



Exploiting an enterprise architecture approach to derive and manage customer requirement: challenging the DoDAF paradigm

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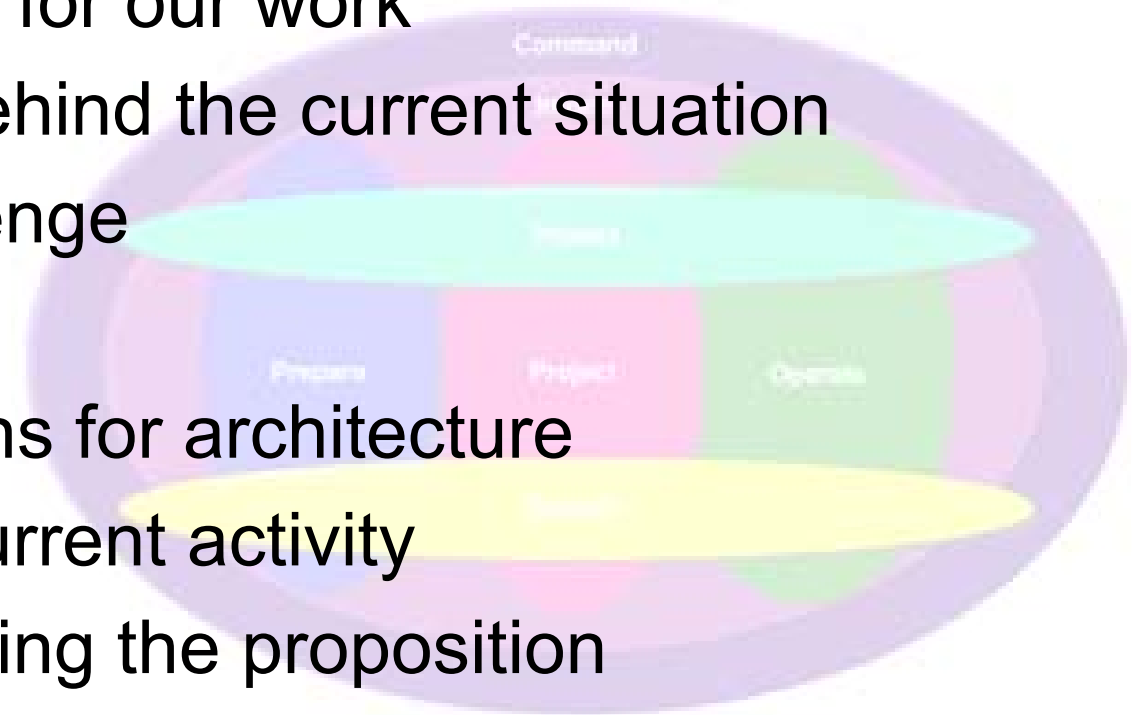
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Topics

- ▶ The driver for our work
- ▶ Factors behind the current situation
- ▶ The challenge
- ▶ The vision
- ▶ Implications for architecture
- ▶ Sample current activity
- ▶ Summarising the proposition



The driver

- Significant cost and time over-runs for capability delivery
 - ✚ UK NAO Report 2003:
 - the 25 largest defence equipment programmes cost £3 billion more than originally forecast and enter service over three years late
 - even Smart projects are £400 million over budget and 61 months late based on main gate forecast
 - and there are warning signs that some projects may be continuing to follow the historic trend of cost increase and delay as they mature
- Although Smart Acquisition has delivered benefit, there is still more to be done to achieve the levels of success required.
- **A critical factor behind this is the poor definition and management of requirements.**
 - ✚ **Potential to deliver significant benefit from approaching this problem in a different way.**

Factors behind the current situation

- Requirements definition is too conditioned by past experience
 - ✚ Early assumptions limit creative and innovative solutions
- Lines of development are not given balanced attention throughout the acquisition process
 - ✚ Leading to poor or delayed implementation, for example poor or inadequate consideration of training LoD resulting in a lack of trained equipment operators
- Requirements definition approaches - including architecture frameworks - tend to focus on technical considerations to the exclusion of the business
 - ✚ Too much focus on the framework and not enough on ways of working to make it real
 - ✚ Notations and methods exclude key stakeholders and so limit their ability to contribute towards requirement definition and/or challenge defined requirements
- The economic realities of stakeholders are not fully accommodated within the acquisition process
 - ✚ Large scale and long time-horizons imply special challenges for management of change and continuing motivation

