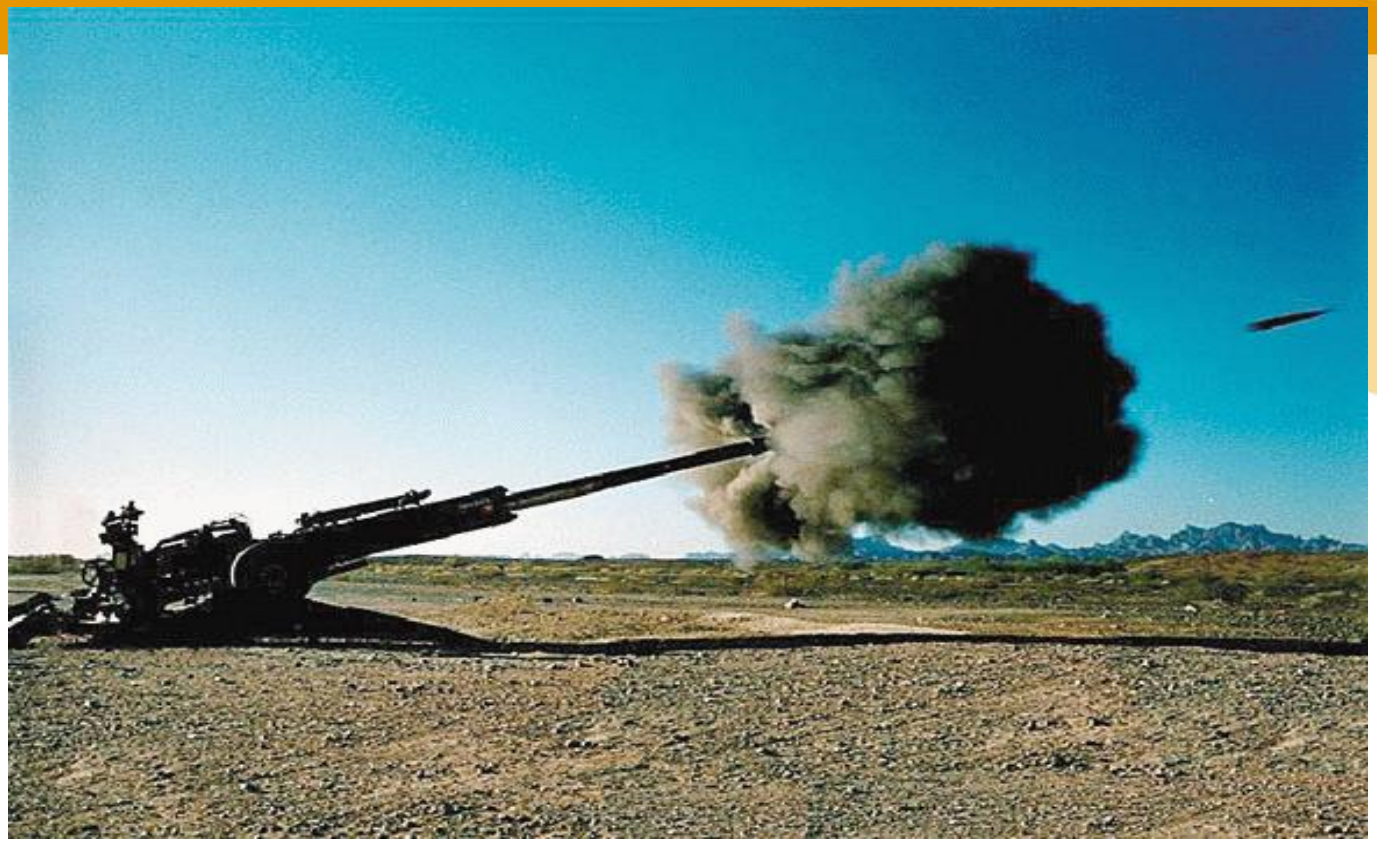

Portfolio Management
A Parametric Approach

ICEAA Conference New Orleans 2013

Who am I?

- **Andy Nicholls**
- **Principal Consultant PRICE Systems**
- **Background**
  - **Electronics/ Avionics**
  - **SCEA certified CCE/A**
  - **37 years in UK Defence environment**
  - **28 years in cost estimating and forecasting complex projects/ programmes**

DISCLAIMER & ACKNOWLEDGEMENTS

The views expressed in this paper are mine and do not necessarily represent those of my employer.

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THE NUMBERS ARE NOT REAL

Contents

- What is Portfolio Management
- How can it be used
- How it can be modelled
- Illustrated local Example
- Summary
- References

What is Portfolio Management?

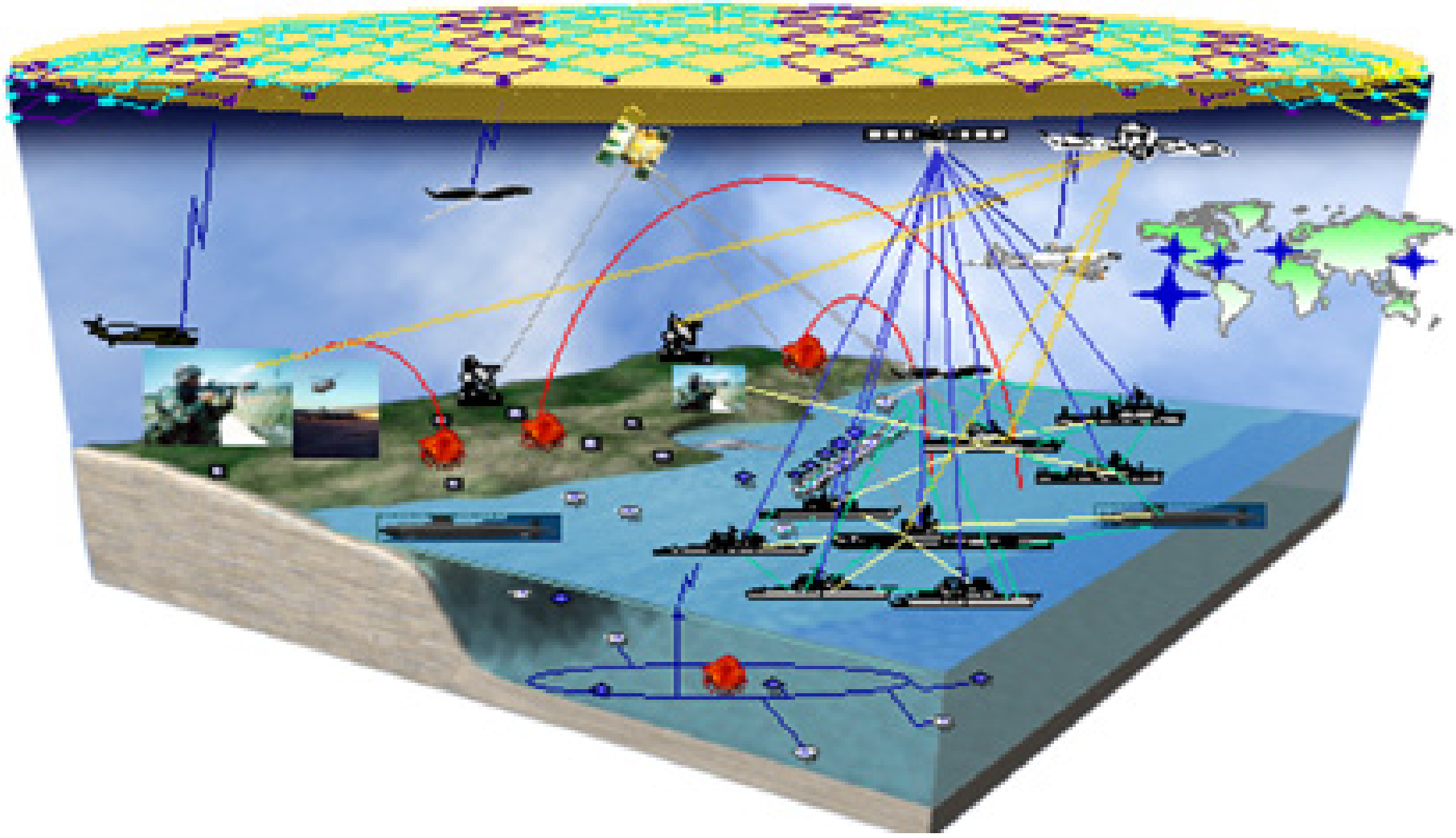
- A Portfolio is defined as a collection of projects and/ or programmes, grouped to facilitate effective management to meet strategic objectives
- Centralised Management of one or more Portfolios including
  - Identifying, Authorising, Prioritising, Managing & Controlling projects/ Programmes & related work to achieve strategic objectives.
- In Defence terms a portfolio is often all those Projects or Programmes required to deliver a specific Capability.
- A recognised method is the UK Office of Government & Commerce 'Managing Successful Programmes (MSP) framework.

