



Ministry
of Defence



Moving towards internal and external M&S distributed simulation interoperability – the UK approach



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The Business Challenge

- A drive for the exploitation of M&S – e.g. the only means to provide effective training that is affordable.
- A knowledge that simulation can reduce costs, improve training/experimentation/acquisition etc and is environmentally friendly.
- An understanding that simulation has historically tended to be bespoke and stove-piped.





The Defence M&S Coherence (DMaSC) Approach

- Creation of a Defence-level DMaSC M&S Domain Authority to ensure coherence for simulation Defence and with Allies.
- Coherence to help provide interoperability across UK Defence and with our Allies.
- Carrot and Stick – Provision of Advice and Guidance as well as effective Governance



DMaSC Vision and Benefits

Vision: To maximise exploitation of investment through ensuring Defence wide technical coherence for all M&S based systems

Benefits: A coherent and co-ordinated technical approach that offers the following benefits:

- Exploitation of investment promoting cost avoidance;
- Interoperability across M&S that in itself promotes the benefit of richer capability;
- Promotes the challenging of assumptions
 - is the proposed solution meeting objectives?



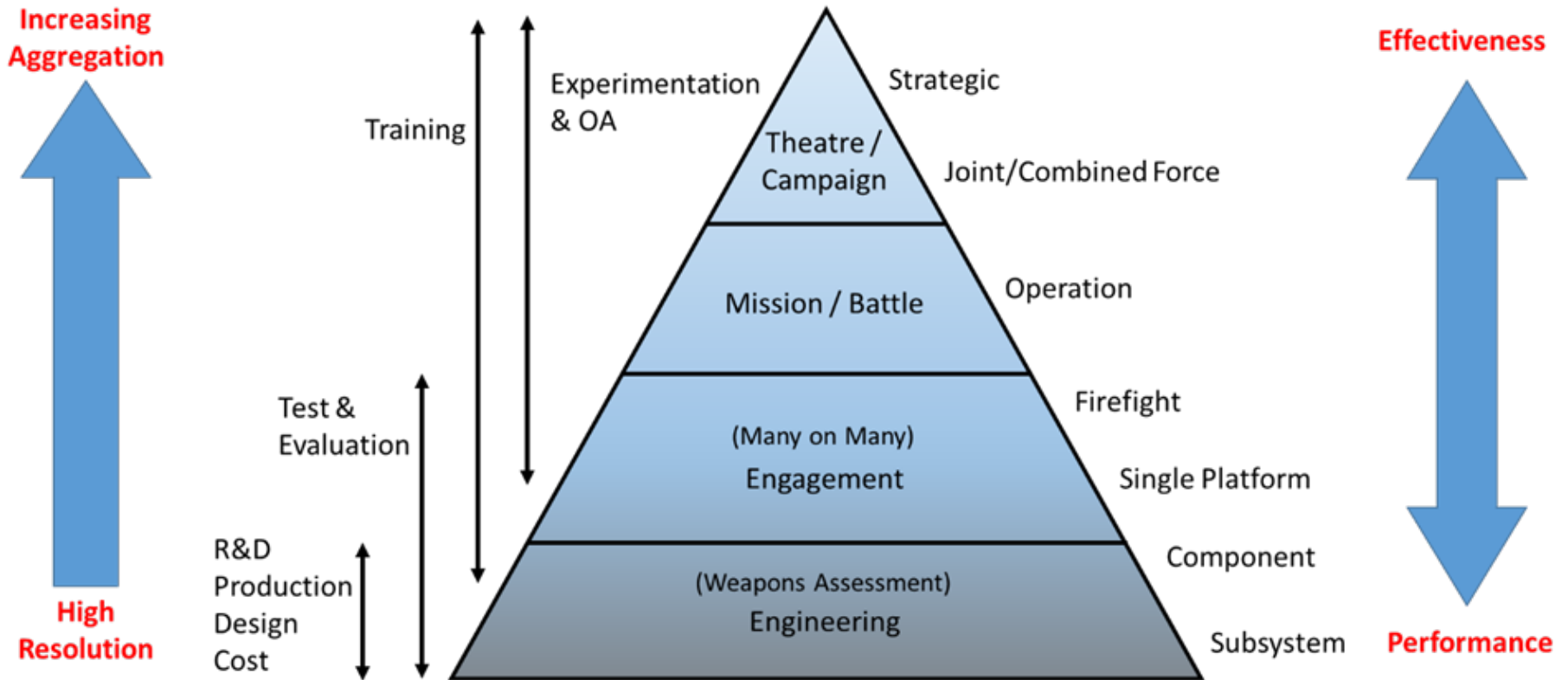
DMaSC Scope

To address this challenge, it has been recognised and agreed that:

- M&S is an enabler only;
- DMaSC applies to:
 - All planned M&S systems
 - Legacy M&S systems (but only at points of capability change)
 - All uses of M&S (not just training)



Scope of DMaSC shown as a Hierarchy of Models



* Diagram courtesy US Defense Systems Management College

State of Play

- A new Defence Policy for M&S (August 2018) that:
 - Is owned by MoD HQ;
 - Authorises Joint Forces Command to deliver M&S Coherence on its behalf via DMaSC;
 - Directs DMaSC Compliance for **all** M&S systems (and states that only DMaSC can determine);
 - Directs all FLCs to implement the policy;
- A Defence Simulation Centre (DSC)
- A M&S Catalogue
- The development of the DMaSC Compliance Assessment Framework