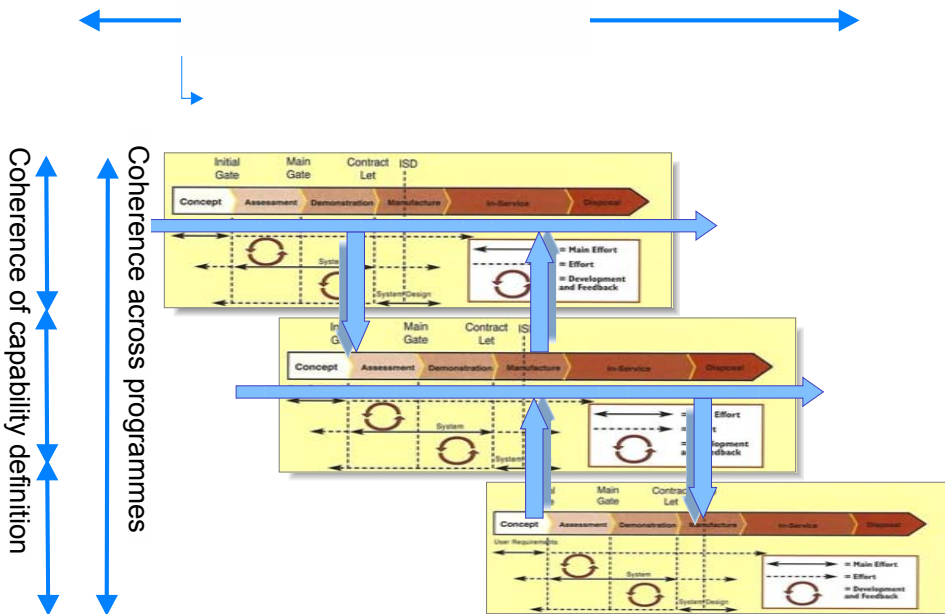
The challenge

To introduce **notations, methods, tools** and **ways of working** that deliver significant improvement to development & deployment of defence capability -

- ✚ addressing cost and time over-runs
- ✚ and ensuring the customer gets what they need

Wasn't this the original motivation for Smart Acquisition and for enterprise architecture?

So what are we proposing that's different ...