The OGC View

PORTFOLIO	PROGRAM	PROJECT
An organisation's total investment (or a segment thereof) in the Changes to meet the Strategic Objectives	A single vision of Change leading to specific outcomes aligned to one or more strategic objective/benefits	A focused delivery of a single output or multiple outputs contributing to a Programme vision or directly to a strategic benefit
Permanent (continually changing and aligned to the Strategic Planning process)	Temporary (can last for many years)	Temporary (relatively short-term in comparison)
On-going process of prioritising and aligning the Portfolio to meet Strategic Objectives	High Level Plans supported by detailed Plans	Project Level Plans with focus on detailed delivery using Stage Plans

Portfolio Management Guide
Final Public Consultation Draft

Defence Capability



A quote……

***"Possibly the single-most transforming thing in our forces will not be a weapons system, but* a set of interconnections *and a substantially enhanced capability because of that awareness*."**

—Secretary of Defense, Donald Rumsfeld

A Capability sub-set

How Can it be Used?

- Given a defined capability grouping of Projects and Programs a combination of cost models may be constructed to include:
  - Project/ Programme details (Current, mid-term and far future)
  - Delivery programmes
  - Perceived Schedule & inter Project dependencies
  - Technical details
  - Technology details
  - Supplier information (where known)
  - Uncertainty
- The combined Capability Budget may then be used with overall predicted cost profiles for further analysis to aid planning and change programmes.

Defence Capability Plan (DCP)

- The public DCP contains:
  - Portfolio Management in Defence
  - First/ second pass Approvals to 2015/16
  - Defence Programs and Projects across Sectors
  - Broad details of budgetary costs
  - Broad details of key milestones per Programme/ Project
- The public DCP does <u>not</u> contain:
  - Committed Program costs extant over the period
  - Time phased budgetary data (Acquisition or Support) profiled beyond the Forward Estimates 2015/16
  - Indications of whether budget figures are "50th percentile" or point estimates
  - Some sensitive programs

4 Year Snapshot – Vehicles & Land Sector

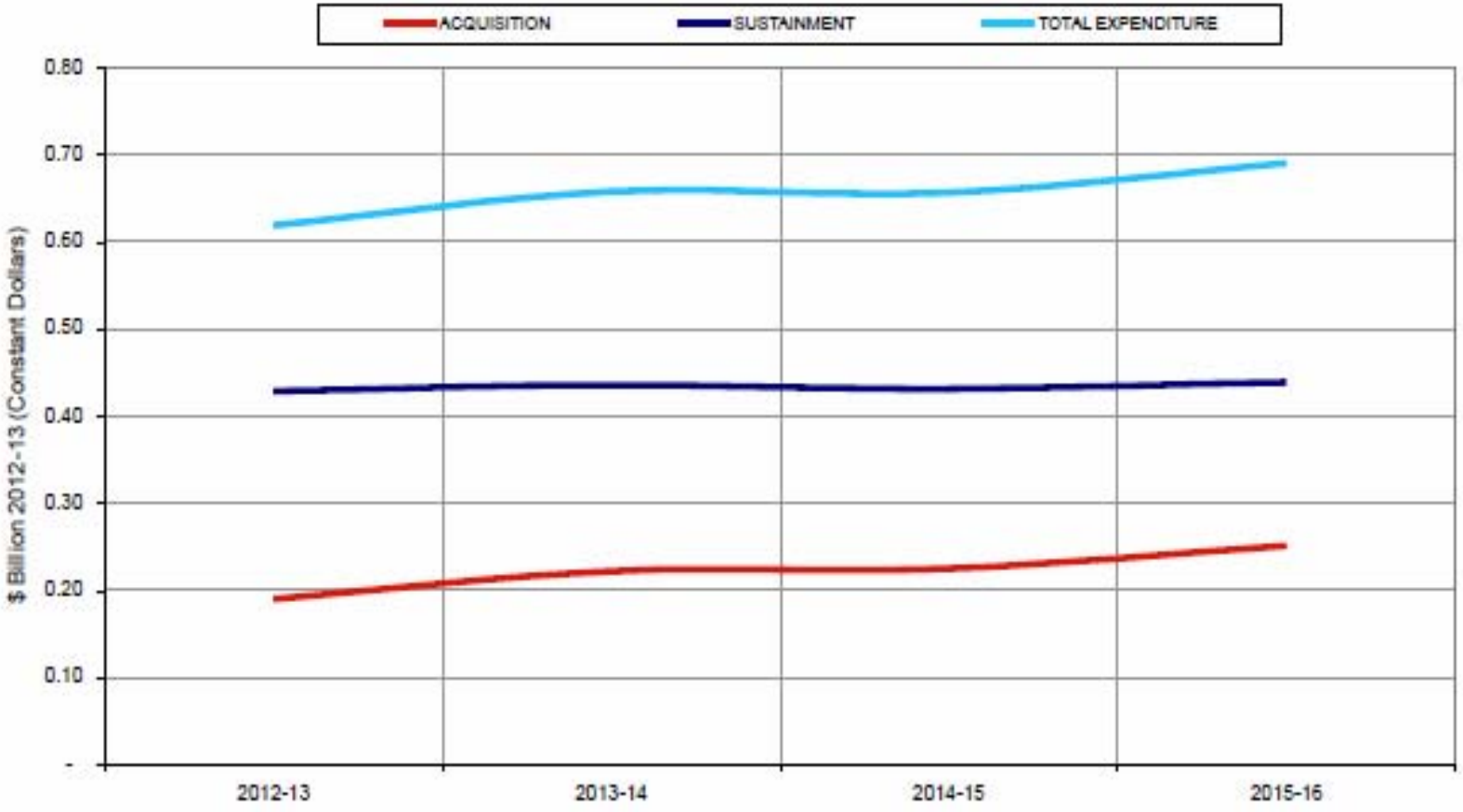


Chart 3: In-Country Expenditure within the Vehicles and Land Sector

Defence Capability Plan (DCP)

- The public information groups projects by Sectors
  - Air
  - Maritime
  - Land & Vehicles
  - Joint Programs (JP), mostly electronic systems and Weapons/ munitions
- The Programs/ Projects are categorised ACAT I to IV, where I is the largest and IV the smallest

ADF Program Categorisation & Modelling

- Programs are Categorised with scores that use six attributes:
  - Acquisition Cost
  - Project Management Complexity
  - Schedule
  - Technical Difficulty
  - Operation & Support
  - Commercial
- The 1st & 5th are the outputs from a cost model, the remainder are required inputs.

How the DCP can be modelled

- The publicicised Programs/ Projects are in Sectors, not to a "Capability" (eg Deep Strike)
- Programs/ Projects categories ACAT I to IV
- Missing technical or quantitative data is fairly easy to find on the internet
- ACAT I-III DCP budgetary mid range total is $89.4Bn
- Using the public information, a 'top down' parametric integrated model by Sector is possible

"*Possibly the single-most transforming thing in our forces will not be a weapons system, but* a set of interconnections *and a substantially enhanced capability because of that awareness*."

