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NiTEWORKS



Architectures for Decision Makers

Integrated-EA 2012

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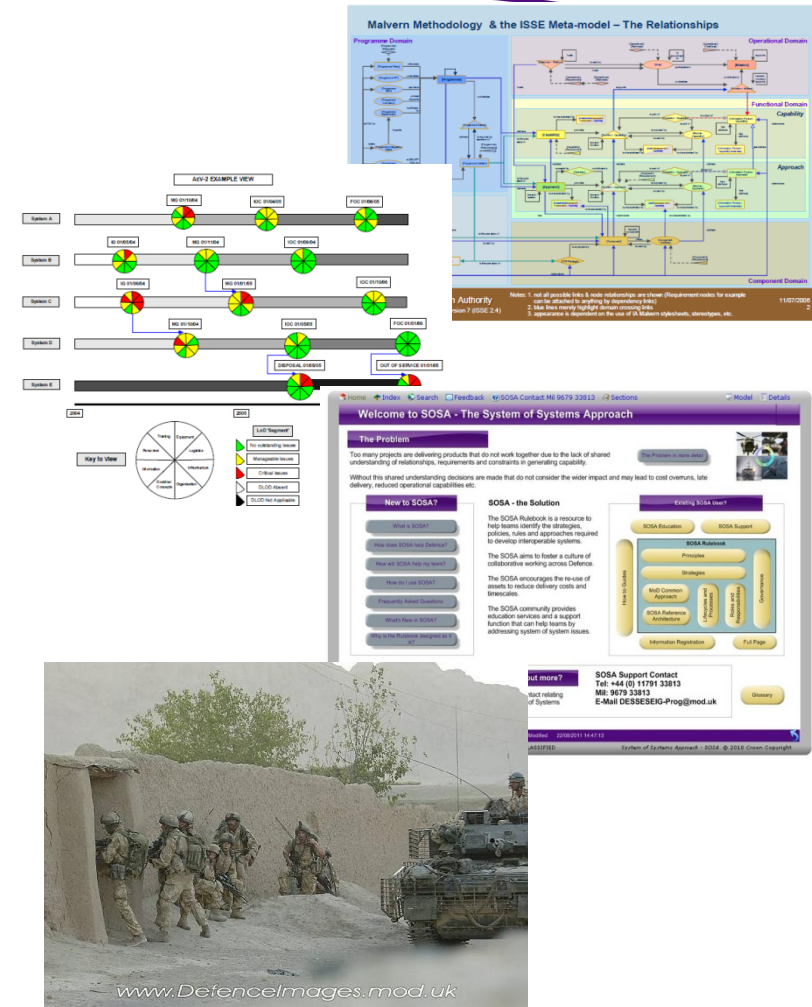
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Architectures for Decision Makers

- The MOD architecture journey
 - A potted history of EA in UK Defence
 - Successes and lessons learnt
- A partner view
 - Changing attitudes to EA
 - Different applications and styles
- Where next for EA in Defence?



MOD ARCHITECTURE JOURNEY



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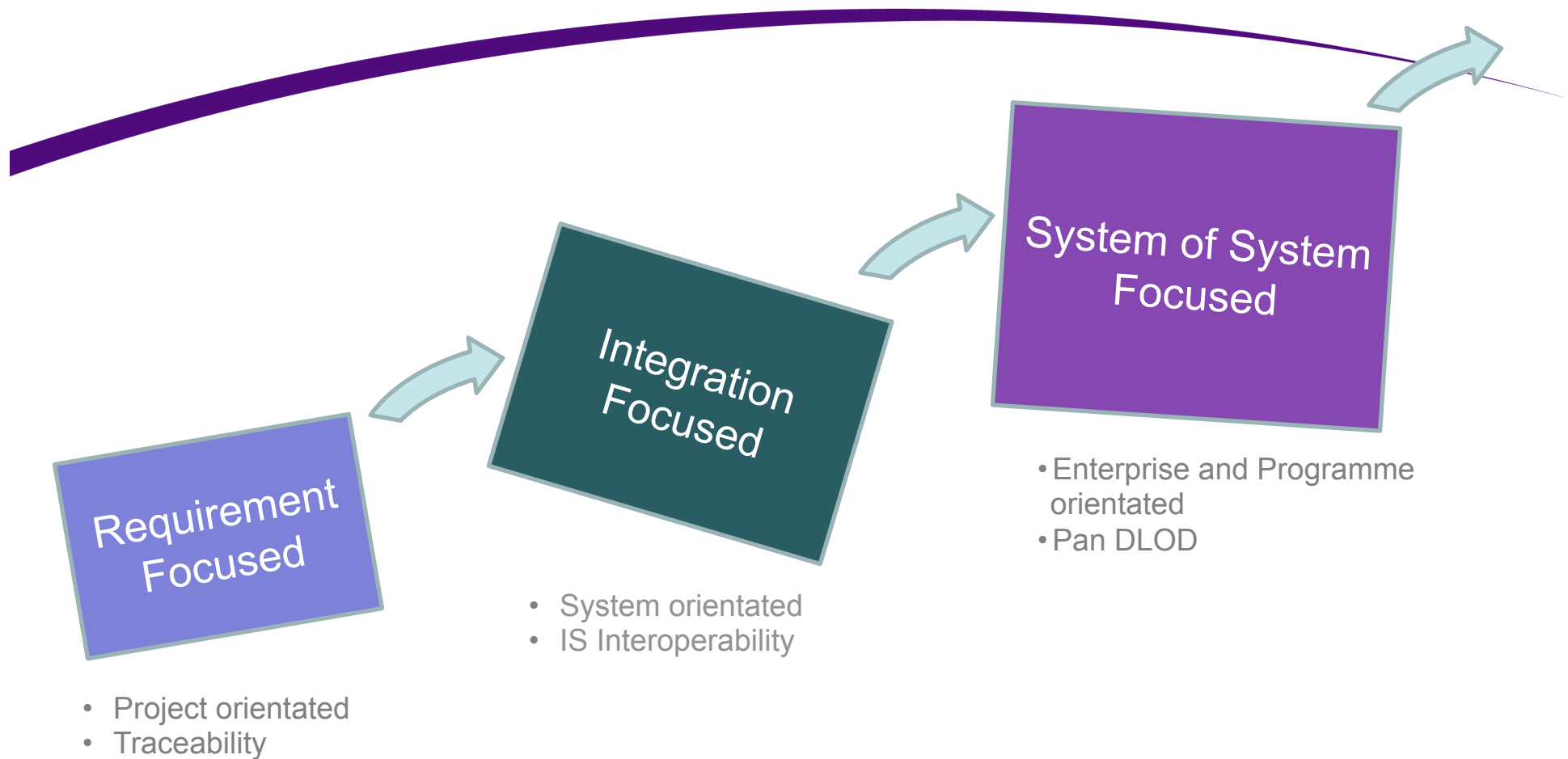
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MOD Architecture Journey