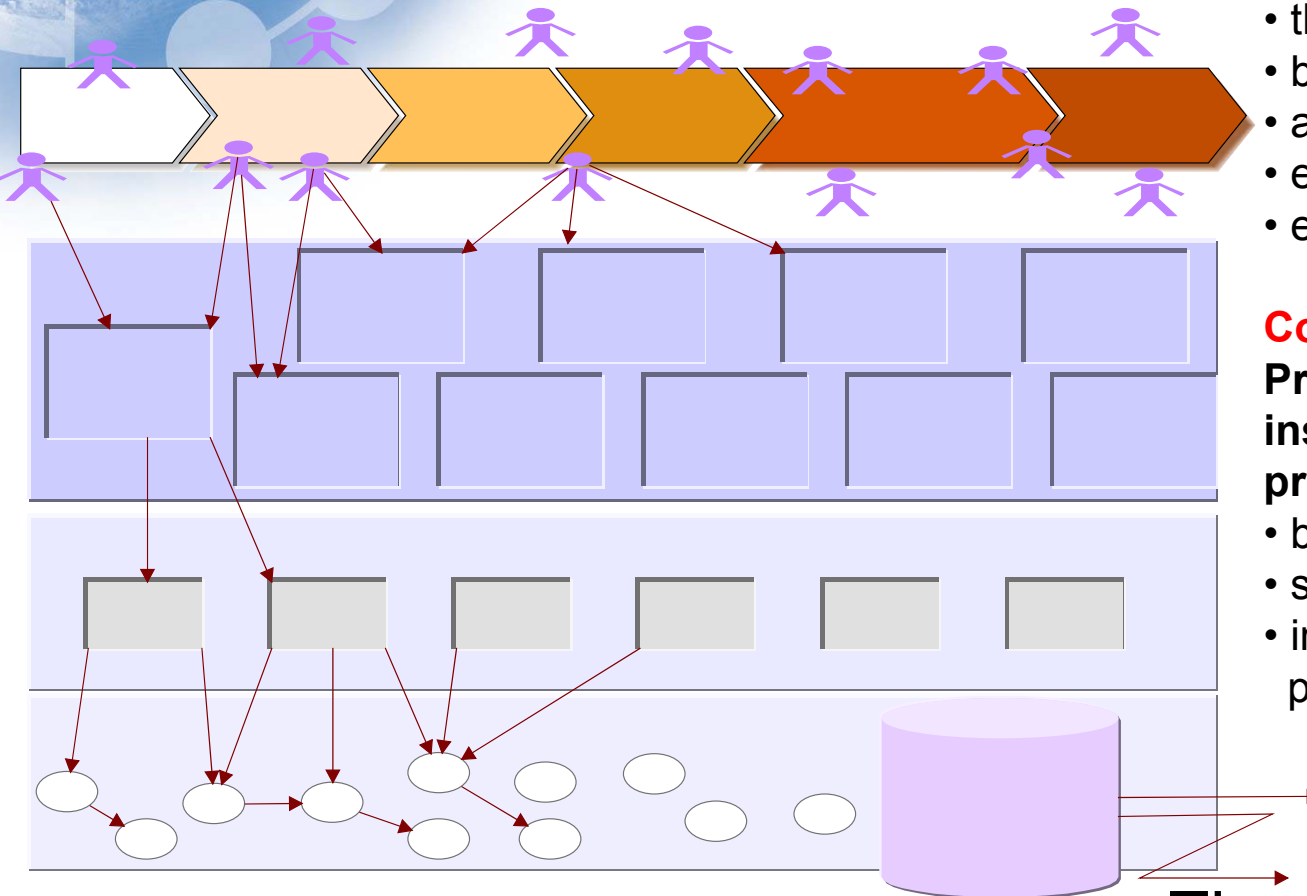
The vision

Architecture approach that addresses the real problems around capability definition and development –

- throughout the process
- both the "wet" and the "dry"
- across lines of development
- ensuring coherence & agility
- embracing re-use and integrity

Coupled with Programme approaches that institute common best practice –

- built around architecture
- speaking to all stakeholders
- integrated platform for risk and performance management



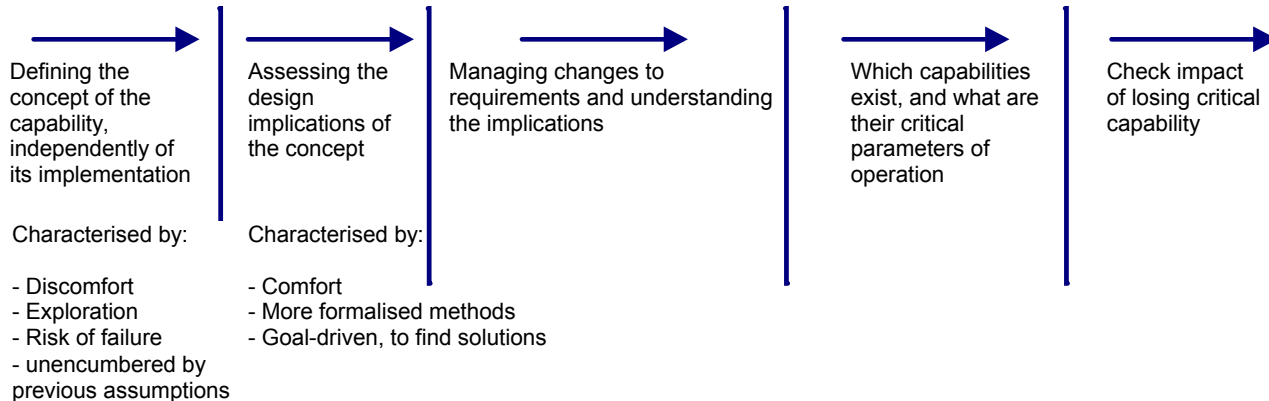
The MoD's CADMID Account



Implications for architecture

Architecture enables and supports the whole process

- User Requirements Definition
- Business Case for Initial Gate approval
- System Requirement Definition
- Identify cost-effective solution
- Business Case for Main Gate approval