—Secretary of Defense, Donald Rumsfeld

How it can be modelled – Top 50

- Extracting data allowed some initial analysis & identification of the Top 50 projects by value (not synonymous with capability delivery)
  - Air - 16 Programs/ Projects
  - Maritime - 9 Programs/ Projects
  - JP 15 - Programs/ Projects
  - Land - 10 Programs/ Projects
- Ranging 2012 to beyond 2030
- Represents a RoM Budgetary value of $82Bn – mid range estimate
- This covers approximately 90% of ACAT I-III in the public domain by value.

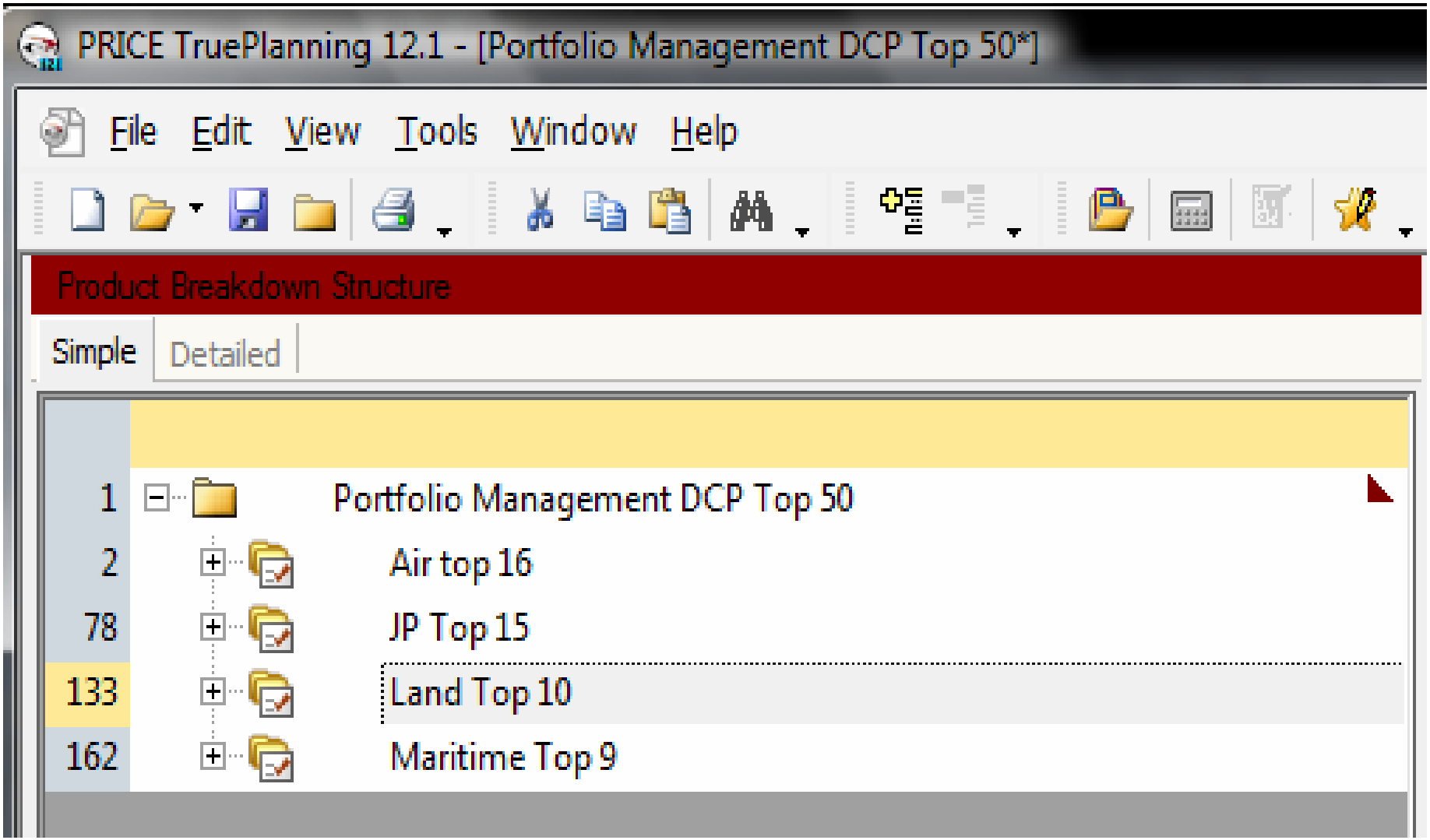
How it can be modelled

- Top 25 ACAT I-III by value
  - Air - 16 Programs/ Projects
  - Maritime - 9 Programs/ Projects
- Ranging 2012 to beyond 2030
- Represents a DCP RoM Budgetary value of $57Bn – mid range estimate
- Covers approximately 70% of the ACAT I-III DCP Top 50 Programs by value.

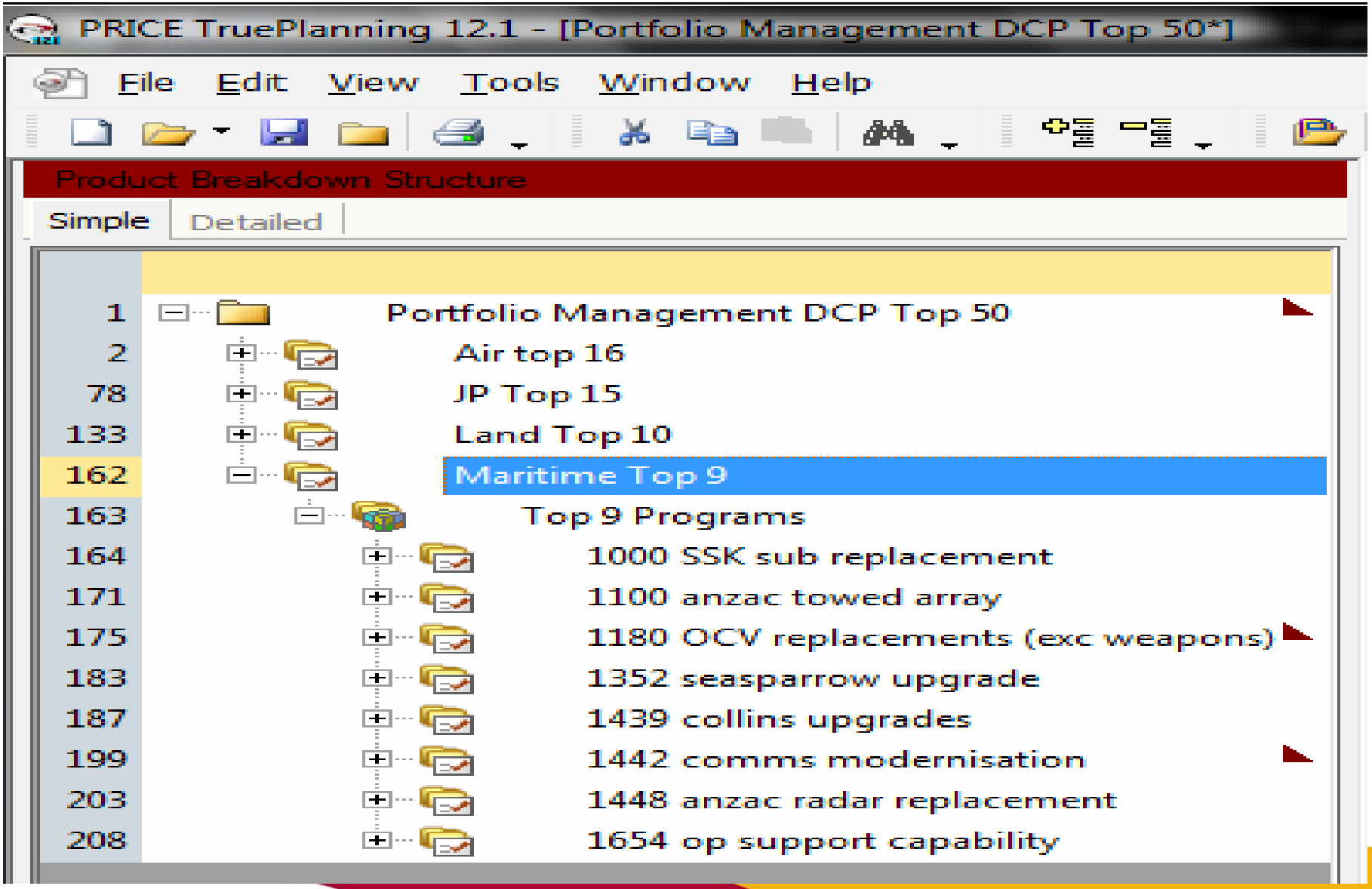
Categorisation Attributes & Modelling

Attribute	Model Input Mapping
Acquisition Cost	Predicted Output
Project Management Complexity	Direct Input
Schedule	Direct Input, can also be an Output
Technical Difficulty	Engineering, Functional & System Complexity, Technology Employed
Operation & Support	Predicted Output
Commercial	Labour/ Profit rates, numbers of Contractors & Sites

