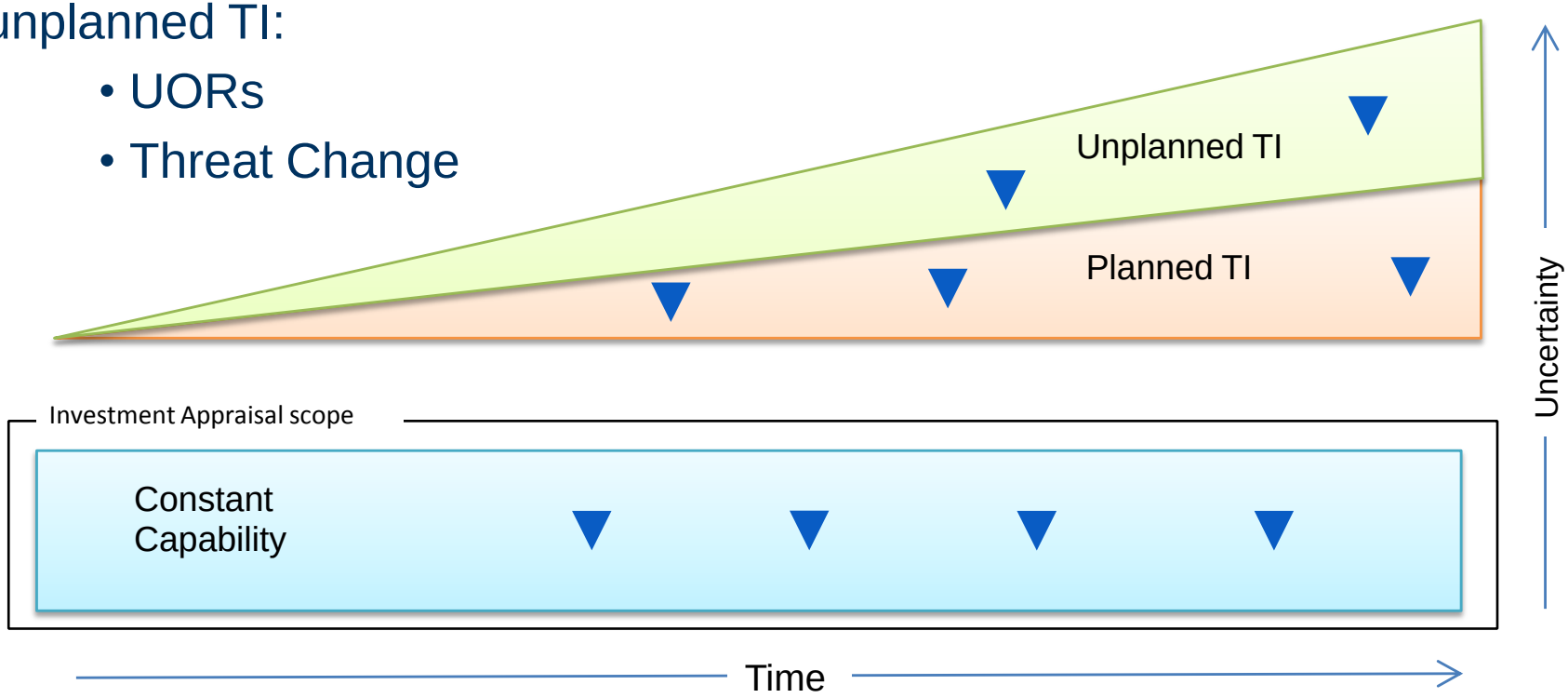


Stakeholder Engagement

- Requirements Capture
  - AgustaWestland - Air
  - BAE MS - Maritime
  - CAAS IA - Policy
  - CAAS QMA - Policy
  - Dstl – End User
  - Dstl PCS – End User
  - IMaGE - ISTAR
  - JBTSE - Land
  - LEPPS - Land
  - MCS PT - Maritime
  - PTG-TD – Tri Service
  - UKMFTS - Air