DMaSC High Level Requirements

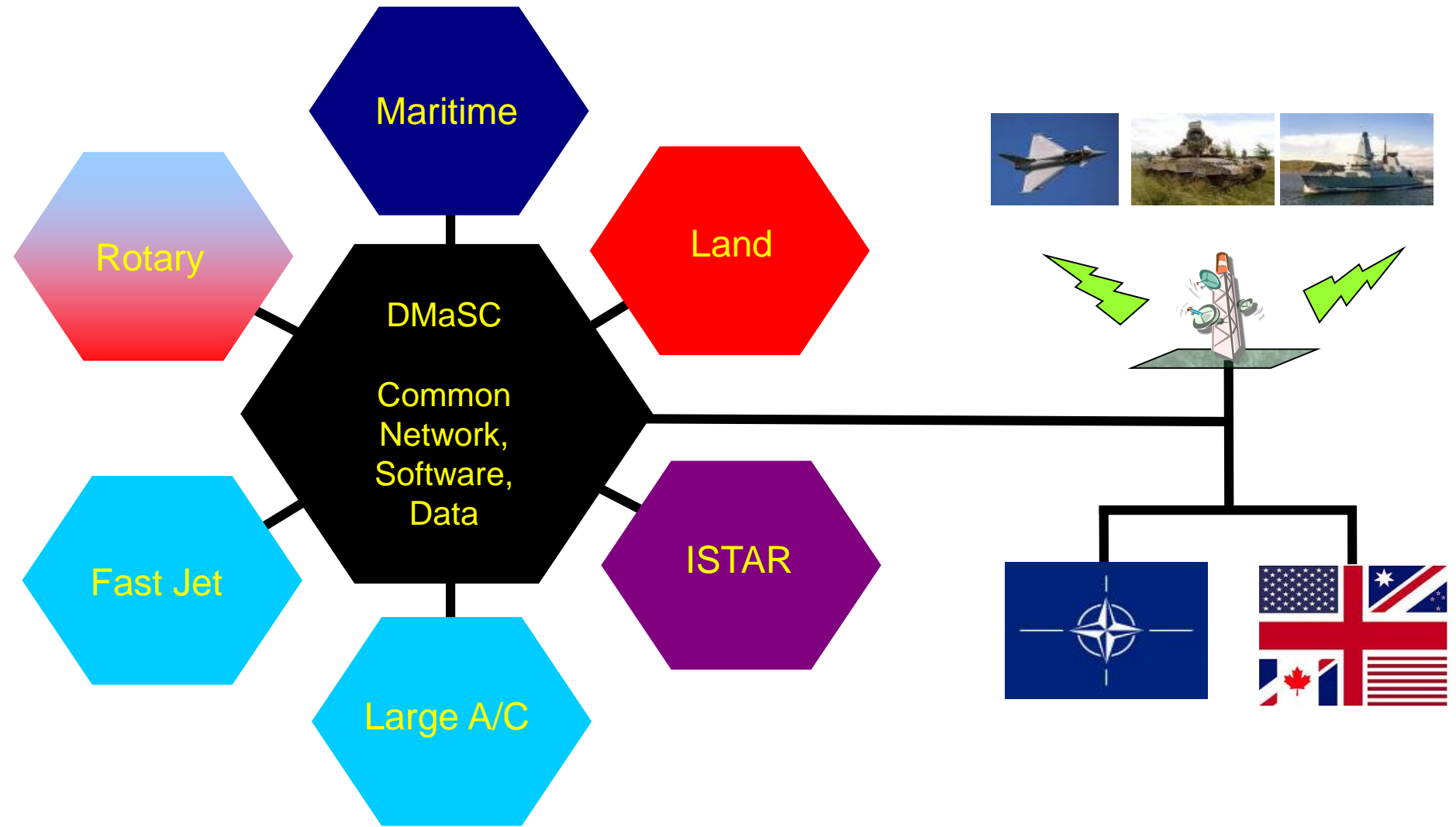
- **Value for Money across the Enterprise (highest priority);**
- Clearly identified M&S requirements helping to provide vertical coherence;
- Conformance to agreed standards;
- Commonality and re-use of data, models and platforms;
- Consistent, enduring, accessible, agile and adaptable M&S solutions.