Top Down Model



Maritime Example

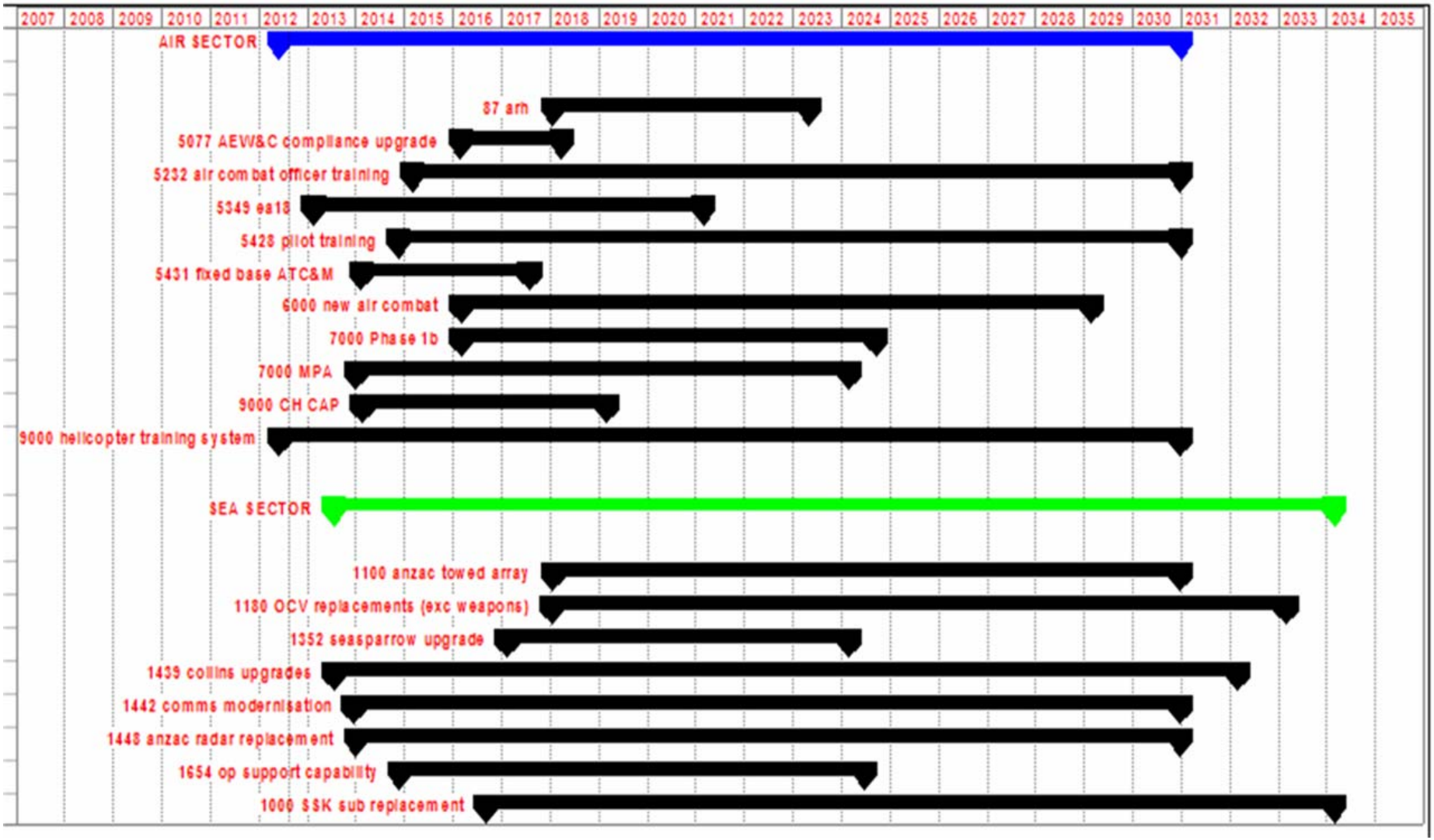


DCP Budget – Model Output comparisons

- The results that follow come from my top down parametric model using the public domain and other public domain sources as input data.
- Values shown include G&S & Profit but exclude GST.
- Since this is Rough Order of magnitude (RoM) all values are rounded up.

CAUTION
All values & public Budgetary profiles are EXAMPLES and do NOT reflect individual Program or Project Official values

