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Whose Line is it Anyway?

Using MBSE in the Management and Acceptance of the Defence Lines of Development

Matt Dent – INCOSE 2017

SYSTEMS AND ENGINEERING TECHNOLOGY

FRAZER-NASH CONSULTANCY

Context

- Case study based in the UK Defence Industry
- Authors are requirements managers and systems engineers driving capability integration in complex platforms.

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Structure of the Presentation

- DLODs
- Origin of the approach
- Database
- Modelling
- MODAF
- Evaluation

Defence Lines of Development

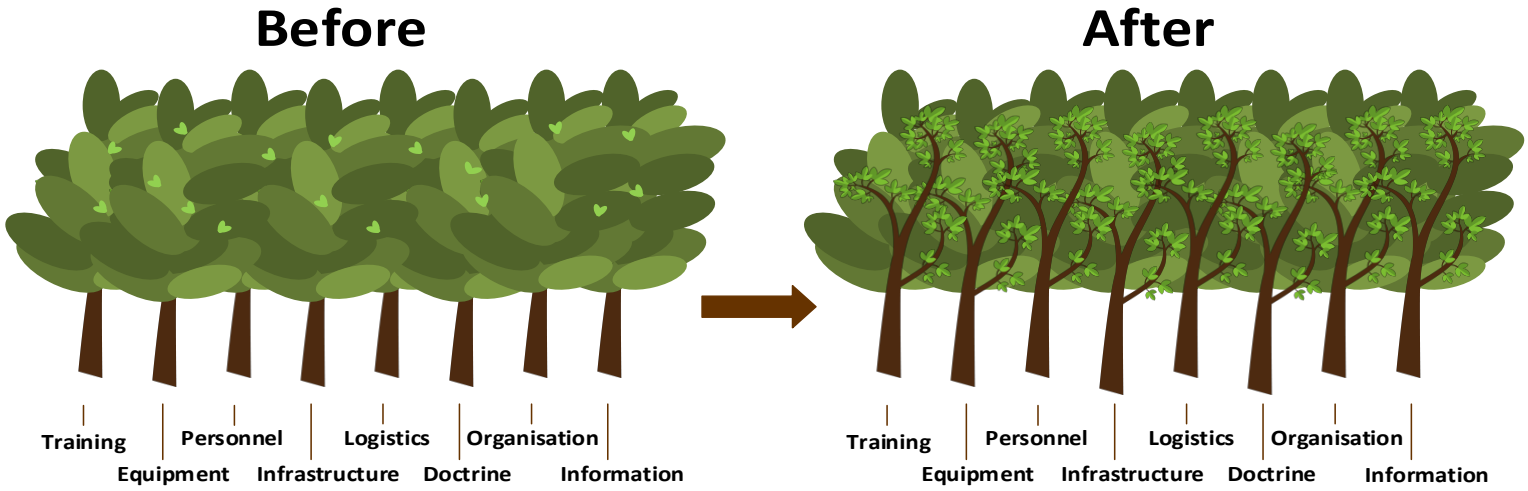
Training, Equipment, Personnel, Information, Doctrine, Organisation, Infrastructure and Logistics, the DLODs.

Similar to:

- Fundamental Inputs to Capability;
- DOTMLPF.