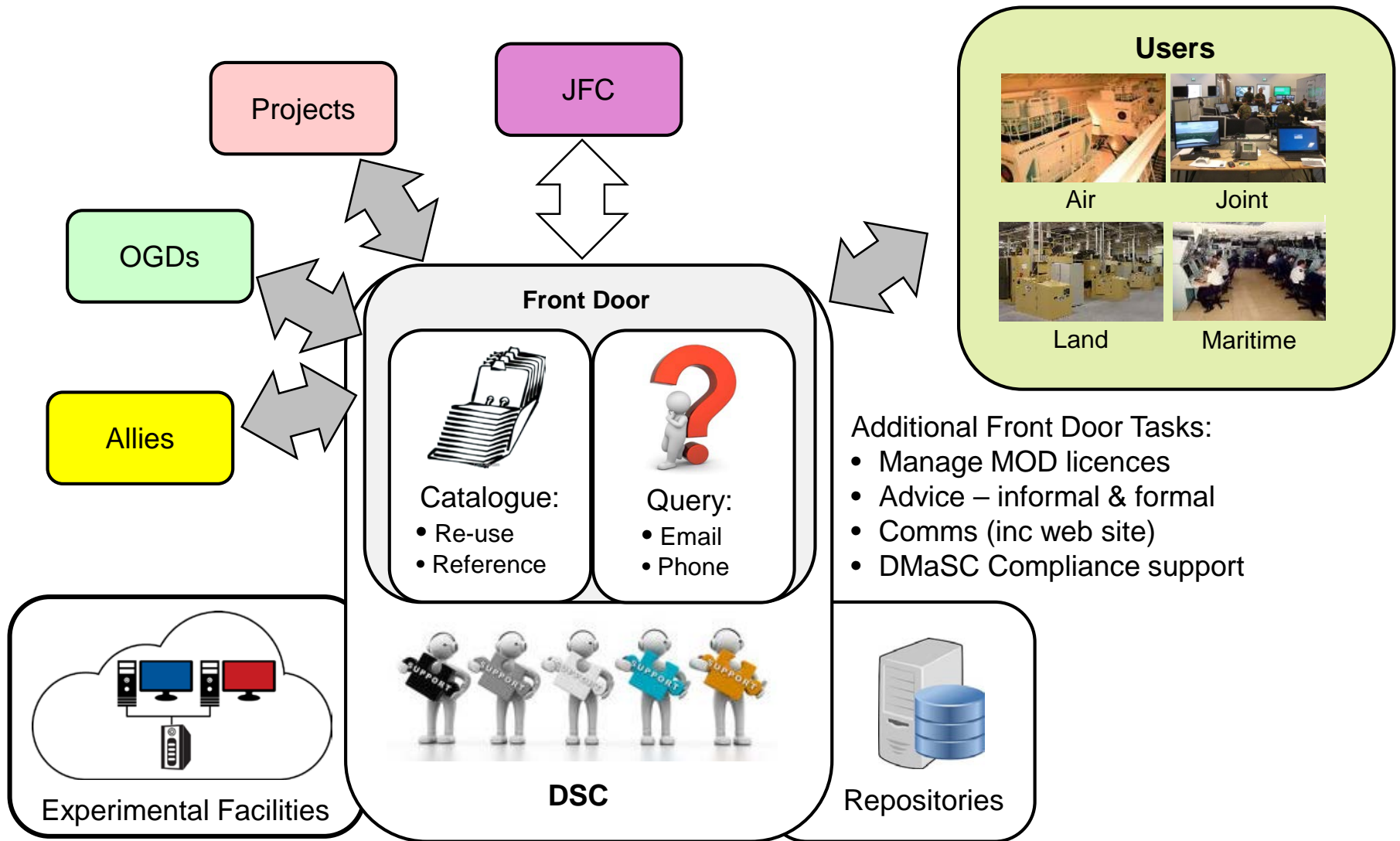
DMaSC Compliance

- *A mandated DMaSC User Requirements Document (URD) statement*
- Compliance can **only** be determined and signed off by the relevant DMaSC
- Project review points agreed
- Reviews based on evidence and outcomes recorded
- Any issues raised with DMaSC TA Hd

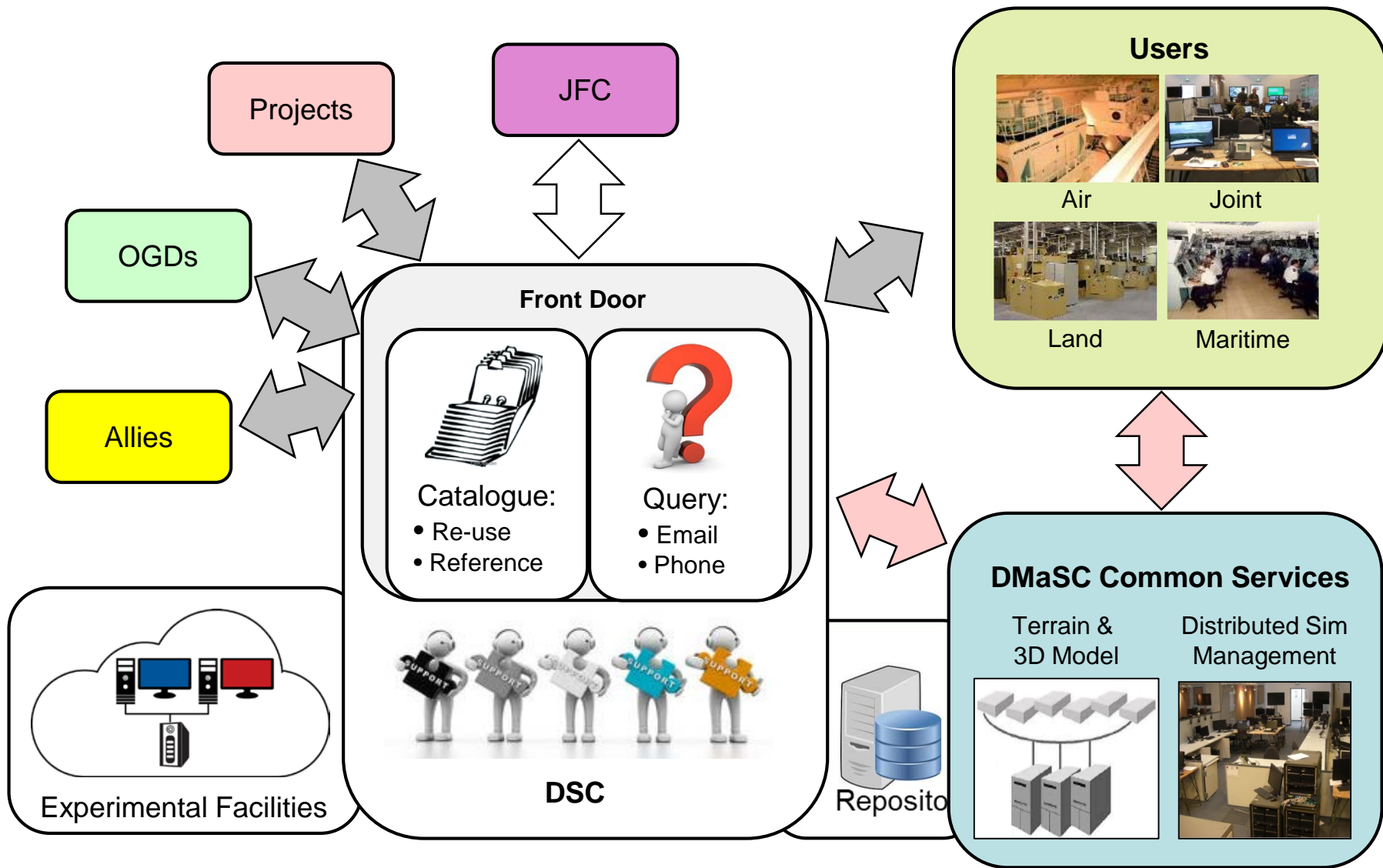
Common Simulation Technical Infrastructure



Defence Simulation Centre (As Is)

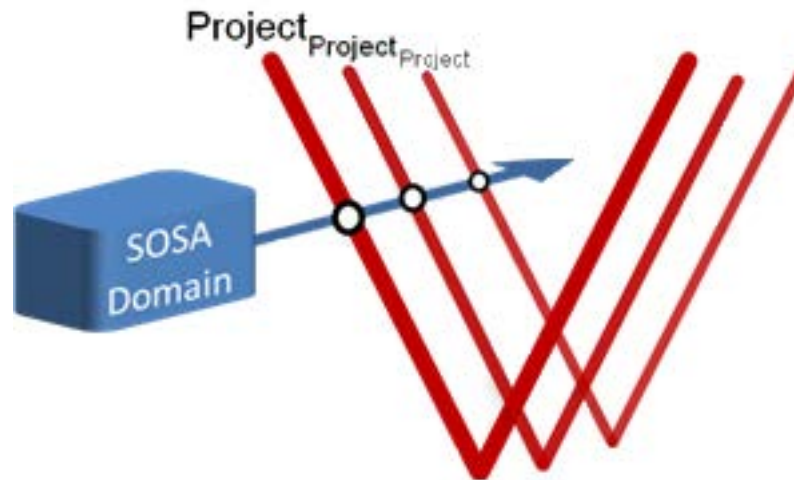


Defence Simulation Centre (To Be)