Overall modelled MS Project Gantt view



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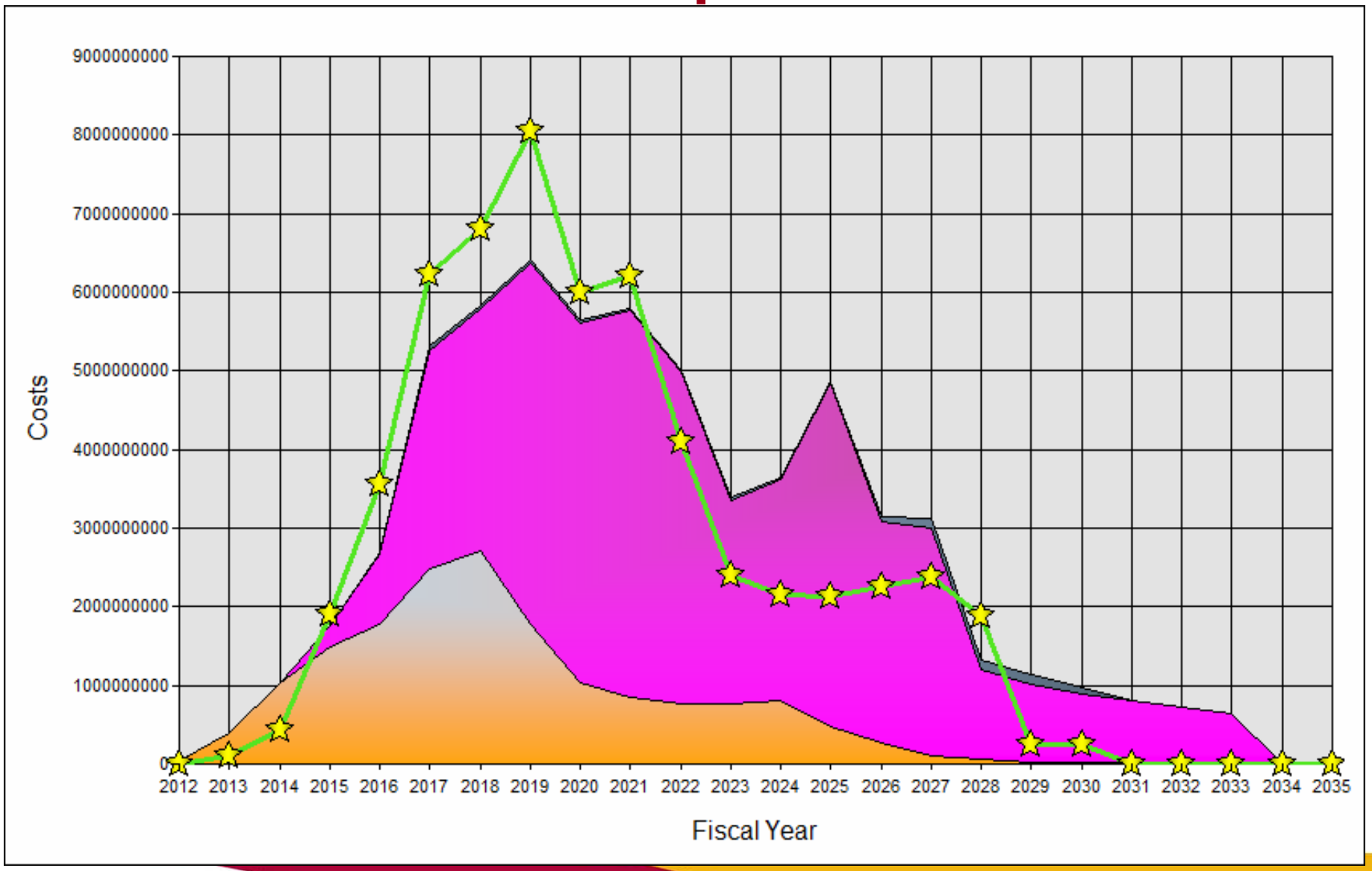
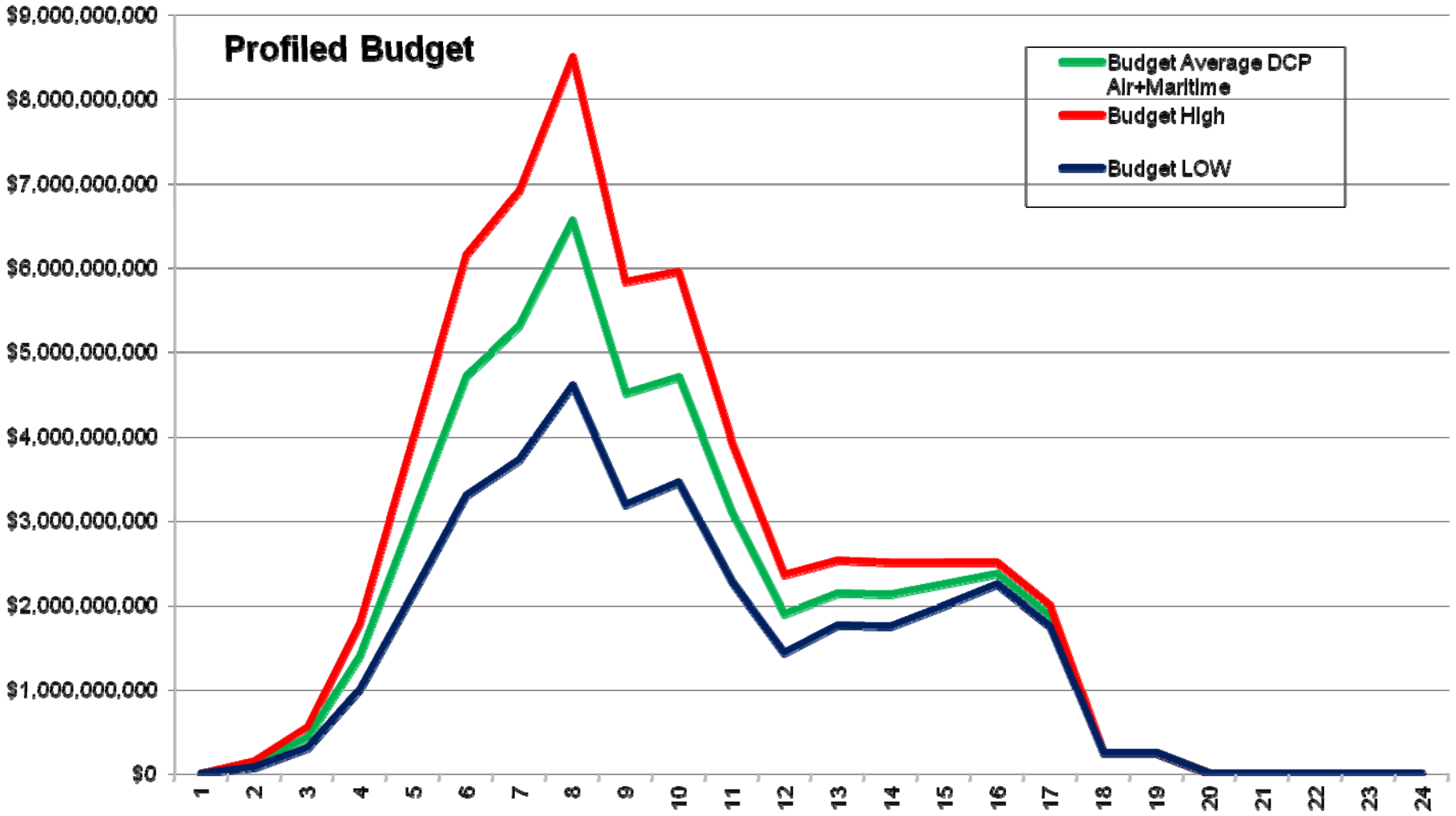
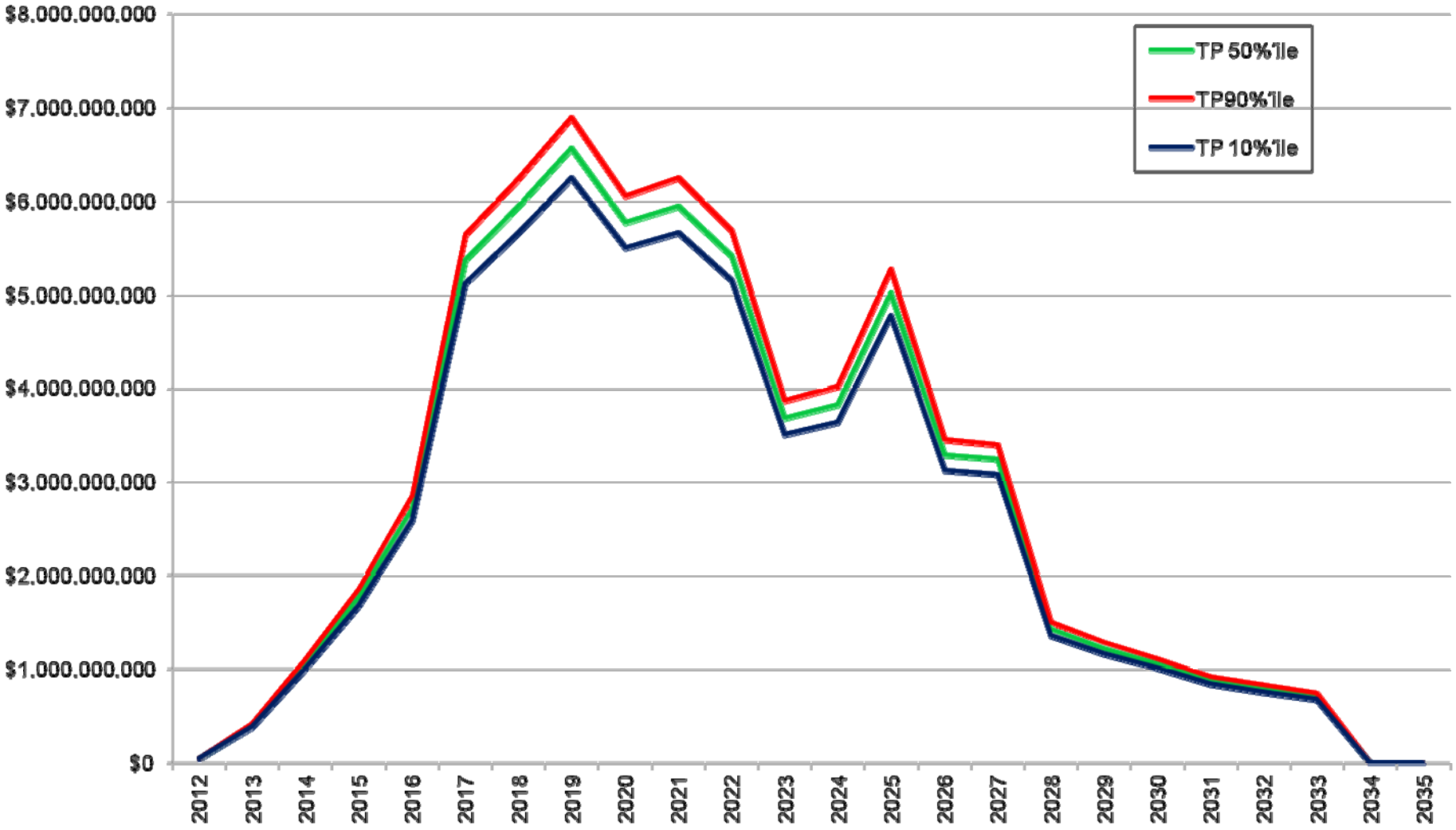
Basic cost model Output