All fundamentally trying to capture and understand the same thing

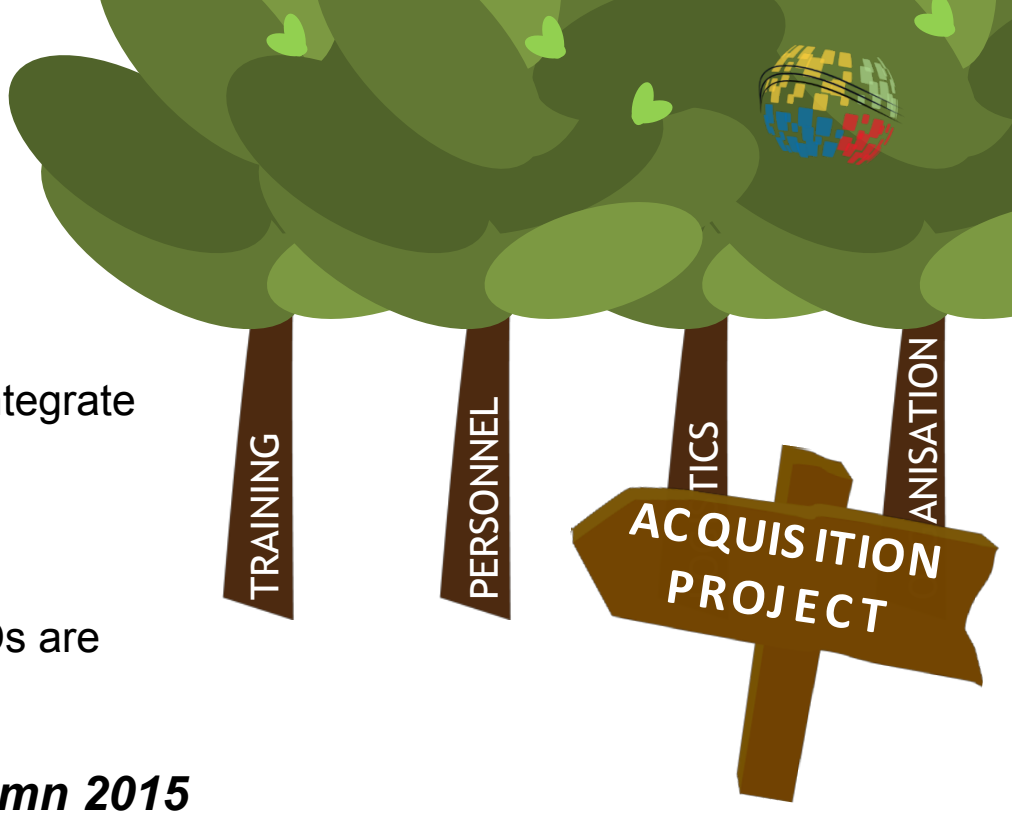
An analogy: “You can’t see the wood for the trees”



Helping to reveal the DLODs

Defence Programme as the Case Study

- Acceptance plan identifies the need to integrate and accept the DLODs;
- Complex;
- Often managed at a high level yet DLODs are large projects in themselves.



Frazer-Nash support started in Autumn 2015

- *Initial task was to develop a "tool";*
- *Evolved into MBSE approach today.*

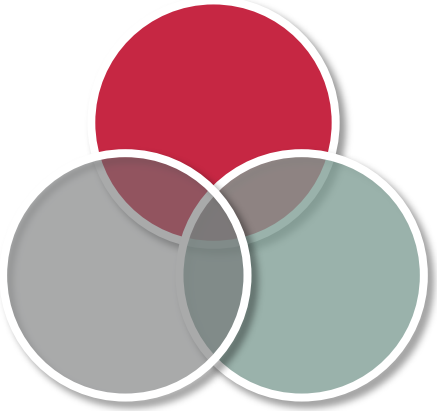
Developed “DLOD Management System”

SysML based Model

Captured views of the DLOD data from the database.

DOORS Database

Captures the data across the DLOD space.