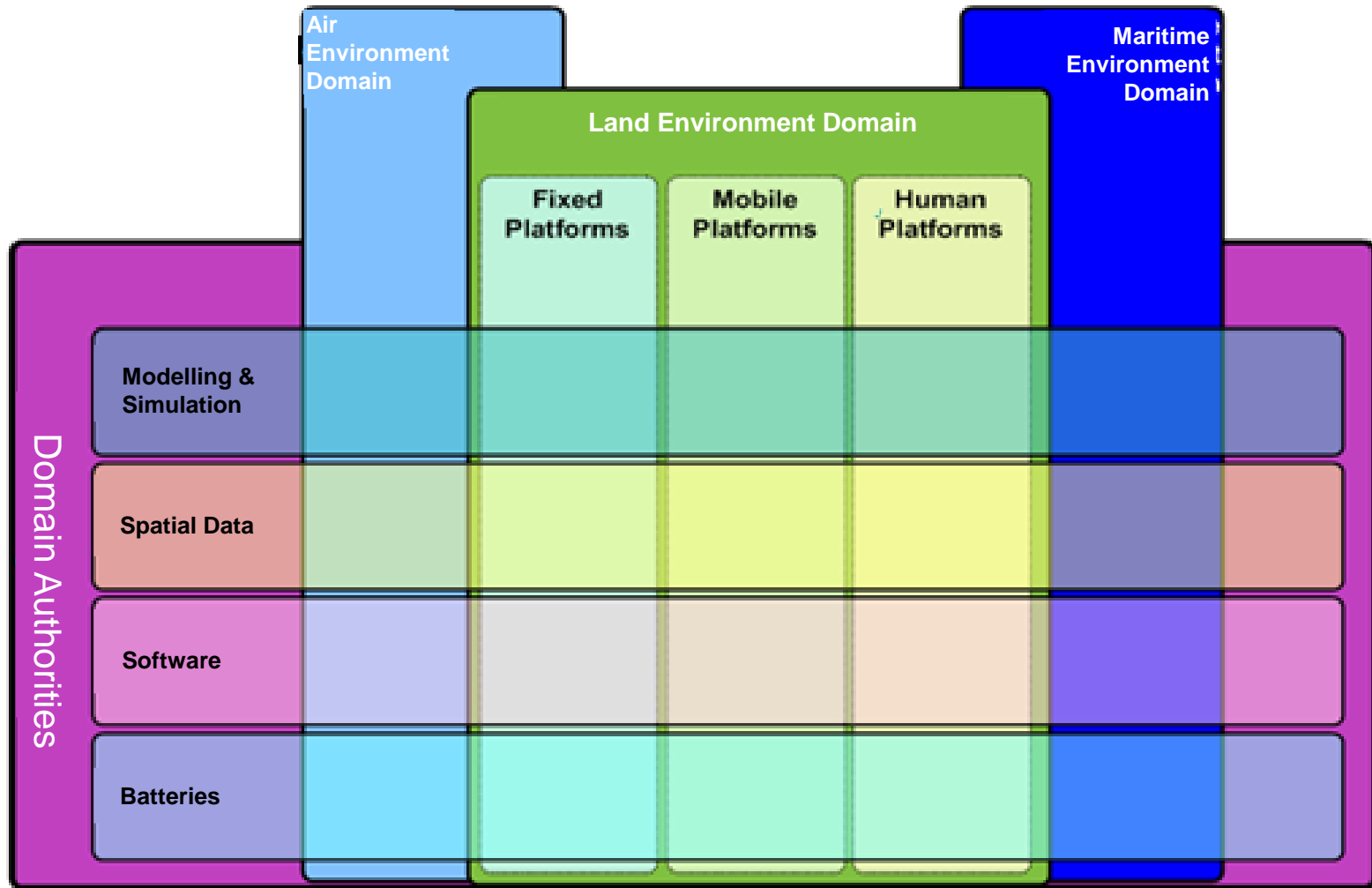


DMaSC Coherence and Co-ordination

DMaSC is based upon the following System of Systems Approach (SOSA) principles which can be applied across all simulation in Defence to improve coherence and efficiency.