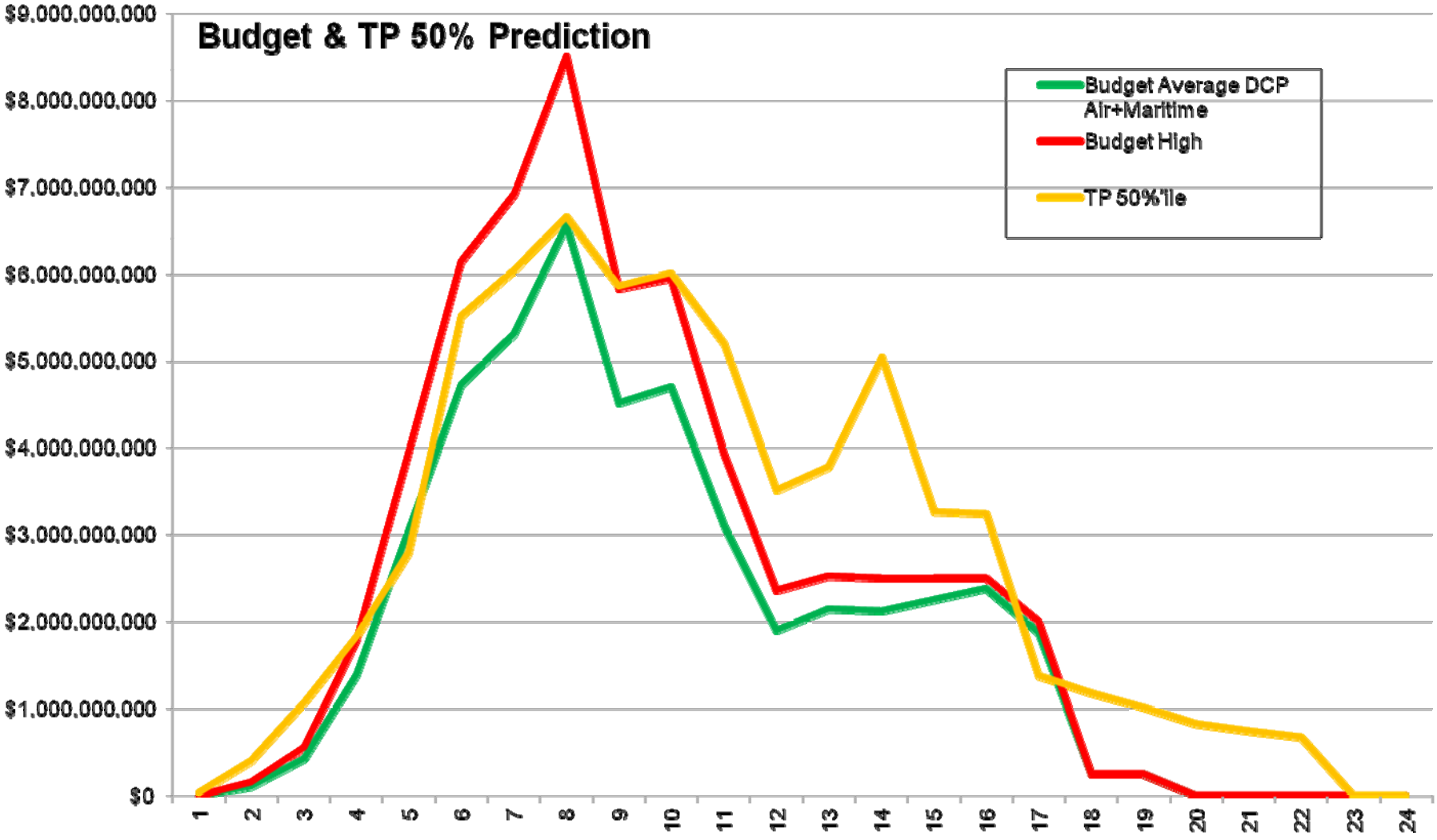
Profiled public DCP Air & Sea



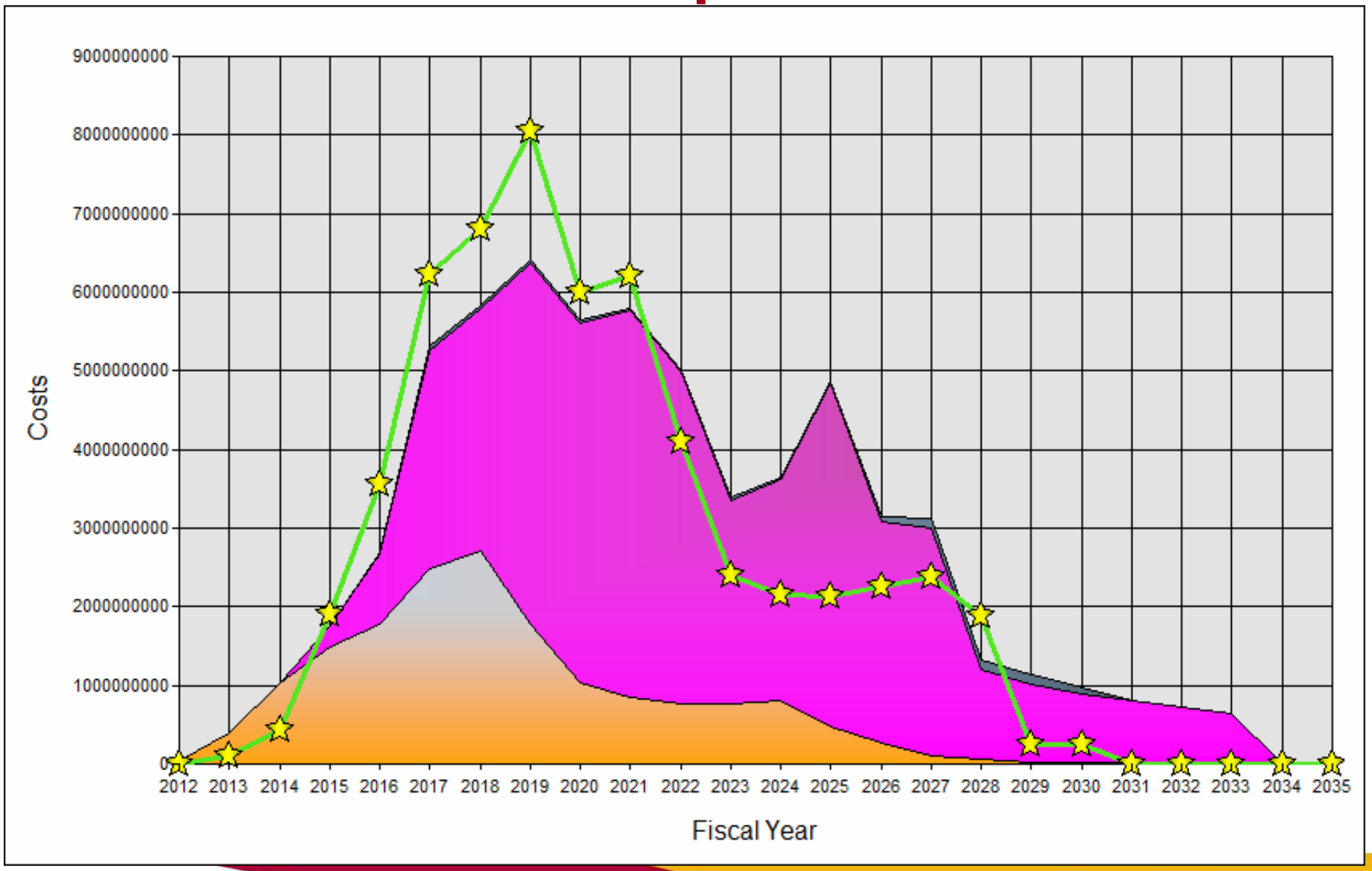