Within the MoD's process for Smart Acquisition, architecture needs to –

Provide an operational system that addresses the concerns of the whole community of stakeholders

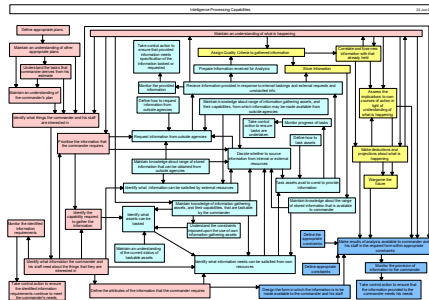
Particularly contribute to the crucial early stages within which customer requirements are derived and defined

Implications for architecture

The challenge is to achieve integrity, breadth and completeness of views, to inform and connect a broad community of stakeholders actively throughout the programme

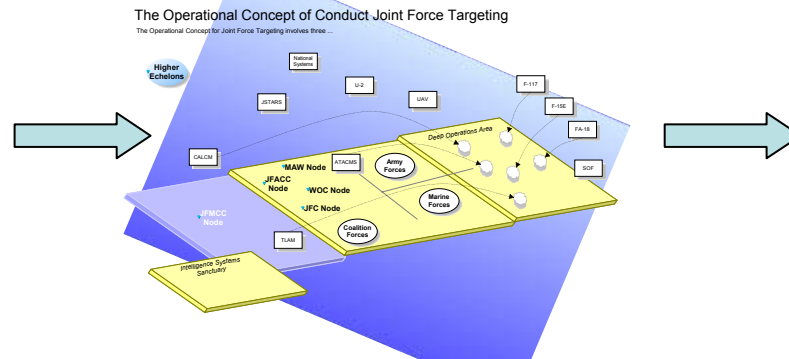
- Managing and working the connections between perspectives – including the business logic and the technical implementation
- The architecture is the property of the business – an operational facility for understanding and managing the delivery of capability
- Generating insights from the architecture – coherence and agility
- Ownership and usage / navigation across stakeholder community

Capability Requirement



Viewed at the 60,000 foot perspective, we are aware of the overall context of the requirement, and the principal participating components

High-level Operational View

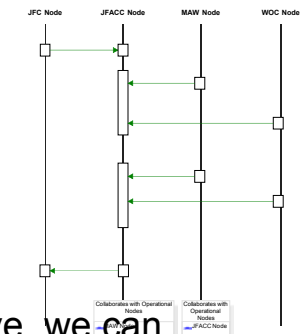


Viewed at the 6 foot perspective, we can analyse specific interactions required to achieve connectivity and synchronisation

Detailed Operational View

USCENTCOM Targeting MEA OV-6c

This trace represents the creation of a Munitions Effects Assessment, derived from the activities that create the assessment (OV-5) and the assignment of activities to operational nodes (OV-2):
[Conduct Munitions Effects Assessment](#)



Implications for architecture

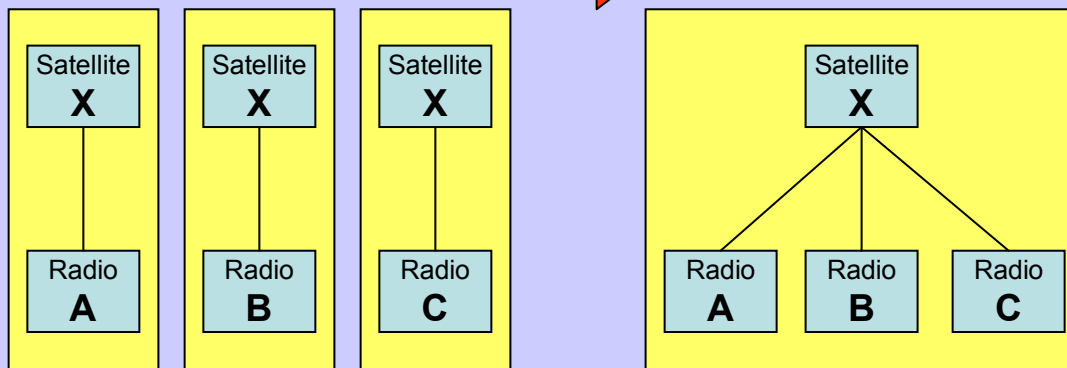
It is important to establish a regime of re-use of common components within and across programmes to –