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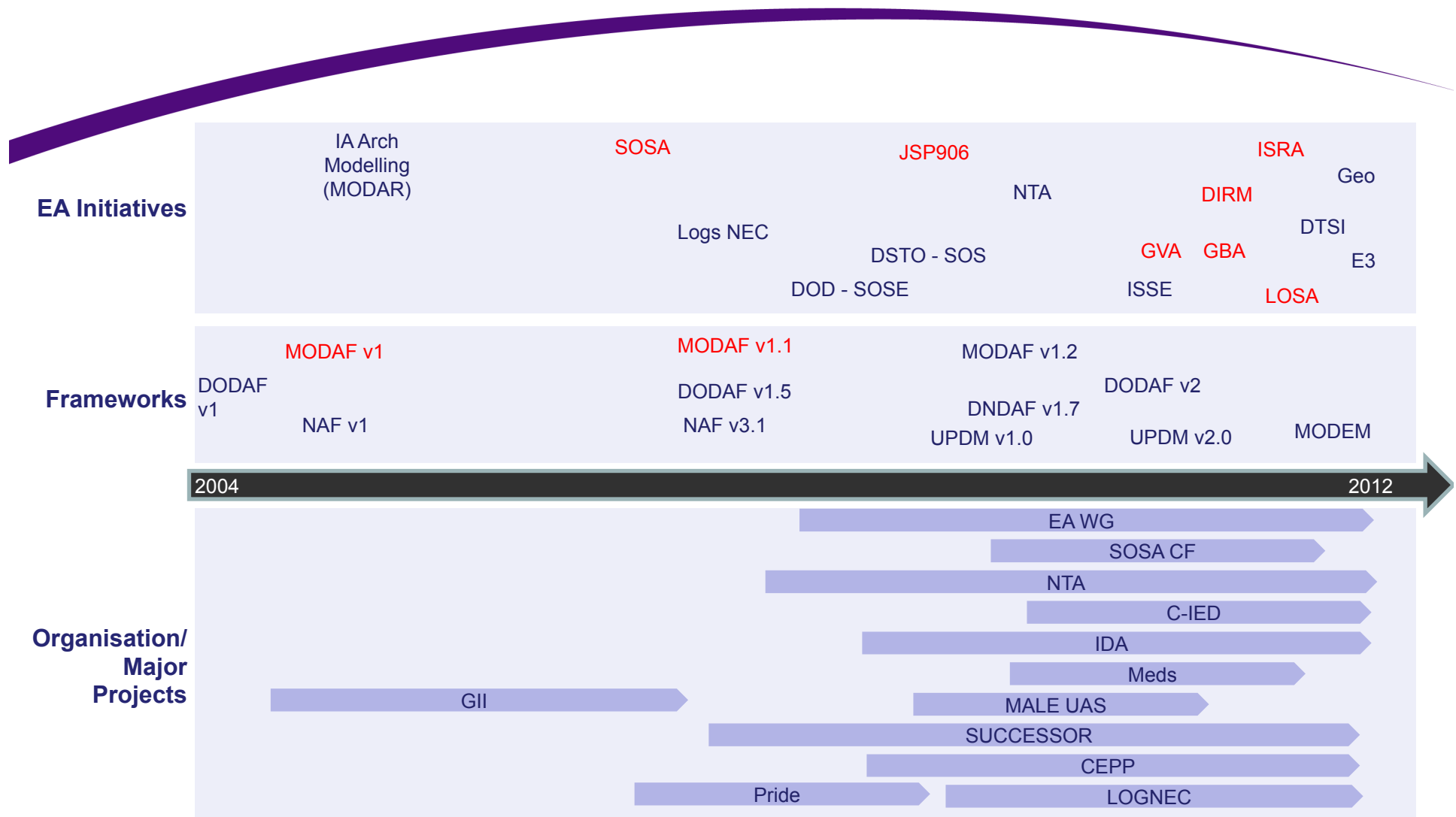
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The Story So Far.....