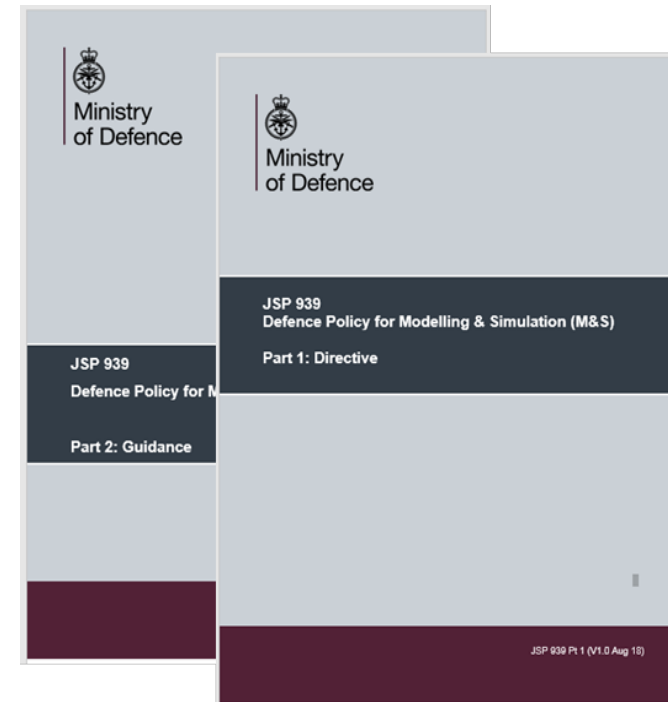


System of Systems Approach

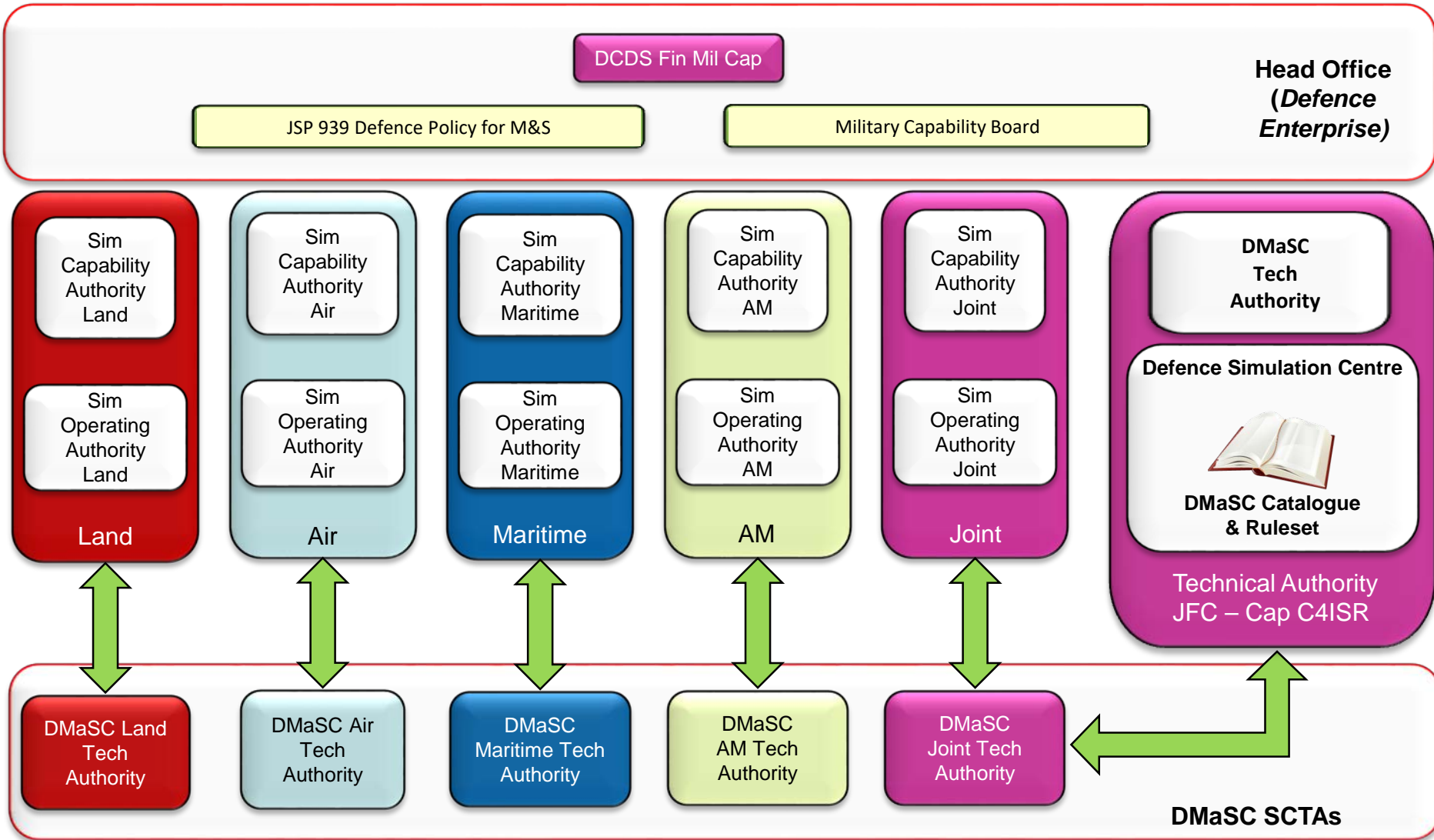


DMaSC Coherence and Co-ordination

- JSP 939 Part 1 – Defence Policy for M&S
- Direction
- JSP 939 Part 2 - Guidance inc DMaSC Rules
- Def Stan 03-50 and DMaSC M&S Standards Profile (DMSP)
- DMaSC Catalogue
- JSP 906 – Coherent Approach to Defence Capability
- HQ right to challenge
- Ultimate referral to DCDS FinMilCap



Operating Model



SOSA Principles

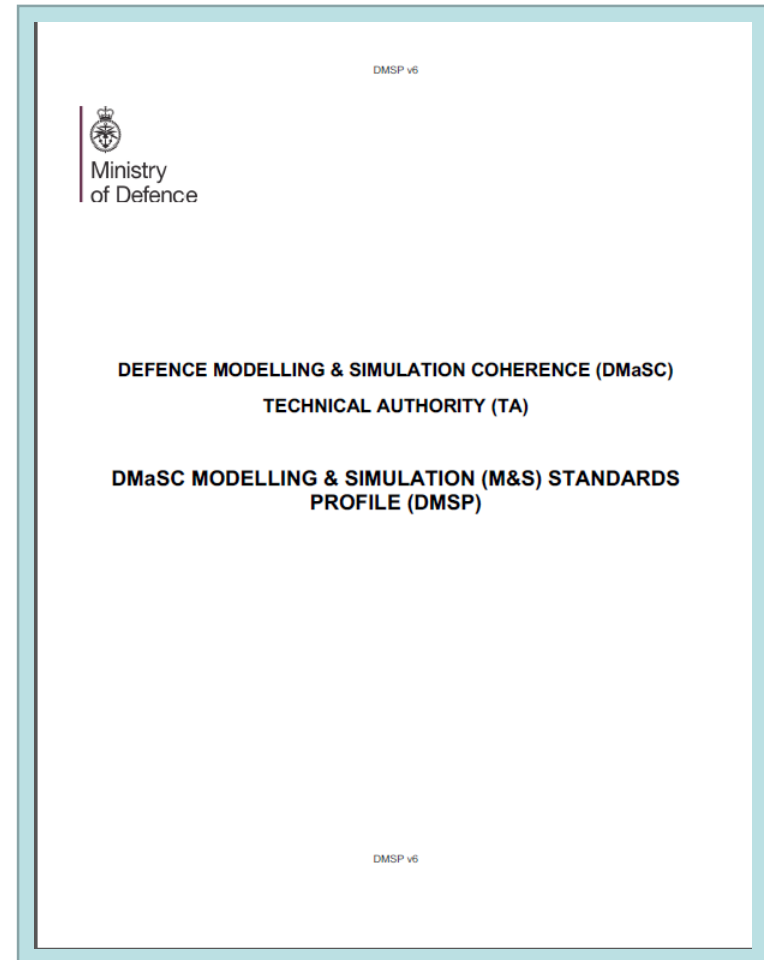
1. *Unify Defence*
2. *Drive Operational and Business Effectiveness*
3. *Minimise Diversity*
4. *Develop and Deliver for Reuse*
5. *Choose Proven Ways and Means First*
6. *Ensure Commonality of Service Provision across Defence*
7. *Develop and Deliver Capability for Flexibility, Adaptability and Interoperability*
8. *Use Open Standards and Approaches*
9. *Treat Information as a Valuable Asset*