- Create coherent solutions that avoid risk (see opposite)
- Benefit from focussed investment in shared resources
- Build upon institutional knowledge
- Avoid re-invention

Repository of components relating to all stakeholder perspectives

The operation of three radio systems **developed in isolation** but dependent upon a shared satellite resource risk exceeding its bandwidth capacity

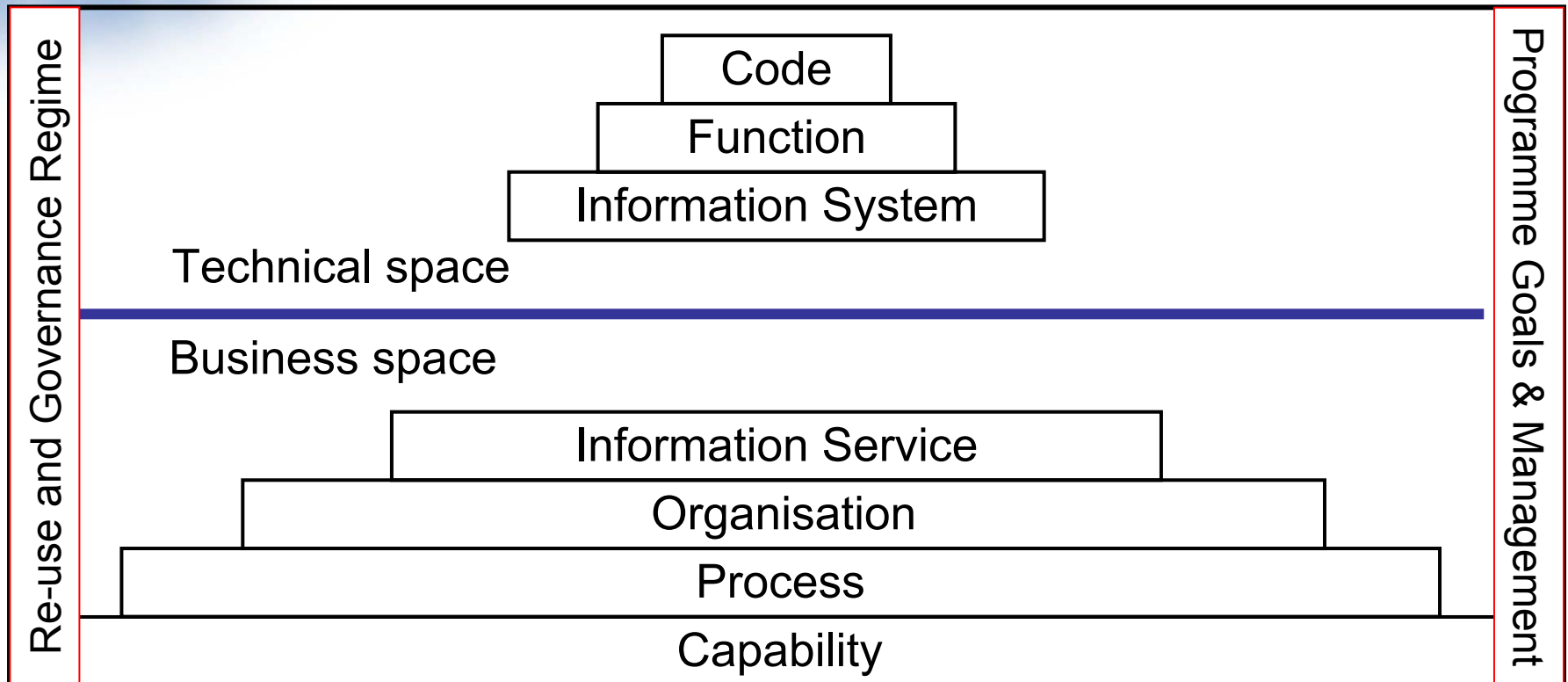
Three radio systems **developed coherently** within an enterprise architecture will identify the potential risk to the shared satellite resource and enable a managed solution to be developed