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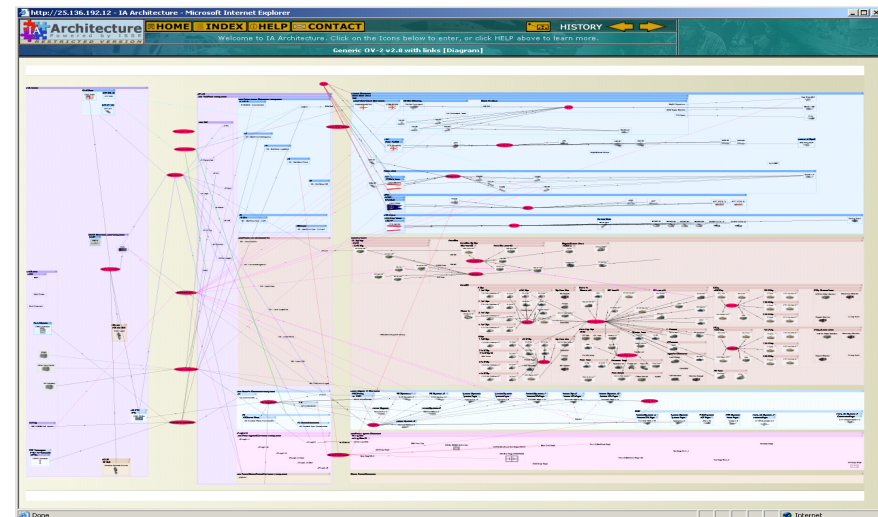


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The IA / SEIG Architecture Journey

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- Architecture modelling focus
 - Dedicated modelling lab
 - Capacity for 78 desks
 - 'Drop in Centre'
- Modelling 'achievements'
 - 400 Systems
 - 24,000 diagrams
 - Only 1600 had any form of history
 - 300,000 nodes
 - 9000 Man Days

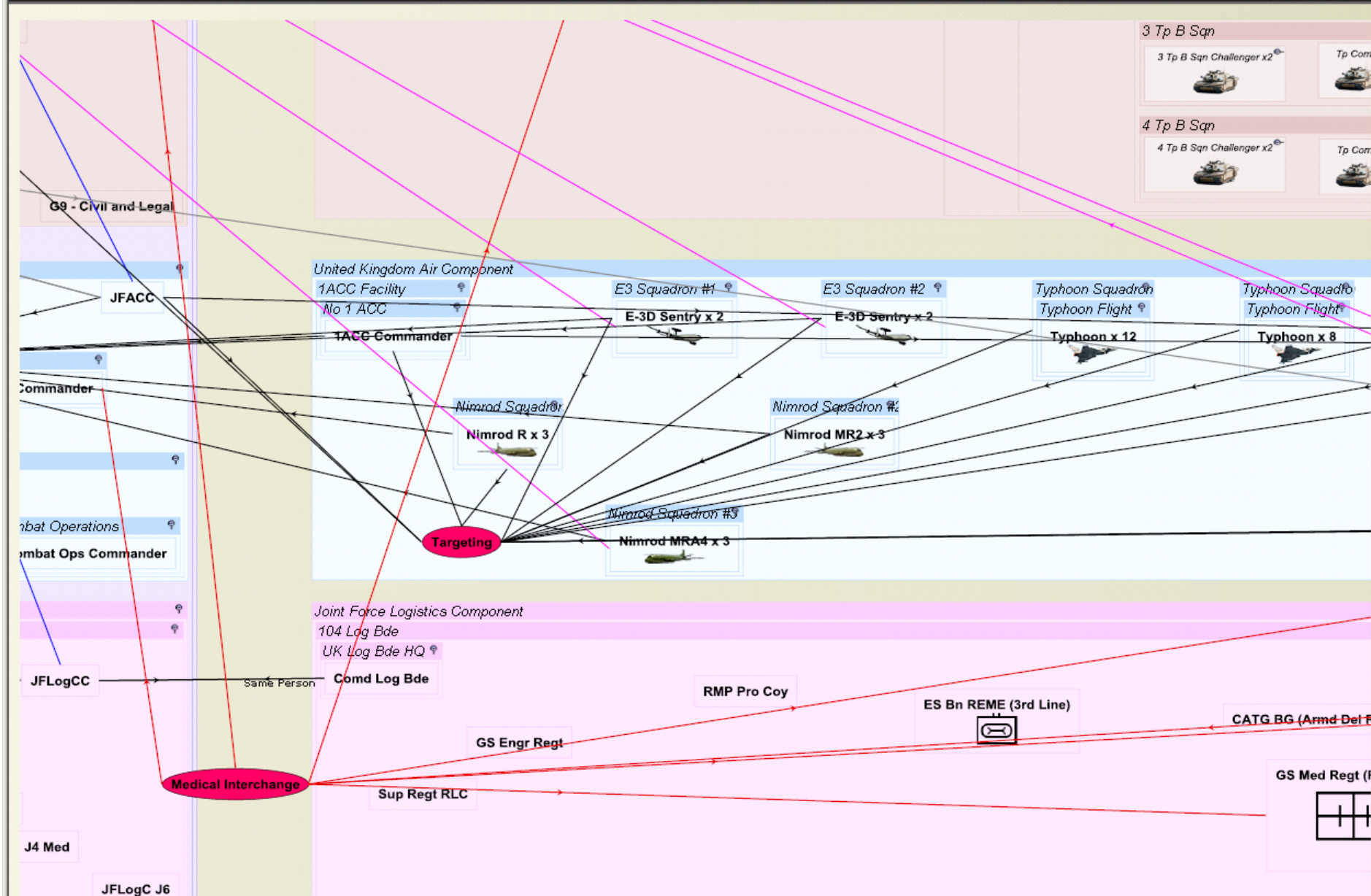


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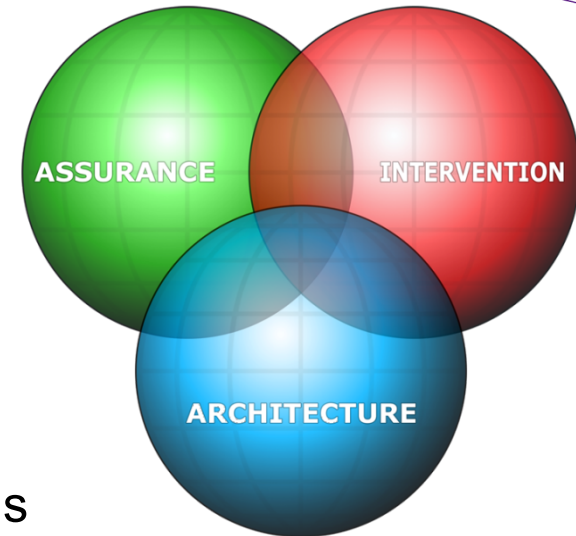
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Lessons Identified (and Learned?)

