Collaborative joint training across international borders

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1 Introduction

Collaborative or joint training across UK Defence and international borders require an approach supported by a suitable M&S systems' interoperability. Part of this approach is based on UK Defence policies that ensure capability coherence and provide governance & technical coherence of M&S enablers (including collective training enablers) across the UK Defence enterprise. Two of such policies include JSP 906 – Defence Principles for Coherent Capability and JSP 939 – Defence Policy for M&S. The UK MoD's Joint Service Publications (JSPs) are an authoritative set of rules and/or guidelines specific to Defence, material to Defence outputs and have pan-Departmental applicability.

The former serves to influence decisions and behaviour towards thinking and working for Defence as a whole - JSP 906, while the latter details how governance and technical coherence is applied.

JSP 939 recognises that M&S is an enabler. Itcovers all aspects of M&S, including, but not limited to, operational analysis, threat analysis, training and education, experimentation, acquisition, evaluation and testing and warfare development.

2 Approach

Underpinning this M&S policy is the Defence Modelling and Simulation Coherence (DMaSC) approach. The aim of DMaSC is to provide a single direction for the development and management of all Defence M&S systems through a set of policies, technical procedures and common resources, providing and promoting and ensuring interoperability with the Front-Line Commands and Allies. DMaSC promotes the exploitation of assets, including research and official studies, through their sharing and re-use across Defence. It applies to all uses of M&S across Defence, and will be used for several purposes including training, experimentation and acquisition. The vision is that UK Defence will have a coherent framework of M&S enablers, accessed through the Defence Simulation Centre (DSC) Front Door [1], that are interoperable, reconfigurable and cost effective. Figure 1 shows diagrammatically how the many users of M&S can access such common resources and share them with deployed forces and Allies including NATO.
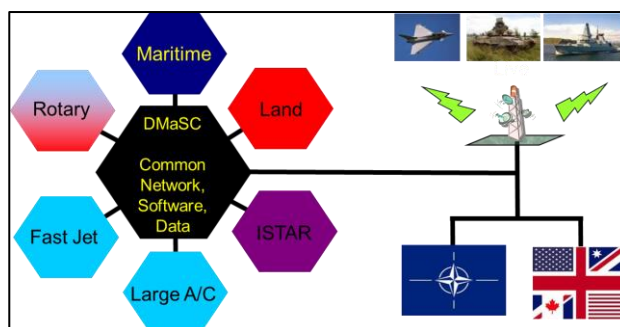

Fig. 1. Interaction between DMaSC and deployed forces & Allies.

It should be noted that DMaSC applies for all uses of M&S across Defence no matter its utility whether it is, for example, for the purposes of Training, Experimentation or Acquisition.

3 Discussions

Figure 2 shows an interpretation of the hierarchy involved with M&S. In this diagram, the DMaSC scope covers all use of M&S the Engineering level to the Strategic level.
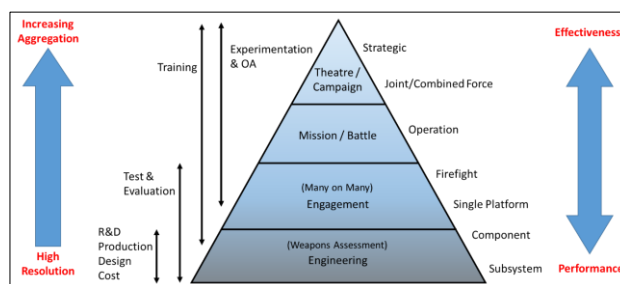

Fig. 2. Scope of M&S shown as Hierarchy of Models (courtesy of US Defense Systems Management College)

3.1 Emergence of UK Distributed Simulation Requirements

The UK already employs distributed simulation systems, primarily in the form of the Maritime Composite Training System [2] (MCTS) and the Distributed Synthetic Air Land Training [3] (DSALT). However, a requirement for further distributed training continues to grow primarily under the banner of Defence Operational Training Capability (DOTC).

DOTC(Air) is the most advanced of this suite of programmes that seeks to fill a demonstrated capability gap that prevents Air Force Elements (FE) training together as force packages, enables a Defence-wide requirement to download live training into a Synthetic Environment (SE), and will allow a rebalancing of live/synthetic training [4].

3.2 Alignment with Allies

UK Government Defence Policy stipulates alignment and interoperability with Allies wherever possible. For M&S this is primarily achieved through the engagement with the NATO M&S Group (NMSG) with which an active participation is taken where the UK currently Chairs the Modelling and Simulation Standards Subgroup (MS3).

International interoperability is fundamentally achieved largely via the common selection of open standards, hence the involvement with MS3 that is responsible for the NATO M&S Standards Profile (NMSSP) as published as Allied M&S Publication (AMSP) 01. As a subset and a superset of the NMSSP, the UK maintains a DMaSC M&S Standards Profile (DMSP) that contains mandated and preferred M&S specific standards. To allow the DMSP to be used contractually, it is covered by Defence Standard (Def Stan) 03-050 that has been accepted by Industry and recently refreshed.

4 Future Work

In line with wider MoD direction to provide capability as services where appropriate, and to ensure commonality and efficiency across Defence in accordance with the direction provided in JSP 906, DMaSC plans to deliver enterprise-wide common M&S services. The delivery of these common services will inform and de-risk plans for Modelling & Simulation as a Service (MSaaS) for the UK, again aligned with Allies.

Other Defence projects and programmes may also deliver M&S services but only for them and their domain. For example, the Defence Operational Training Capability (Air) (DOTC(A)) programme has a separate project known as Common Systems and Services (CS&S) that has been established to deliver and operate as the 'Air Hub', the necessary simulation and network functions required to allow the linking of current and future air simulation capabilities and enable them to regularly operate together in a single coherent synthetic training environment.

Clearly there is the potential that both DMaSC, through its DSC, and CS&S will overlap and possibly duplicate services and therefore care and co-ordination must be taken to avoid this risk. The same applies to other M&S services that Land or Maritime, for example, may provide. For this reason, efforts are being made to ensure that suitable architecture work is conducted to ensure, at least internally to UK Defence, that we understand what is being done by whom and how interactions should take place.

5 Conclusions

The benefits of DMaSC's co-ordinated and coherent approach to an Enterprise wide management and usage of M&S are clear in terms of cost savings and improved capability. Notwithstanding the above, care is taken to ensure that alternative proposals are not automatically dismissed and innovation is not stifled. An added benefit of such an approach provided by DMaSC is the improved interoperability internally to the UK and through engagement and alignment with NATO, externally with Allies. Such interoperability underpins the ability to be able to deliver successful distributed simulation capability.

References

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Author/Speaker Biographies

Michael Lewis – Over 10 years' experience in Project, Programme & Portfolio Management and Capability Management. Now part of a team that leads capability strategy & planning and responsible for developing a coherent framework of simulation enablers to support the DMaSC approach iaw Defence Policy.

Grant Bailey - 15 years in RAF as a Synthetic Environment Engineering Technician with over 30 years' experience of simulation. Now part of a team that both provides advice and guidance and also coherence assurance across Defence for M&S iaw Defence Policy.