TP Air-Sea (10, 50, 90%) Outputs



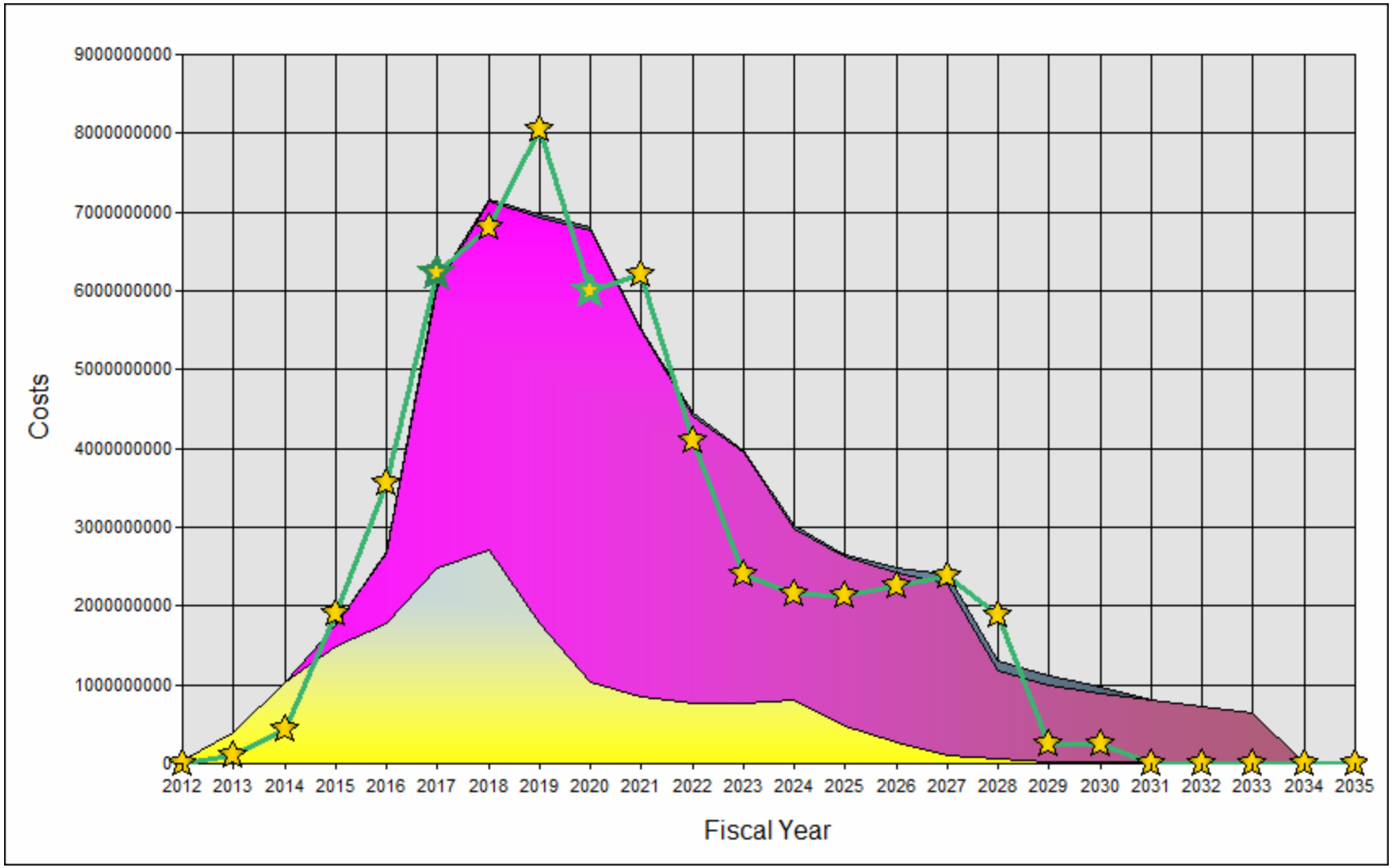
Combined public DCP (Av, Upper) -TP (50%)