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- Focus on architecture modelling
 - Not architecture understanding
- Focussed on Gate submissions
 - Used to support Assurance function
 - Investment model wrong – project focussed
 - Too little too late
 - Not maintained
- Products not owned or valued by Delivery Teams
 - Done to them not with them
- Architectural outputs
 - Policy produced stating what views required to support which gates
 - Complexity & detail viewed as good
- Limited grasp of Enterprise Architecture (EA) concept
 - EA was composite Architecture of the Enterprise
 - Repository was being built piece-meal
 - Did not know what you did not know



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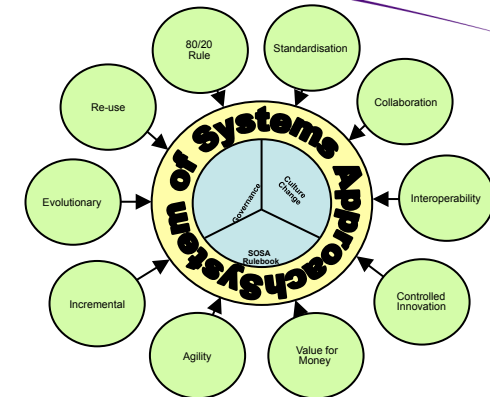


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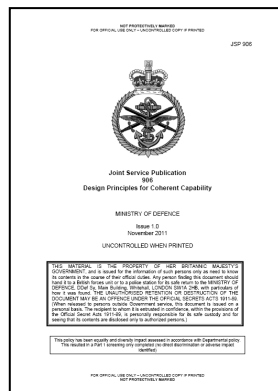
SOSA – System of Systems Approach

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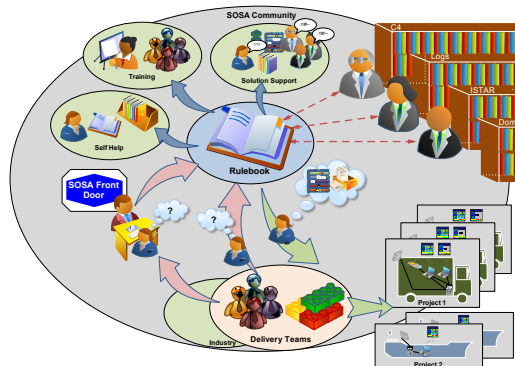
“Enabling enhanced capability through achieving commonality, reuse and the interoperability of independently procured systems”



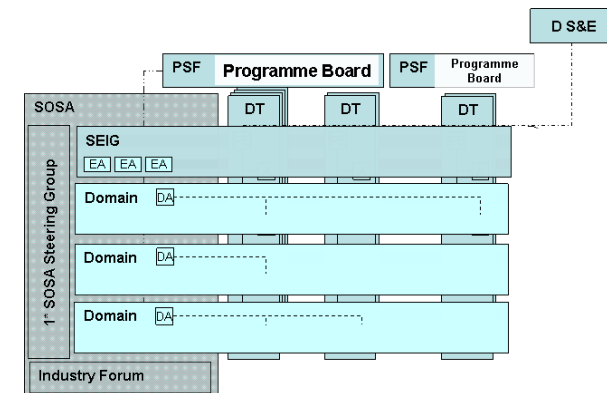
Principles



Rulebook



Operating Model



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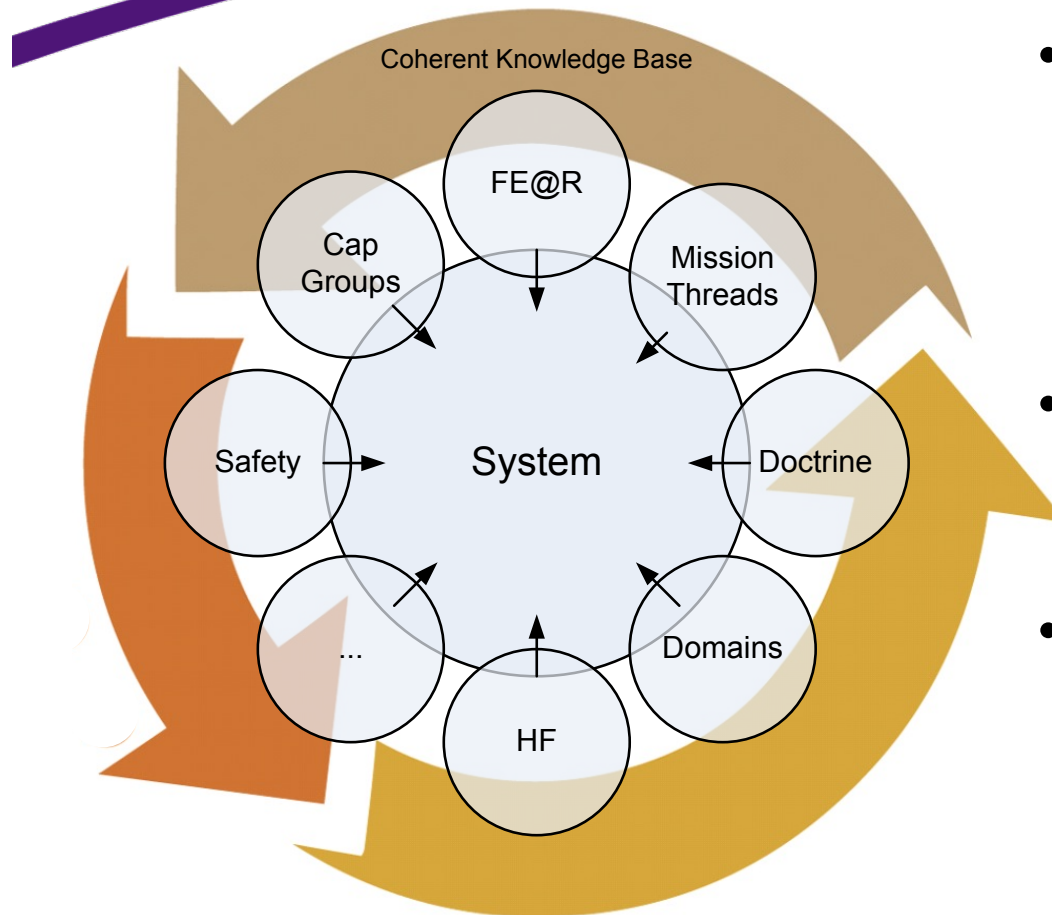
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Current Approach – System of Systems **NiTEWORKS**