Requirements – The IA Problem

- Traditional IA Scope assumes *Constant Capability*
  - Planned *updates* maintain obsolescence
  - Planned *upgrades* maintain capability against requirements
- OSA Through-Life Cost Benefits realised against planned and unplanned TI:
  - UORs
  - Threat Change

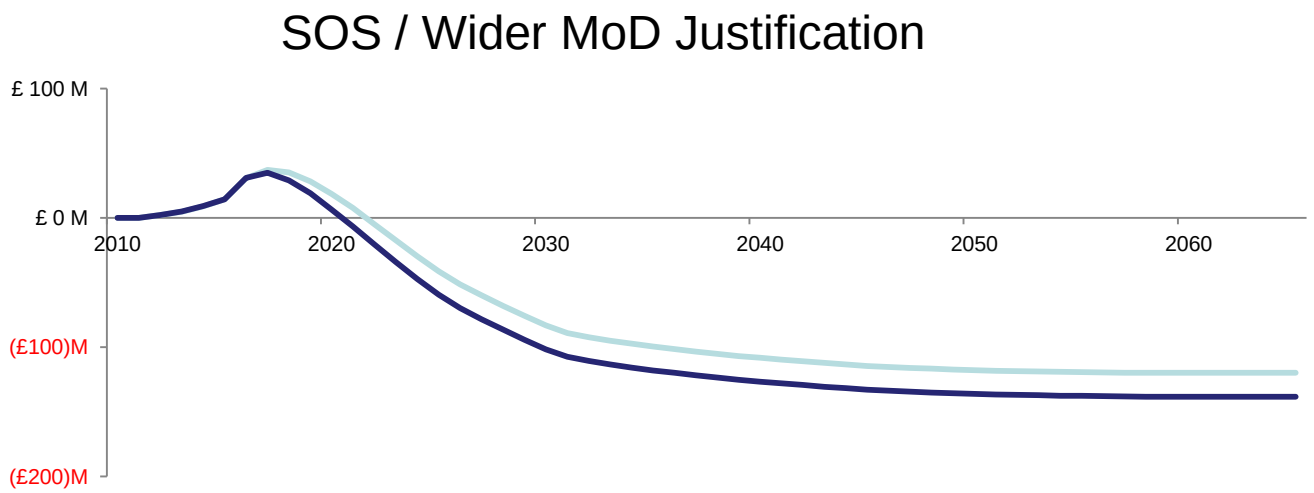


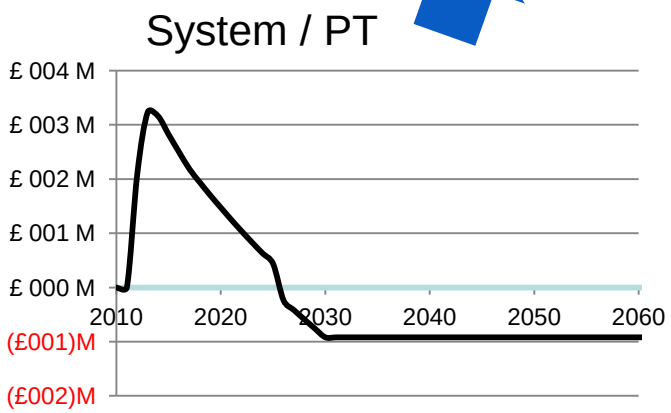
Requirements

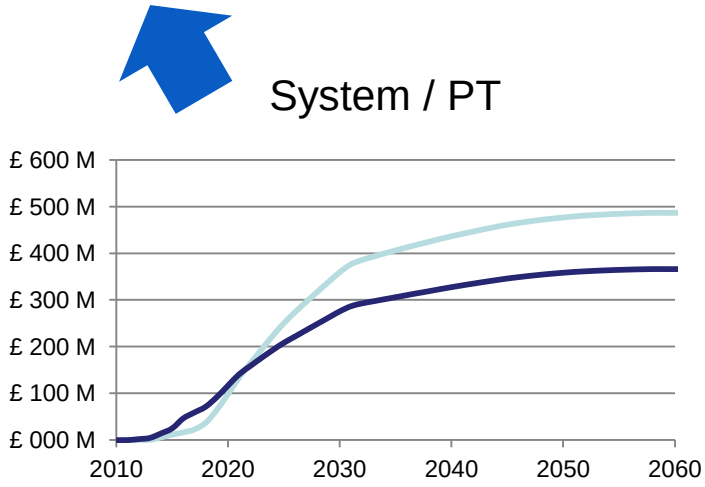
Key OSA cost model challenges:

- Technology Insertion (JSP507 Compliant) – the use of Other Contributing Factors (OCFs)
- Generic & Scalable – JCB01 to MG
- Intelligent User (WLC Practioner) not Parametric
- Cost to MoD at all levels (Component, System, SoS)
- System of Systems (SoS) approaches
  - Allocation of shared costs to individual systems, DLoD

Requirements – Cost to MoD & SOS Challenge





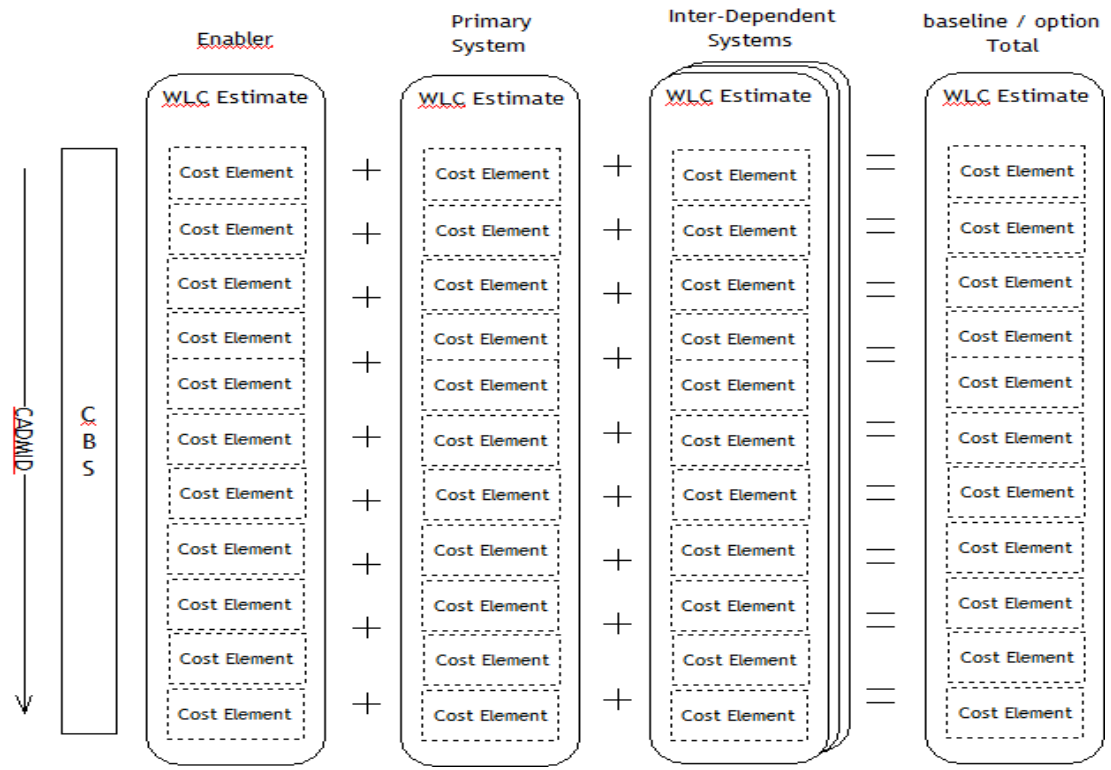


Framework

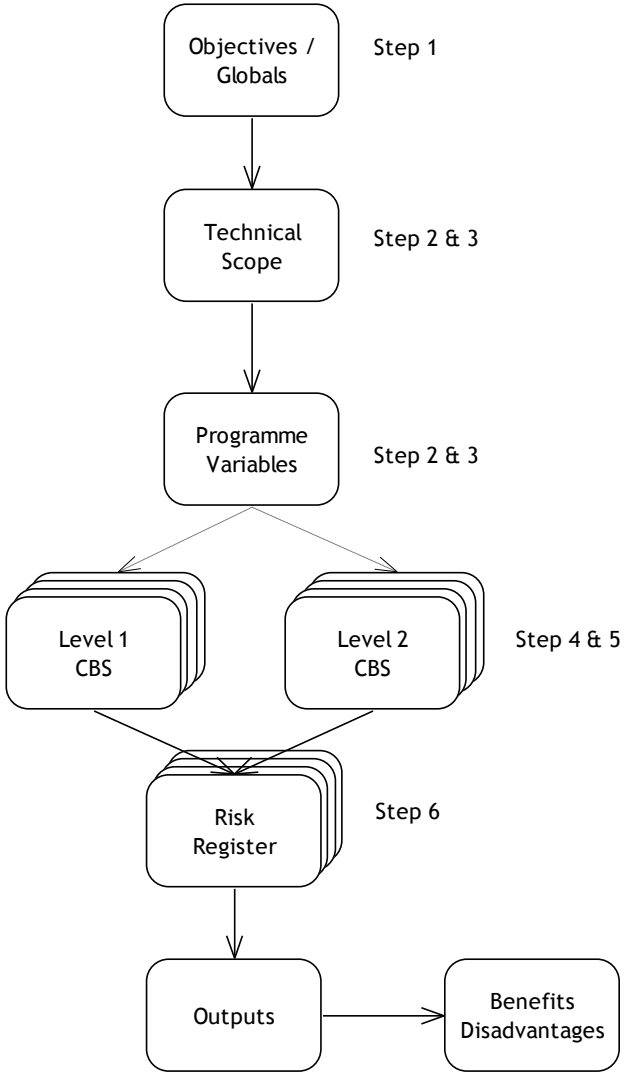
- Practical Step by Step guide
  - For WLC practitioners
  - Includes potential benefits/ disadvantages check list
  - Identifies:
    - Enabler
    - Primary System
    - Inter-Dependent System
  - Budget Holders

Framework – Scalable & pan MoD

- Generic OSA Cost Breakdown Structure (CBS)
  - Level 1 - JCB 1&2
  - Level 2 - IG MG business case

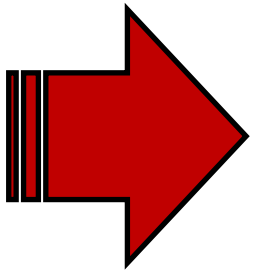


Framework steps



OSA Guidance

Exploitation benefits and disadvantages of an OSA



Cost breakdown structure

Assistance to users of the cost model

Proposed Implementation

- Excel (2003 version)
- Risk Inputs
- Monte Carlo
- Baseline + 3 options
- Budgetary Outputs
- Dynamic Cash Profiling
- Cost Breakdown Structure (CBS) –
  - High level fixed structure by CADMID
  - Low level defined elements with additional user defined elements
  - 2 levels of WBS

Case Study Selection

- Key considerations
  - Availability of data
  - Open vs Closed systems options
- Case Studies
    - LPH & LPD CMS replacement – DNA2 vs SCE
    - Type 26 CMS – Discrete Vs Shared
    - Family of Weapons – BoB Vs FoW
    - UOR into Core – Bespoke Vs GVA
    - LOSA Warrior CSP Training – Bespoke Vs GVA
    - Situational Awareness – Bespoke Vs NATO standard

Model V&V Plan

- Independent Verification Model testing.
  - Level 1Development Check - Forms, Data entry and Data manipulation checks to be conducted by the development team and documented (iterative checks)
  - Level 2 Blank copy check – A blank copy will be provide to Persides for data entry and output checks. (iterative checks)
  - Level 3 functional checks – An independent Persides member of staff (with WLC experience) will review the model to ensure the outcome follows a logical path
  - Case study Reviews – Persides will be provide with a Case study and populate the Model to ensure the model provide the expected outcomes
- Independent Validation Activities
  - Requirements and model outputs check against
- CAAS Assurance – V&V the V&V