The DMaSC Rules

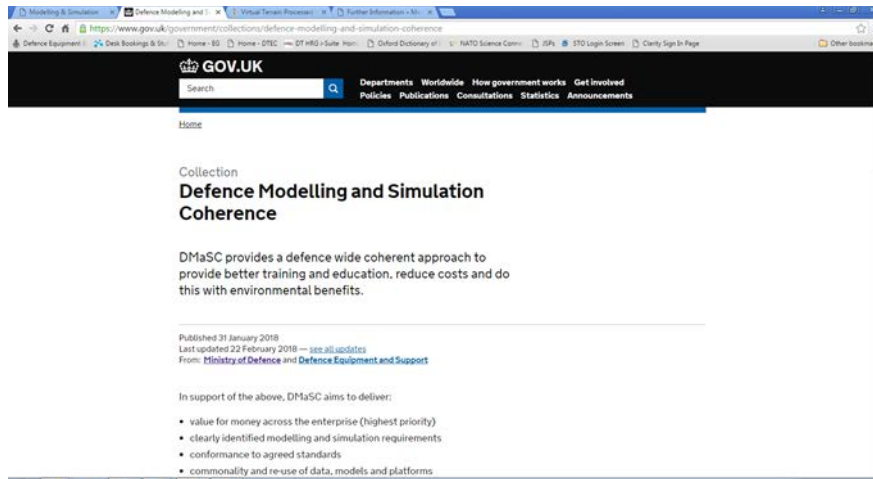
Rule	Description
1	Projects shall confirm if suitable existing systems are available to meet their requirement.
2	Any M&S standards selected for use by the training capability must be compliant with Def Stan 03-050.
3	Common M&S components, services and data as made available by the DMaSC Catalogue must be used by the M&S capability.
4	Any new/modified/enhanced M&S components, services and data shall be made available for reuse via the DMaSC Catalogue.
5	All M&S capability must be developed in accordance with the relevant Service Command's technical architecture approach
6	Relevant enterprise rules from other domains acting as constraints must be adhered.
7	All new distributed simulation enumerations must comply with the DMaSC Enumerations Policy and be registered with the DMaSC TA.
8	Open interoperability documentation, to include Interface Control Documents, must be made available for all M&S Capability.
9	All M&S capability needs for terrain source data and 3D models that cannot be sourced via the DMaSC Catalogue, are to be routed via the Defence Simulation Centre (DSC) Front Door.
10	All M&S related research and decision support activity is to be registered with the DSC.

DMaSC M&S Standards Profile

- Recourse to the DMSP is mandated
- Lists *preferred* M&S Standards
- Derived from NATO M&S Standards Profile (NMSSP) aka AMSP-01
- Living document reviewed annually
- Covered by Def Stan 03-50
- Industry & Academia consulted

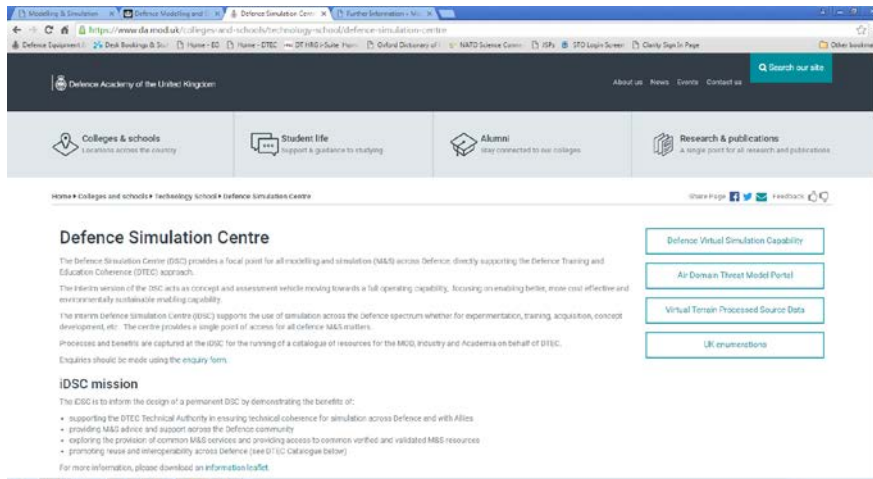


DMaSC Comms – Further Information Sources



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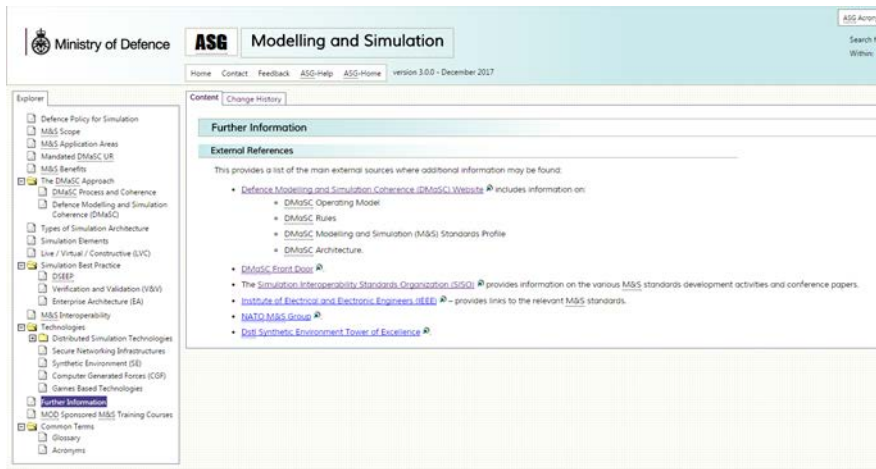
- Policy
- DMSP
- Enumerations policy