- Enterprise split into federated domains
 - Domain - defined logical area of Defence for which control and coherence is required at an Enterprise level
 - Enterprise view
 - Capability, Technical, Operational
 - Domain Authority - organisation with authority to cohere and control one or more SOSA Domains
 - Domain Map - relationship between domains
- Domains develop & maintain necessary Body of Knowledge (artefacts)
 - Artefact framework
 - Supported by more abstract concepts – Patterns, Services,
 - Issue based development
- Support of domain experts provided throughout life of project
 - Systems Engineering Lifecycle - Shaping, Control, Release
 - Supports DE&S engineering strategy
 - Design Reviews



Knowledge Based Systems Engineering **NiTEWORKS**



- Developing, maintaining & using knowledge ‘about’ the system
 - Working from System of Systems Perspective
- Two overarching models
 - Reference model
 - Process model
- Creating coherent, consistent requirement set constraining the system
 - Context for the system



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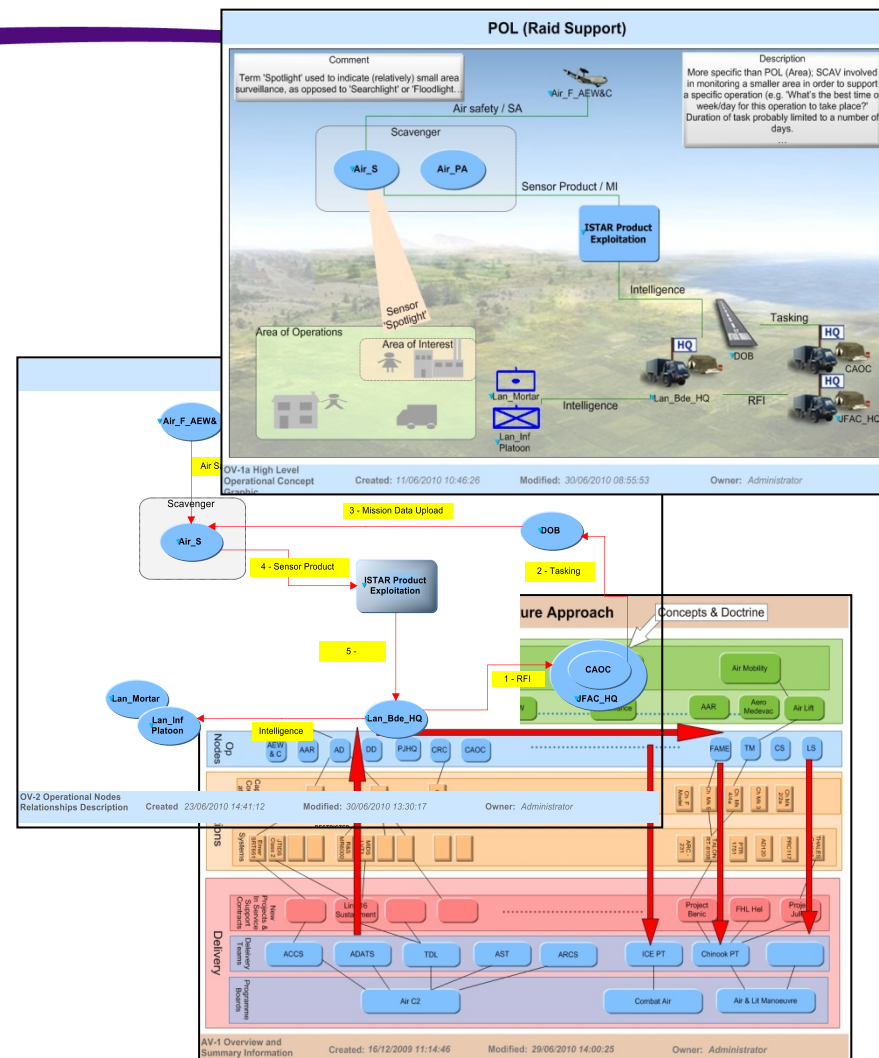


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Scavenger Case Study

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- Purpose
 - Support development of Scavenger context
 - Develop constraints and interoperability requirements
- Approach
 - Use CONEMP, DSG 08, HLOC, FASOC 2009 and Allied Joint Doctrine for Air and Space Operations (AJP 3.3A), and is consistent with the concepts espoused in the FMOC, FLOC and FEMOC
 - Synthesise
 - Coherent Context
 - Validate with stakeholders
 - Corner Case Mission Threads



Benefit – Complete and coherent requirements specification developed from a through life perspective enabling SoS integration during delivery not operations



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Niteworks - **then and now**

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2003

- ▼ Focus on traditional warfighting experimentation and the NEC domain. Long duration providing high level of evidence.