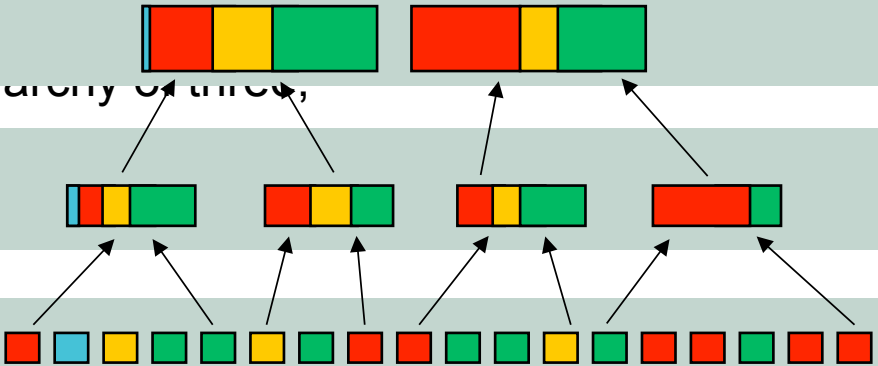


Systems Engineers

Championed the approach, data collection and presentation.

The DOORS Database

- DLOD each DLOD;
- Group
- Each DLOD broken down into a hierarchy of three;
- Capability Component
- Risk, owner, date also captured.
- Capability Sub Component



The DOORS Database

Captures the following information against each DLOD capability sub-components:

Group, Capability Component, Capability Sub-component

RAG Status

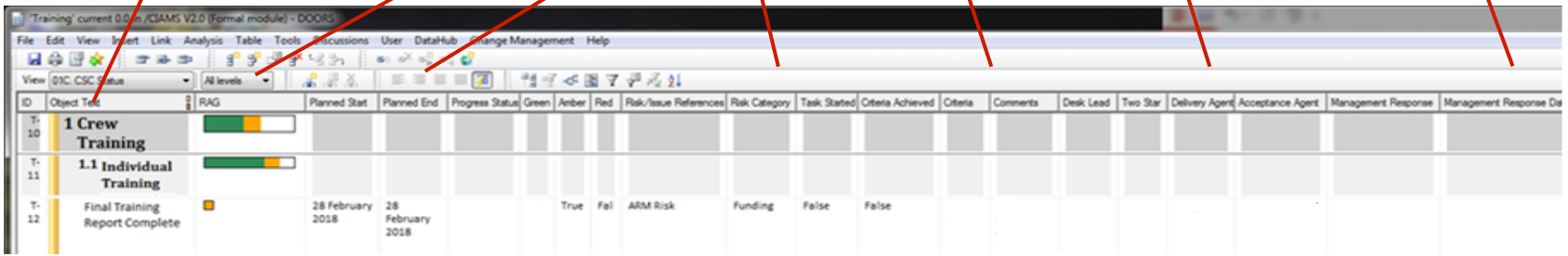
Dates

Risk/ Issues

Completion Information

Ownership

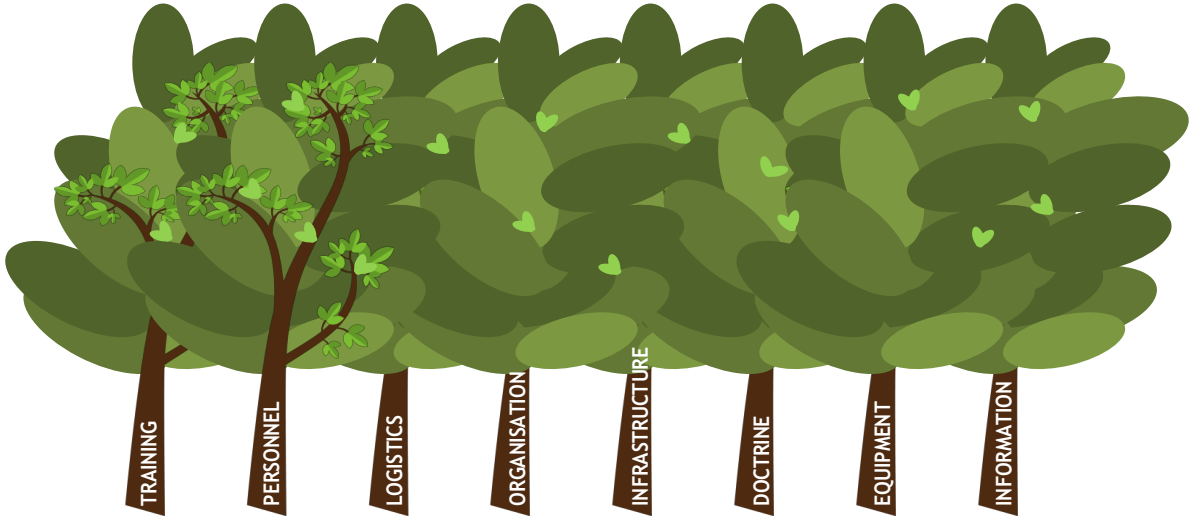
Management Response



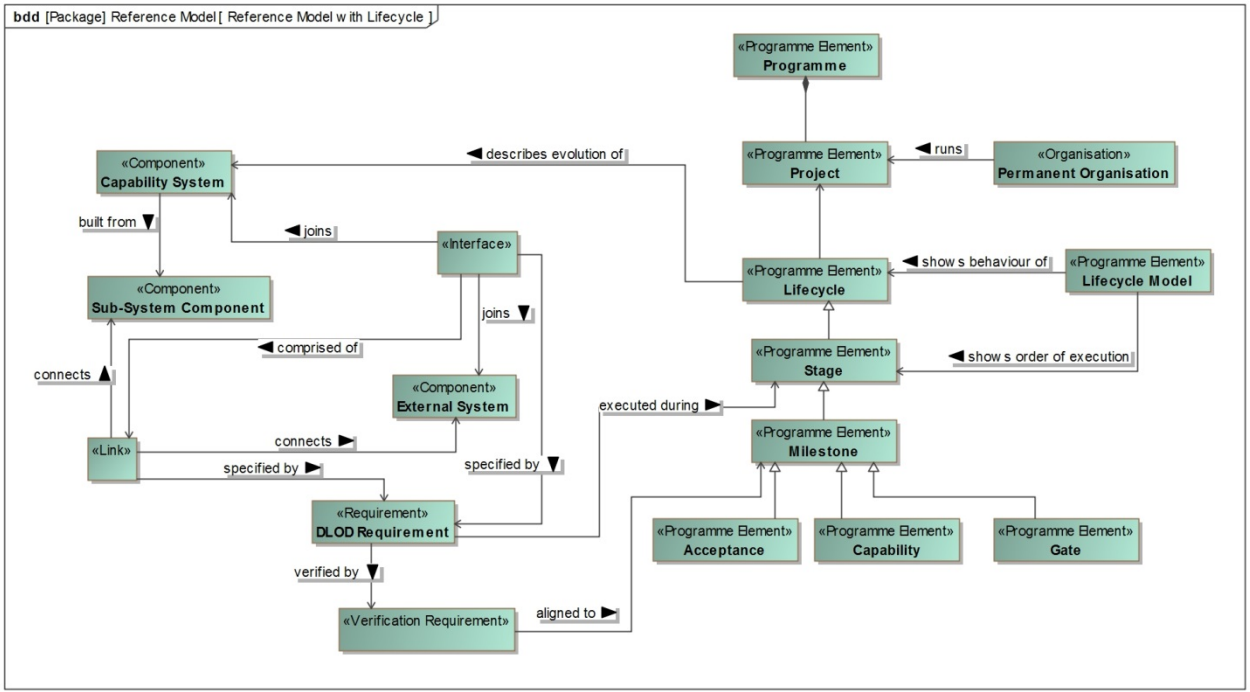
Applying Modelling to Reveal the DLODs

Using the WSAF architecture:

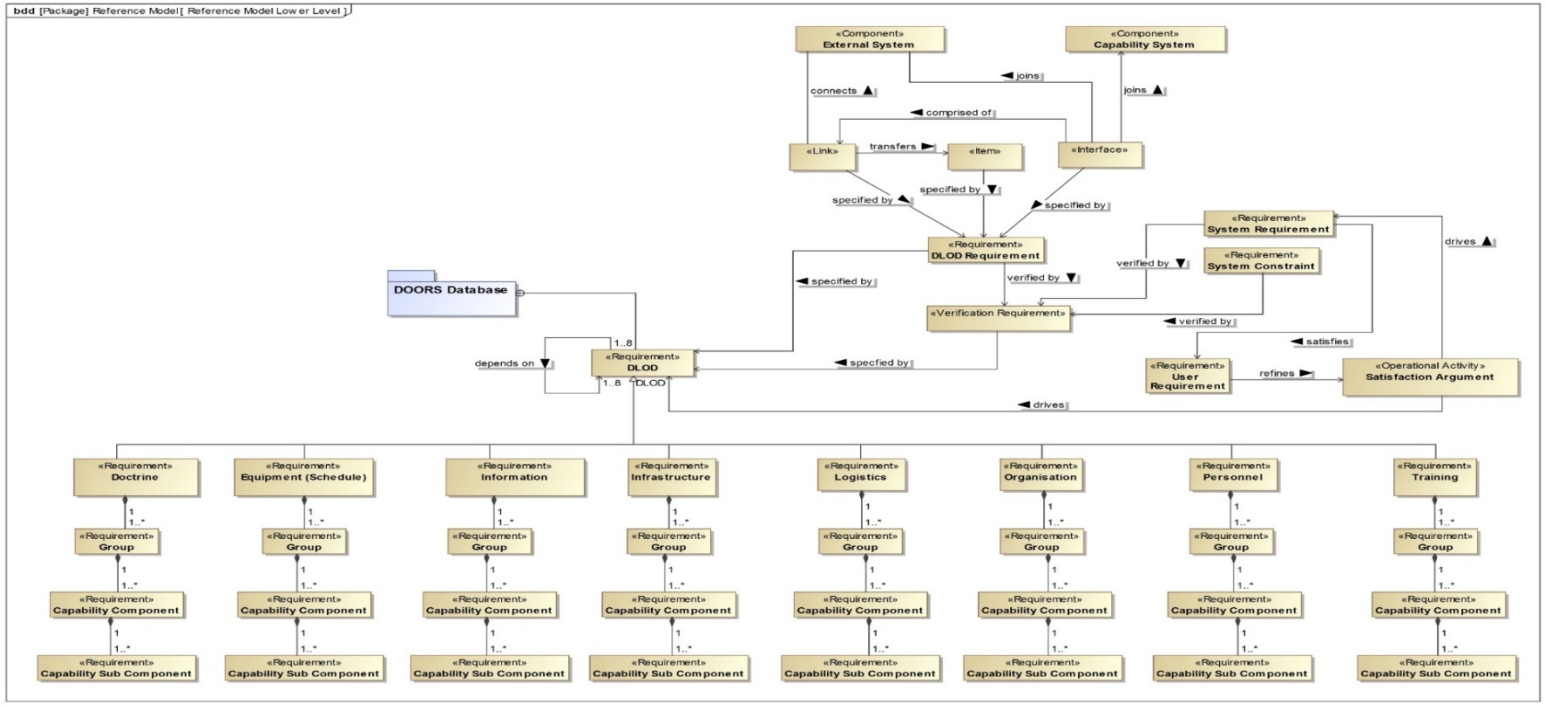
1. Reference Model
2. Process Model
3. Knowledge Model