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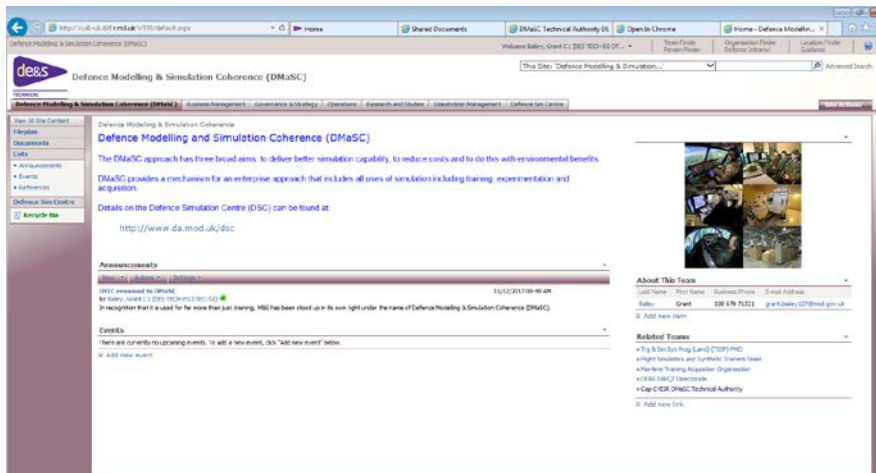
- DMaSC Catalogue
- DVS
- Enumerations process

DMaSC Comms – Further Information Sources



Acquisition Systems Guidance

- Mandated Common UR
- DMaSC
- Technologies
- Best Practice



DMaSC SharePoint

- DMaSC Compliance Process
- DMaSC Presentations
- NATO business



DMaSC relationship with Industry & Academia

DMaSC Industry Advisory Group (DIAG)

Bi-directional engagement between DMaSC with industry and academia. Open to all industry and academia that can contribute to the design & delivery of the DSC.

DMaSC M&S Catalogue

- Provides visibility for the M&S resources available for sharing and re-use.
- Effectively a registry containing metadata.
- The ability to identify potential cost avoidances and improve interoperability.
- Defence will achieve better resource management.





DMaSC M&S Catalogue – construct #1

- **Part 1 - Reuse**

- **Synthetic Environment (SE) Data Repository:**

- Source Geospatial Data processed for M&S;
- Virtual BattleSpace (VBS) v2/3 compiled virtual terrains;
- 3D models for which the MOD has reuse rights;

- **Software Resources**

- A listing of M&S resources available for reuse



DMaSC M&S Catalogue – construct #2

- **Part 2 - Reference**

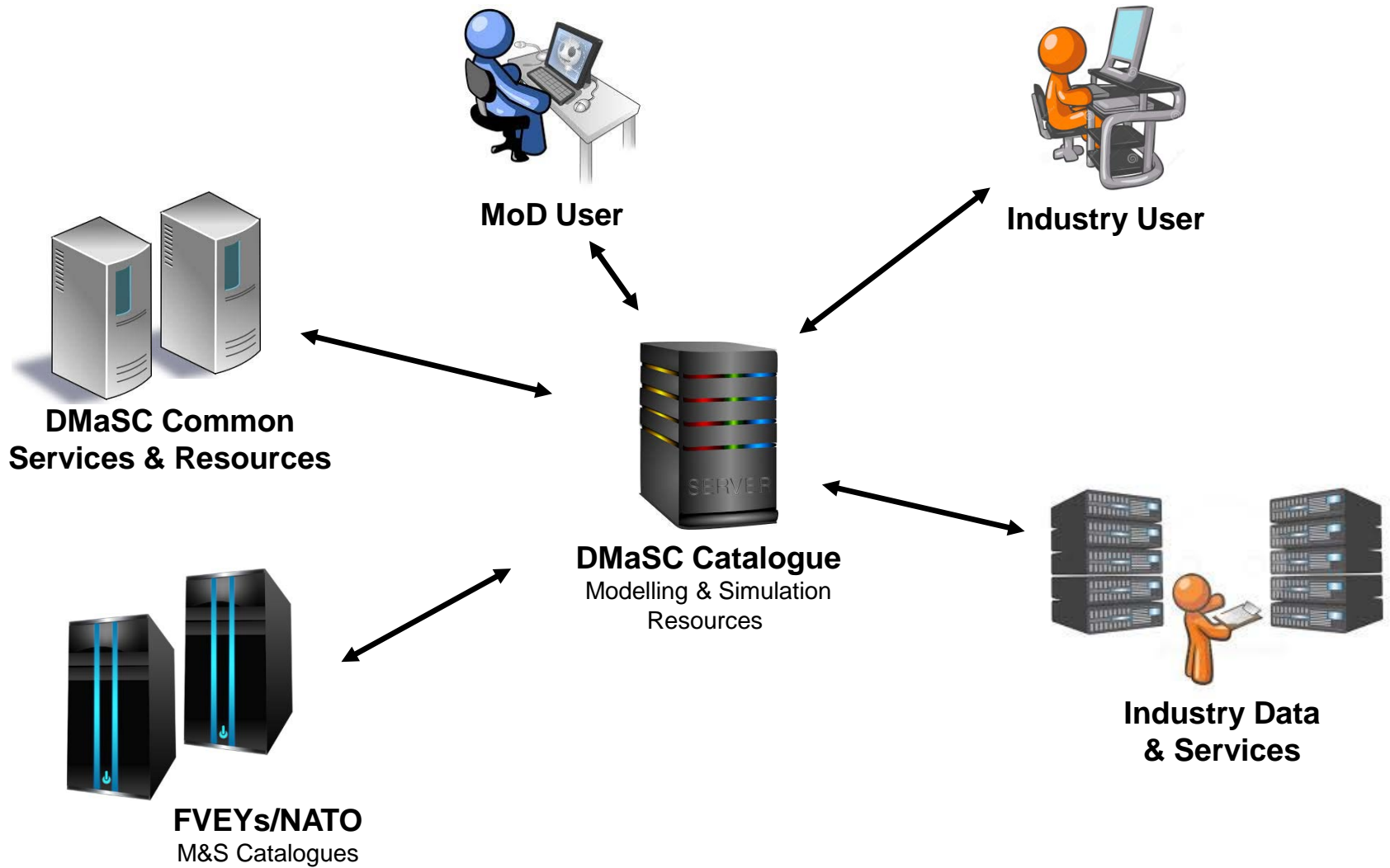
- **Assets:**

- The Simulation Systems Asset Baseline;