This involves agreeing ways of working whereby components are owned, managed and made available by appropriate teams, within a framework of organisational governance

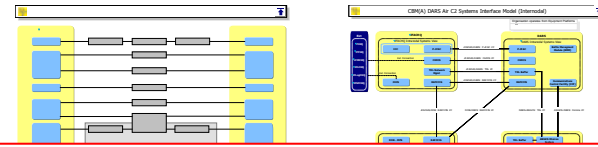
Current activity: Methodology

- Build all solution components upon clear statement of capability within the context of business programme goals
- Apply MoDAF blueprint to develop required perspectives, with visualisations that encourage engagement by all stakeholders
- Adopt a toolset by which the architecture can be deployed as a live and active environment for re-use, sharing and decision making.

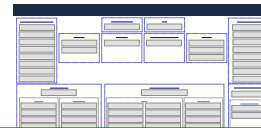


Sample current activity

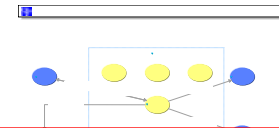
- The MoD's CBM(Air) architecture has been built using Mood by Stasys.
- MoDAF views were applied to produce a comprehensive model that integrates the considerations of a wide range of stakeholders in a highly visual and connected way.
- Stakeholders navigate the architecture to view their considerations within an integrated whole.



Systems & Technology Design

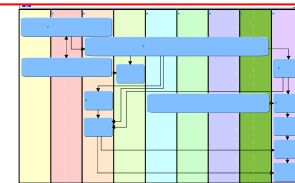


Organisation Structure & Appointments Details

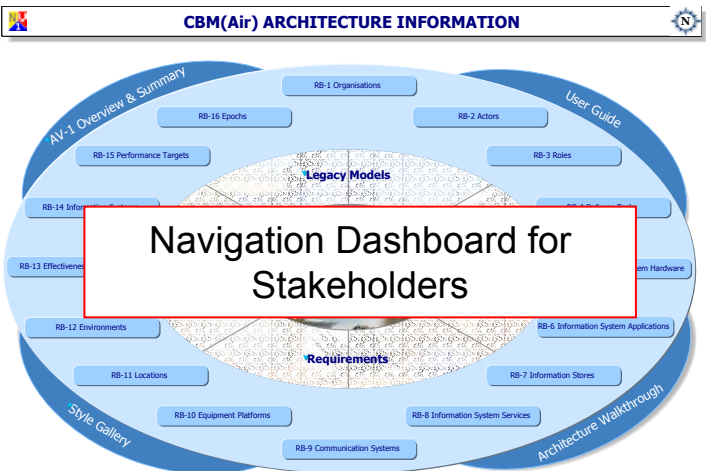
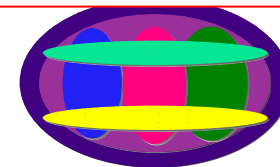