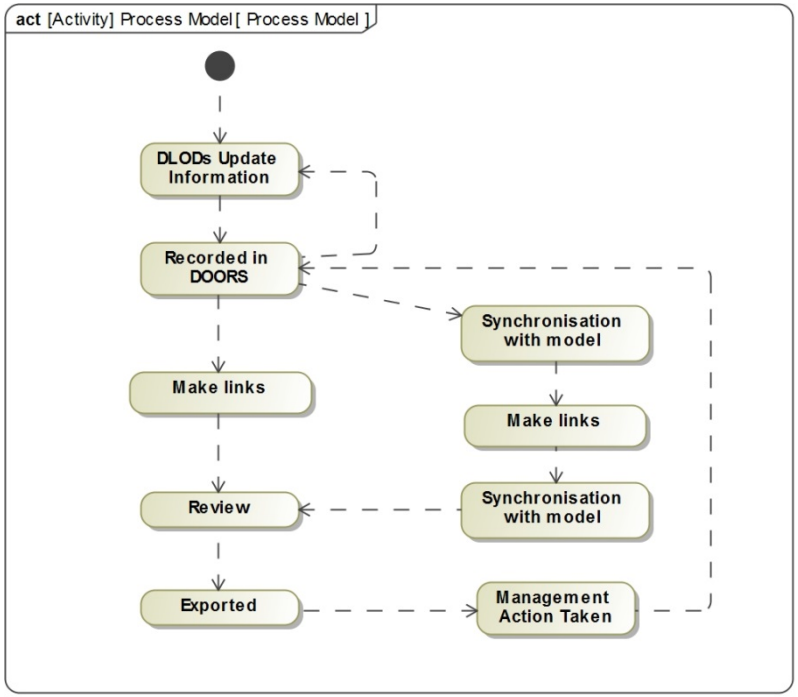
Reference Model:



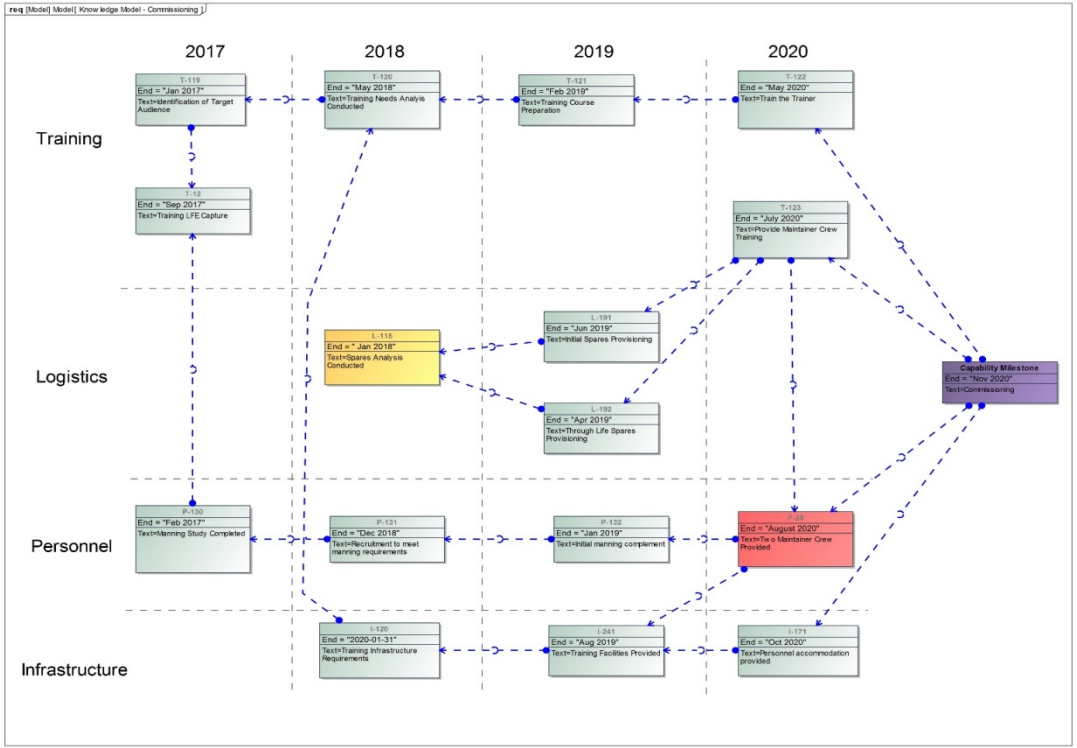
Reference Model:



Process Model:

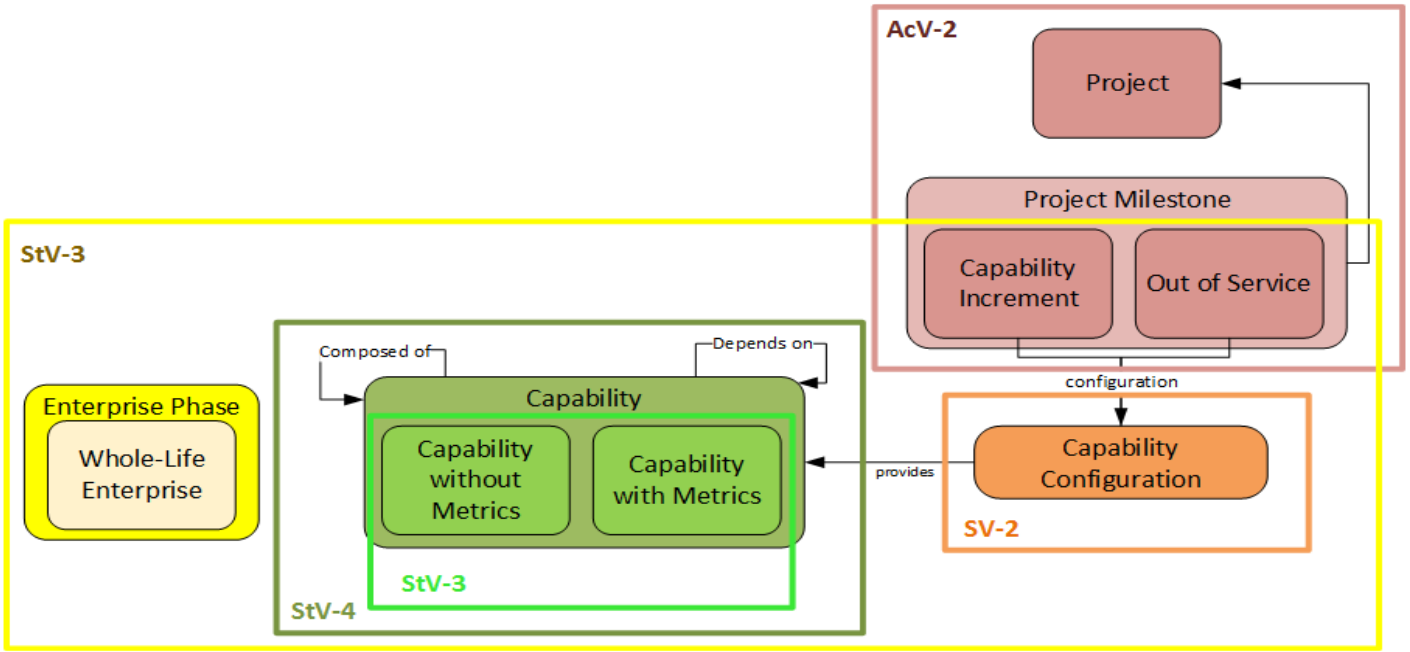


Knowledge Model – DLOD Dependency Analysis:



Relation to MODAF View Acquisition View

- Most similar to AcV-2 or StV-3



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Benefits

- View and Analyse Dependencies;
- Promote common understanding;
- Reduce interface risk;
- Validate DLOD space;
- Support pro-active management.

Ultimately…
Help to disentangle the DLODs to increase the likelihood of programme success

What to watch out for

- Increased upfront effort;
- Relevancy;
- Enterprise buy in;
- First implementation;
- Dedicated personnel required;
- Software Tool Limitations.

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Further work…

Plenty more projects of varying sizes that could benefit from an approach like this.

Any Questions?

Matthew Dent – Senior Engineer
Frazer-Nash Consultancy UK