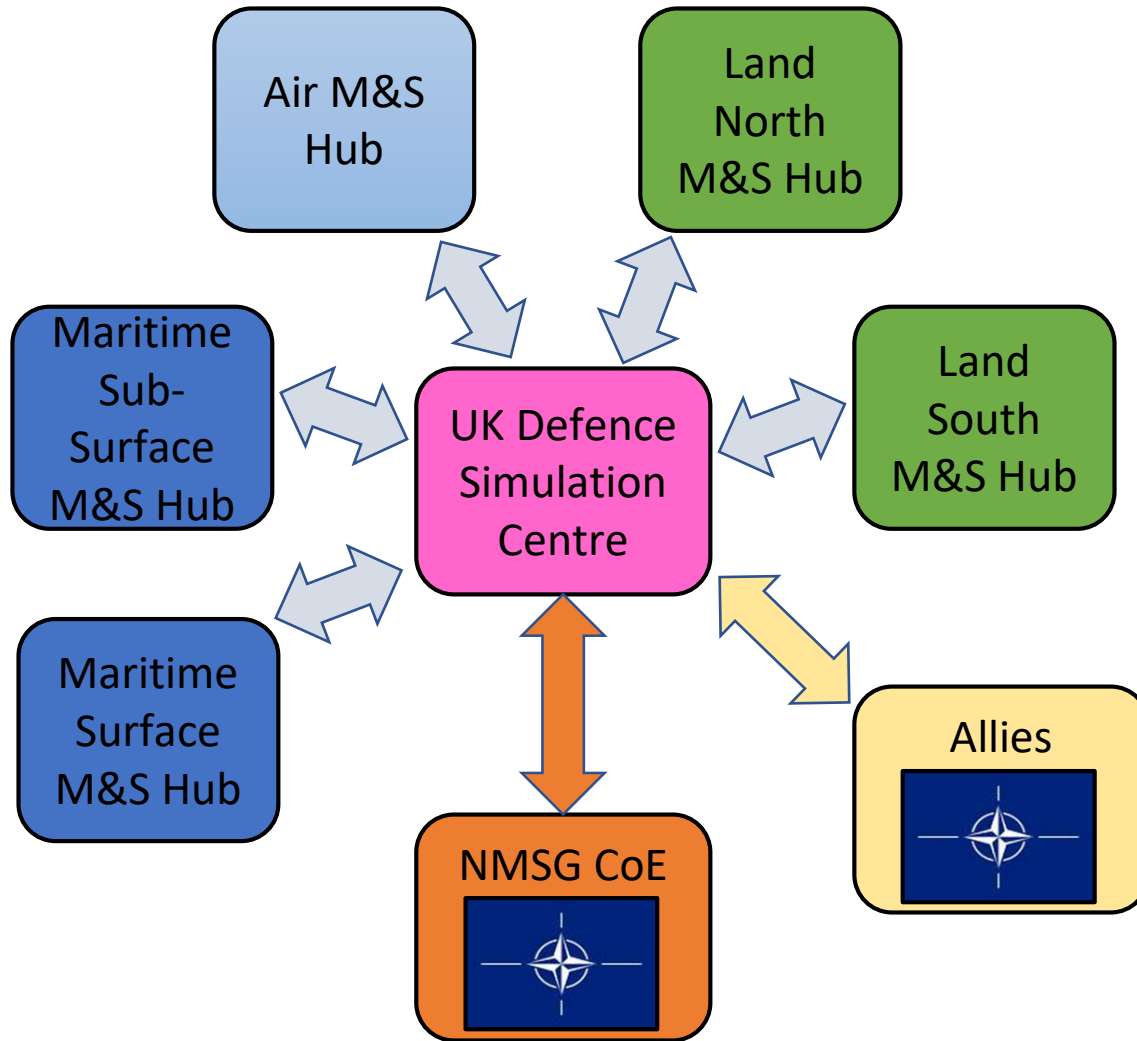
- **Standards:**

- The DMaSC M&S Standards Profile (DMSP).
- The UK Simulation Enumeration Register.
- Research and Official Studies

DMaSC M&S Catalogue



DMaSC Interaction with other available M&S Services



M&S SQEP

The SCTA should determine (with support from the DefAc) the courses that are necessary depending on the role. On exception, the SCTA decision could also incorporate experience and non DefAc courses/education. This SQEP stipulation applies to both internal and external resource.

The DefAc courses are as follows:

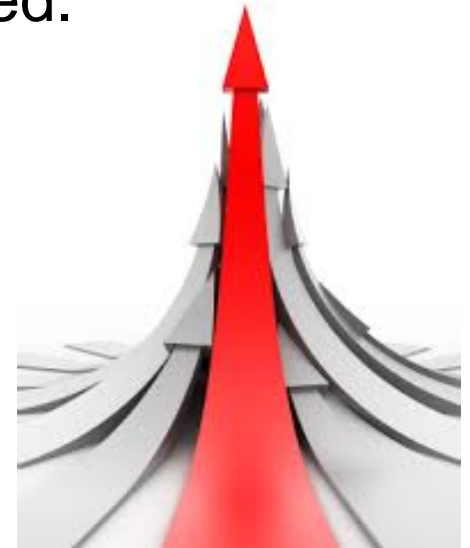
- **Introduction to Defence Simulation (IDS)** 1 week.
- **Simulation Employment Training (SIMET)** 5 weeks.
- **Defence Simulation and Modelling MSc (DSM MSc)** 1 year or up to 5 years part-time.
- **M&S Foundations (DSM FMS)** 1 week residential.
- **Networked and Distributed Simulation (DSM NDS)** How defence simulation systems make use of networking technology. 1 week residential. **

The tasking of a SQEP M&S resource must be advised by the SCTA as the SME.

** - NB Other 5-day technology courses are also available.

Summary

- VFM for Defence (at Enterprise level) top priority
- Better co-ordination of activity and visibility of assets.
- DMaSC offers ability to improve simulation acquisition and provide support for all simulation users.
- Appropriate governance framework required.
- A mature and unified approach
- Care taken not to stifle innovation



Any Questions?