Information Models

Operational Definition and Scenarios

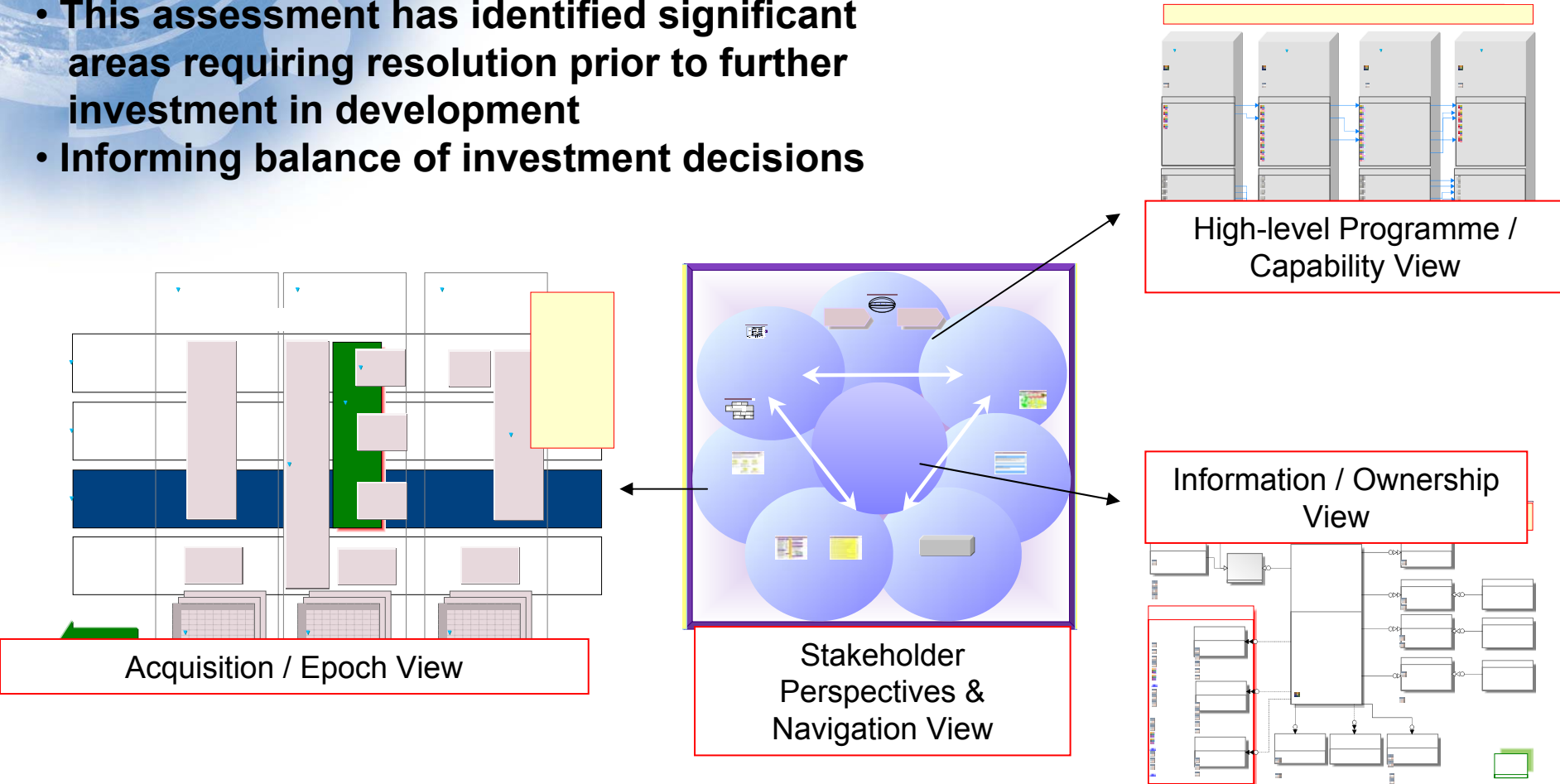


Capability Framework and Requirement



Sample current activity

- **DG Info has applied a similar approach to assess the coherence of a collection of current HR & Training Systems programmes.**
- **This assessment has identified significant areas requiring resolution prior to further investment in development**
- **Informing balance of investment decisions**



Proposition

- To address the issues of risk, cost and time over-run, we need a new approach to the derivation and management of customer requirements, especially during early concept development
- Owners of capability requirement need to be able to (and be expected to) take a more active and responsible role in requirement definition and solution alignment
- Decision makers throughout the process must be able to make informed balance of investment decisions, which requires them to be able to make sense of their complex adaptive environment
- This requires notations, methodologies, tools and ways of working that are rich enough to express in a coherent and integrated manner the perspectives of all the stakeholders
- Which means exploiting architecture as an operational environment that holds together the programme – not just a collection of technical drawings – to facilitate sharing and analysis, sustain alignment of capability with requirement, and inform executive decision making about balance of investment.