*Single 'experimentation' Focus
Dedicated Architect
Enduring Role
Plan Development*

2012

- ▼ Trend towards shorter term projects taking rapid, pragmatic view of a problem. Often followed by more in-depth investigation.

*Multiple foci
Arch Principles more prevalent
Multiple Roles
Rapid Development*



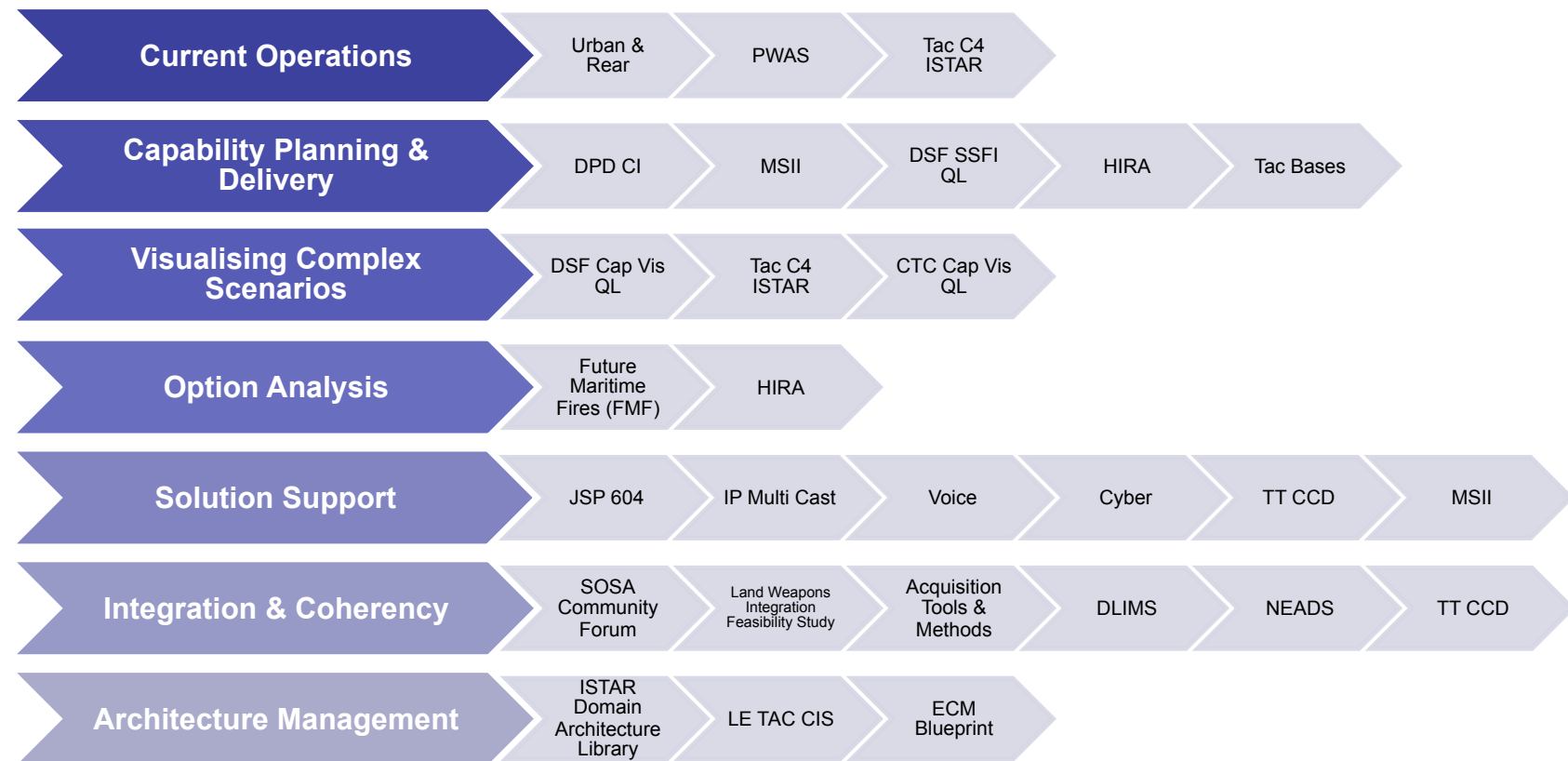
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Recent Architecture Work In Support Of..... **NiTEWORKS**