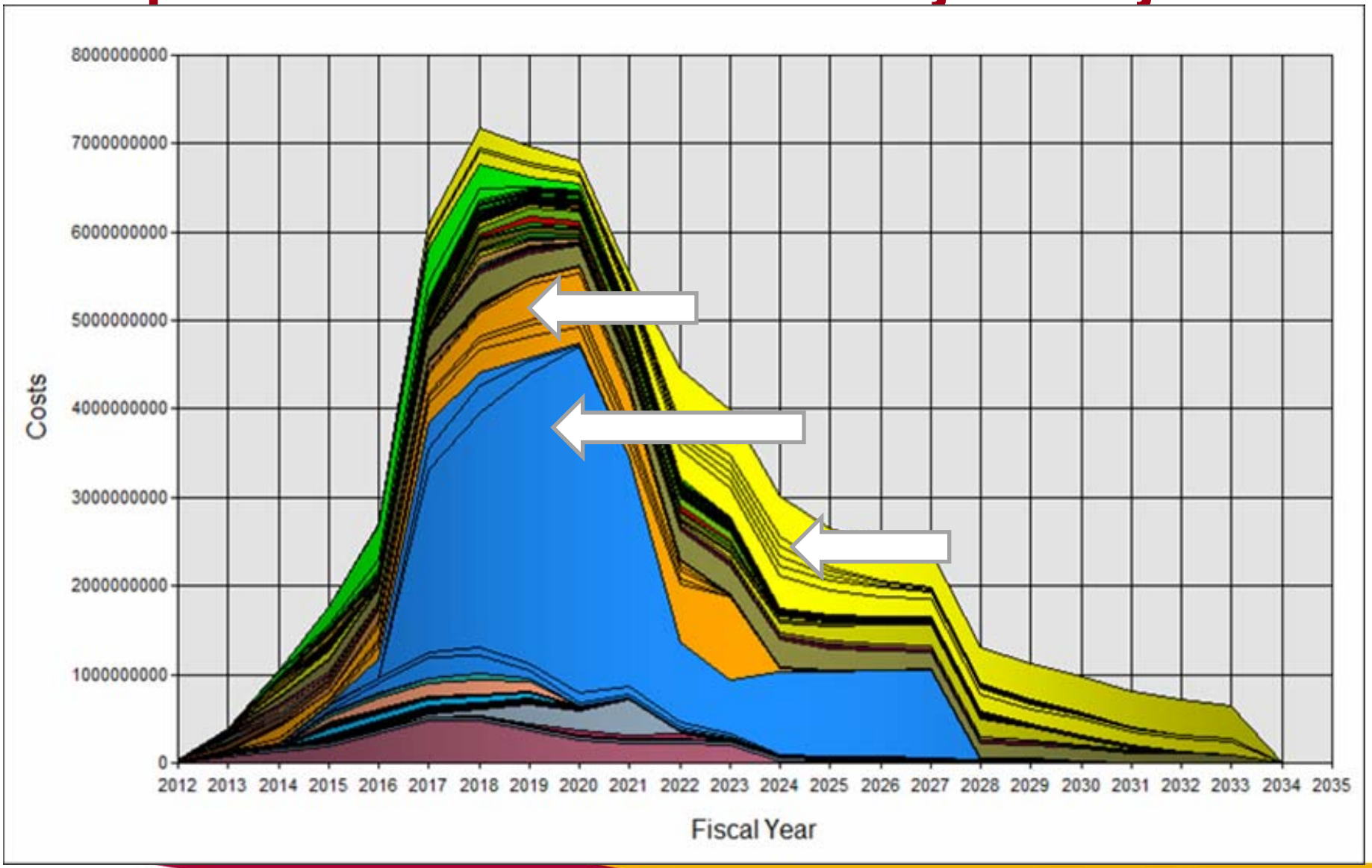
Basic cost model Output



After Re-profiling of 1 Major project



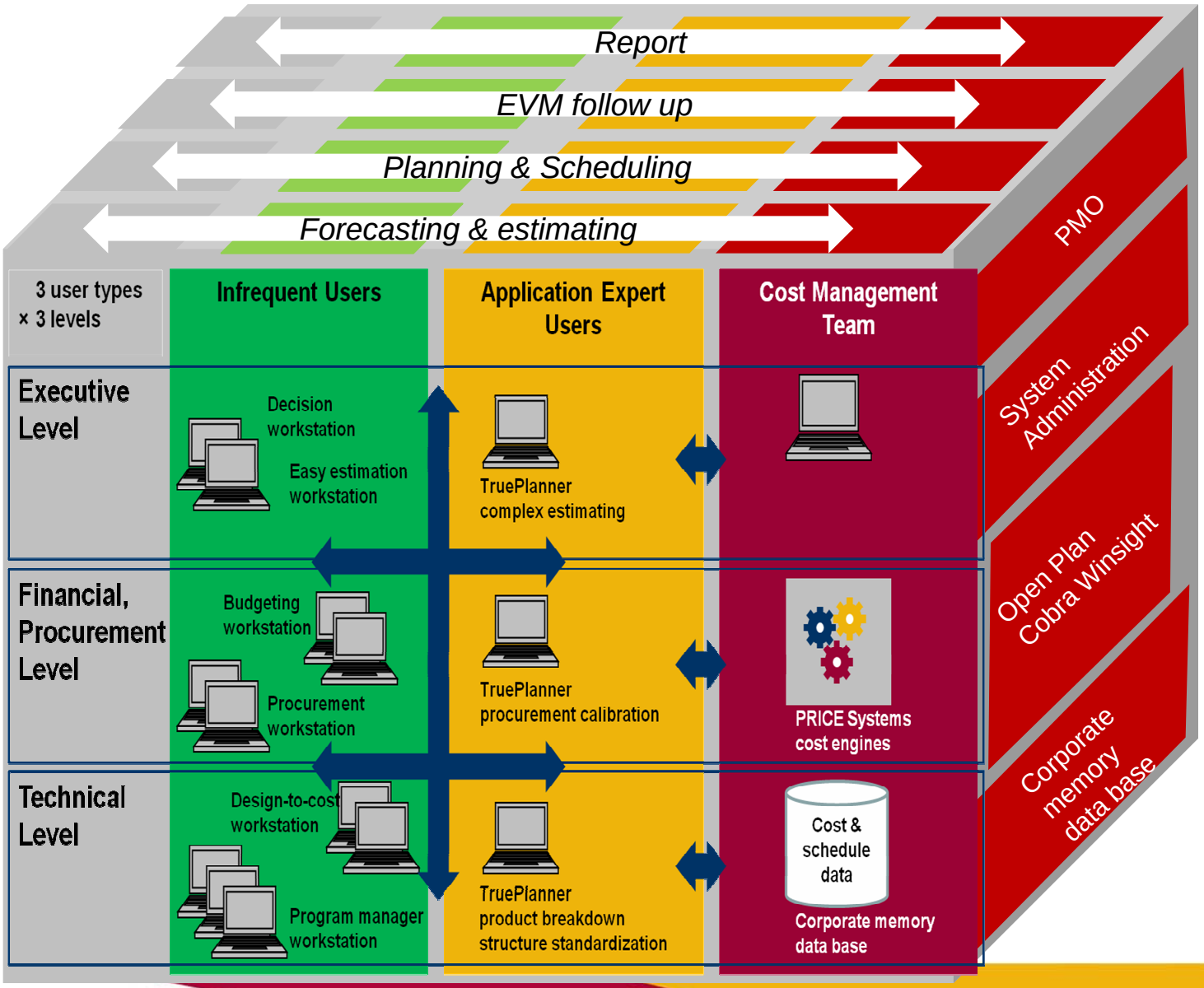
Acquisition 'Silt Chart' for Major Projects



Improving cost modelling

- There is no true Capability cost model.
- Modelling large numbers of varied inter-related Programs and Projects is not an Excel task.
- Any modelling development should be integrated and capable of serving not just the estimating community but the Decision makers as well.
- The final methodology may require a range of linked tools to ensure all lifecycle phases and local requirements are costed in most satisfactory manner.

The "3×3 rule"



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SUMMARY

- The public DCP & other Public Domain sources provided sufficient data for a quick top down model of Air/ Sea sectors. This model build, data collection & validation took approximately 8 days start to finish.
- The model provided:
  - comparison of cost profiles (budget to estimate)
  - an overall schedule estimate
  - quick adjustments with representative & more accurate data
  - a comparison method to check in house or Contractor Program/ Project estimates
  - the ability to include probability based risk.

Any Questions?

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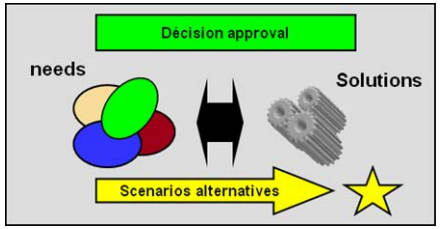
- OGC UK Managing Successful Programmes ISBN 978-0-11-331040-1 at www.tso.co.uk
- Defence Capability Plan Public Version 2012 at www.defence.gov.au
- Defence Portfolio Budget Statements 2012-13 at www.defence.gov.au

Focus is on Organisation level needs

Executive level



Early stage costs & risks estimation
Aids decision making process

Programme Control Through the whole Life Cycle

PMO

Portfolio Management

Program Management

Cost Management Applications

Financial

Budget Management

Integration of Early stage estimation for budget application

Budget Program follow up

Procurement

Saving costs

Should costs

Make or Buy

Supplier assessment

Cost Management Applications Implementation

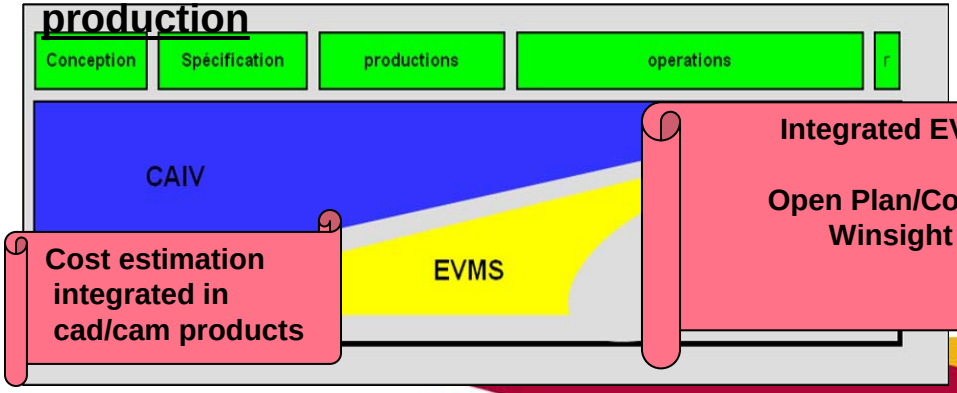
System Administration

Costs Corporate Memory Database

Users Support

Cost Management

Engineering & production



Integrated EVM

Open Plan/Cobra/ Winsight

Cost estimation integrated in cad/cam products

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