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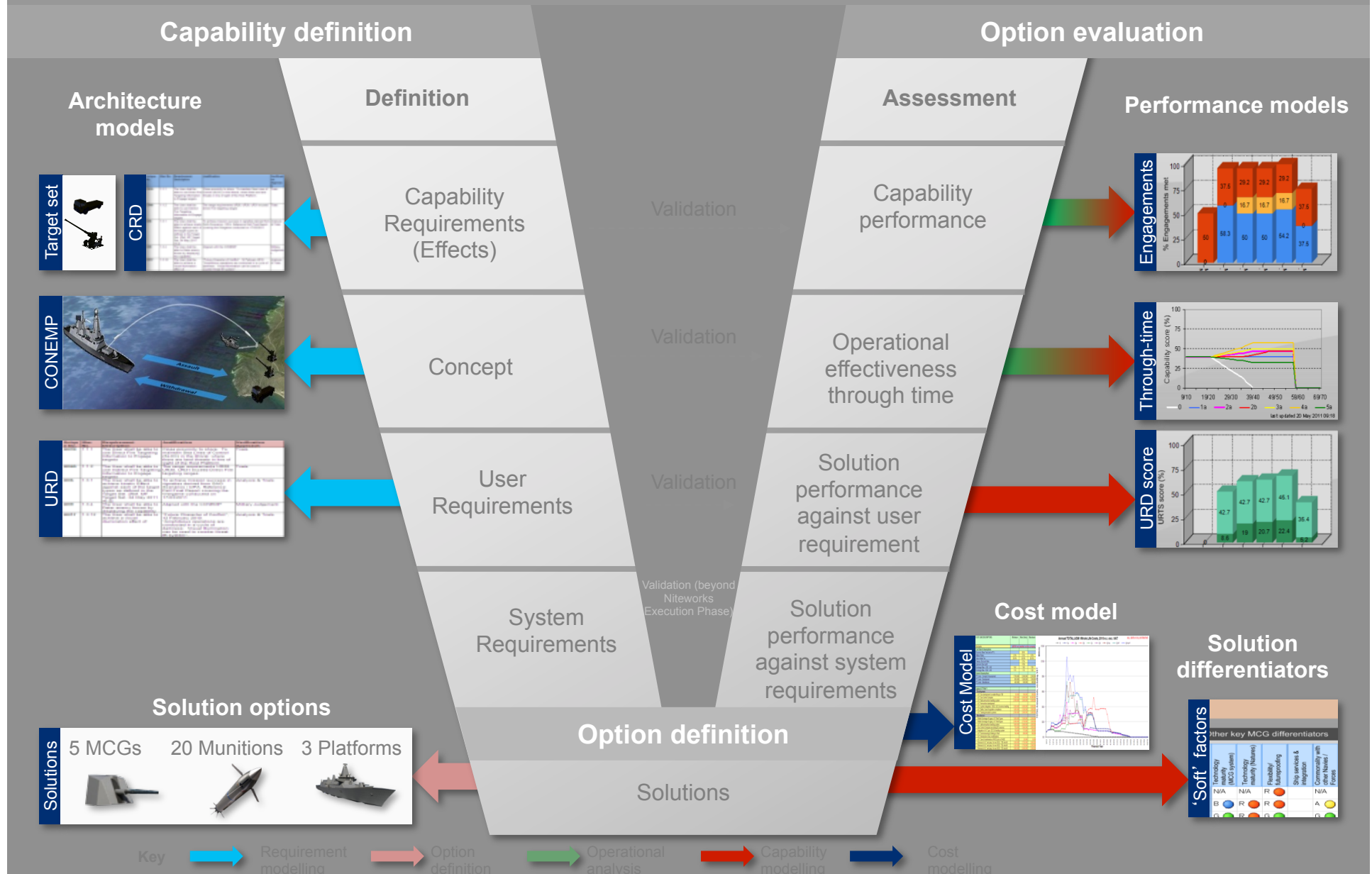
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The approach is based on the systems engineering 'V-model'

All capability definition outputs support the evaluation stage



The Changes In EA Adoption

- Decision focused
 - Used in support of decisions rather than done for the sake of the architecture
- Good is good enough
 - Rapid development and very focused
- Increased awareness
 - Higher level of stakeholder involvement, understanding and buy-in
 - Within the community an EA mentality and behaviours is more recognisable if not the architect
- The role of the architect
 - Emerging understanding on the different architect roles
- Architecture by stealth
 - Architectural Principles more important than the architecture model



The Changes In EA Adoption

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- Service Approach
 - Service based approach/thinking more common
- Visualisation is key
 - Greater focus on visualization of complex data rather than architecture design
- Diversity in tooling
 - Best tool for the job (PowerPoint, EA , MOOD, SA)
 - Drive to integrate EA tooling with MI systems
- Appreciation of reuse
 - Partial reuse but limited based on domain, purpose and currency
 - Understanding model shelf life and maintenance overhead

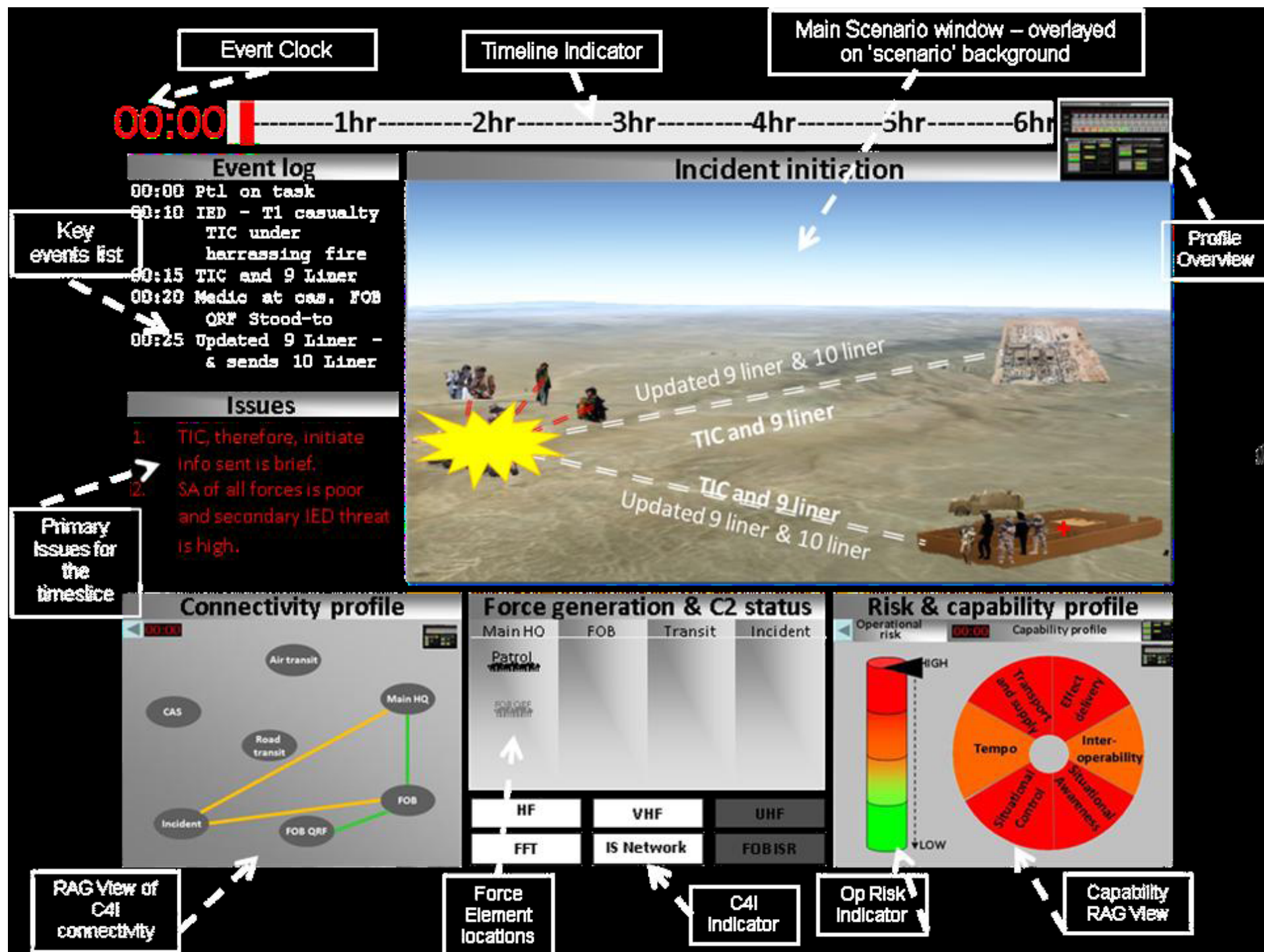


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WHERE NEXT FOR EA IN DEFENCE?



The Good, the Bad and the Ugly

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The Good

- MODAF internationally recognised
- Part of the acquisition mind-set
- Significant project successes
- Continuing to develop

The Bad

- Never fully meet early promises
- Disjointed messages

The Ugly

- At times lost focus of the value to the war fighter
- Distracted by the complexity of the problem



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Challenges for Next 5 Years

- MOD Industry relationship
 - White Paper – OTS and SME
 - Shared architecture development
- Tools maturity
 - Niche – all do some things well – limited interoperability
 - Integration into MI / Business tools
- Framework maturity and simplification
 - MODAF, NAF, DODAF,
- Put single information source at heart of project development
 - MBSE
- Establish ‘business as normal’ governance
 - Ownership and authority
 - Architecture validation and verification



The Key Challenge – Institutionalisation

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- Corporate and cultural challenge
 - Architecture still seen (by some) as overhead
 - Long haul – no silver bullet
 - Post reform organisation
 - Architectural roles / responsibilities
 - Embed into mature organisational processes
- Understanding value
 - Value of Coherence – Pan DLOD and whole life
 - Configuration understanding and sharing architectural information
- Professionalization
 - Skills recognition / skills development
 - Ways of working, style to enable reuse
 - Common lexicons



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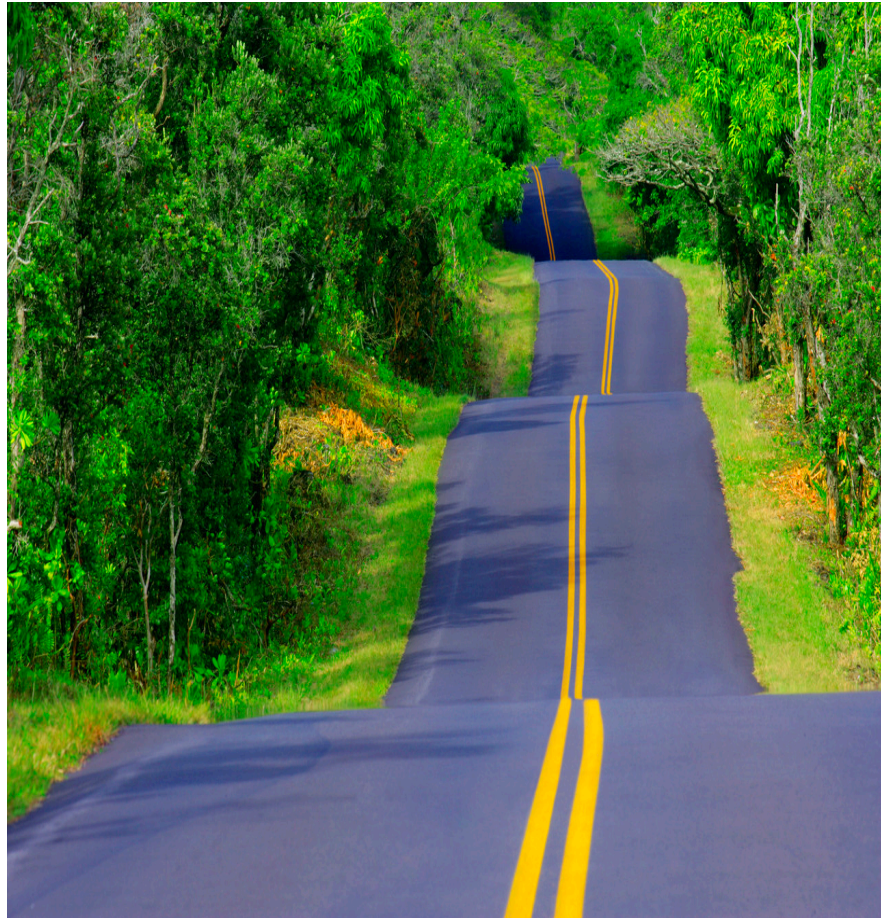


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The Journey So Far

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- Joint journey by MOD and Industry
- Significant successes but..
- ...continue to reinforce way of thinking and good practices



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QUESTIONS?

