

# Capability Integration



Successfully delivering military capability requires effective integration of all the elements that make up military capability. The scope of this Capability Integration activity involves the entire stakeholder community and includes the management of the Defence Lines of Development (DLOD) and related projects often in other IPTs, the planning of technology integration with the R&D community, and a coherent approach to the organisation and trading of requirements at the capability, programme and project level.

Sula Systems has worked with a number of IPTs, the Equipment Capability Customer (ECC) and the DE&S's Future Business Group (FBG) to develop an innovative approach and associated software tools for delivering Capability Integration, based upon extensive experience with various projects.

### Defence Lines of Development (DLODs) Coherence

There are numerous examples of high profile, large scale Defence programmes that have been delayed or the Armed Forces have not received the capability they had planned due to problems not directly related to the equipment. This has included, for example, training systems not being available, infrastructure not being built, or the link to other equipments (often communications systems) not being in place.

It is therefore imperative that the Defence community establishes systematic processes for this to be done.

Over the last few years Sula has worked with DE&S IPTs on programmes such as FRES, DII, Bowman/CIP, Artillery Systems and Network Enabled Air Defence and Surveillance to develop a methodology based upon the use of Capability Maturity Models (CMM). This approach means that all stakeholders agree on the level of maturity that each DLOD must reach by key points in the programme, such as Initial Gate, Main Gate and Initial

Operating Capability. The CMM defines what these levels of maturity mean in terms of measurable achievements or 'Critical Success Factors' (CSFs).

The methodology then becomes a project management tool that is used by Capability Integration Working Groups (CIWGs) to co-ordinate the actions of stakeholders to ensure the coherent delivery of the DLODs for a particular programme. In turn, this enables the successful delivery of the required military capability – on time and on budget.

### Interfacing Programmes and Systems (IP&S)

In order to deliver a particular military capability, most projects have dependencies on a number of other projects often in different IPTs. However, it is frequently the case that programmes do not understand the issues and risks

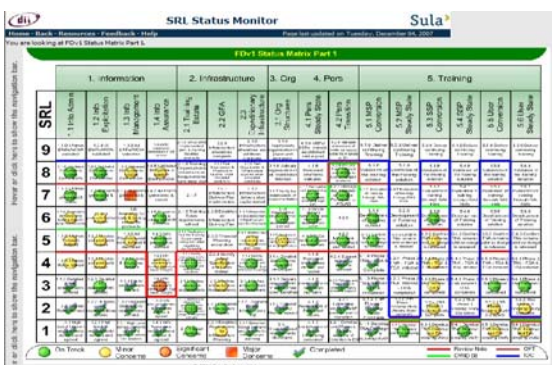


Figure 1: A DLOD Maturity Matrix

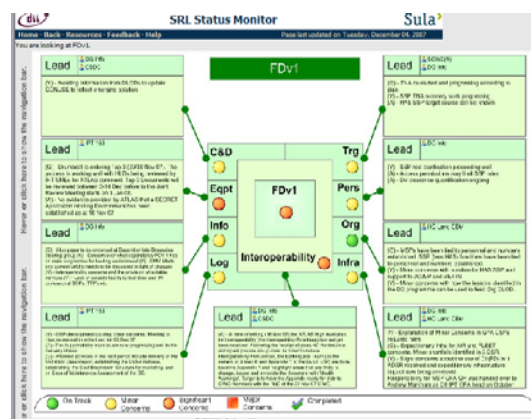


Figure 2: DLOD Maturity— Balanced Scorecard view

associated with these dependencies and are unprepared for the impact of a change to an associated programme. This 'system of systems' view is not just about defining the technical linkages between projects, via the use of Interface Control Documents (ICDs) and Information Exchange Requirements, it is also about agreeing the programmatic schedule and financial assumptions, with the management processes in place to ensure that these dynamic relationships are actively managed.

Sula have developed a systematic approach to managing the interdependencies in a 'system of systems', pioneered on the FRES programme, and underpinned by a toolset that is used to monitor the 144 separate IP&S that are required to deliver the

This implies traceability from Capability Requirement Documents (CRD), where they exist, as the highest level, through User Requirement Documents to System Requirement Documents and, where necessary, various specifications at the lower levels.

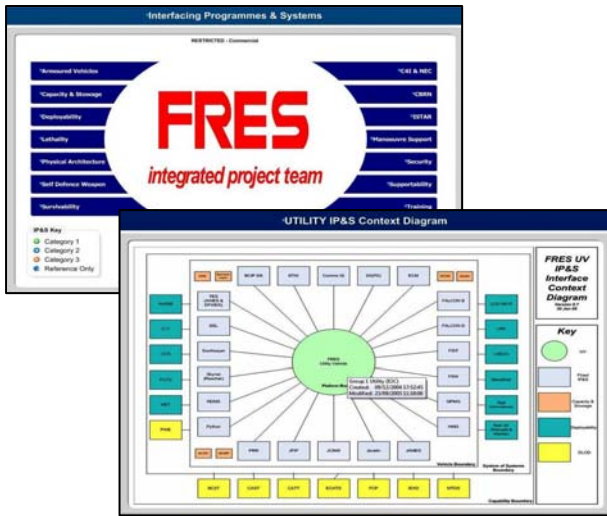


Figure 3: Views from the FRES IP&S database

FRES capability. This approach has led to the FRES IPT developing Business Agreements with their critical IP&S delivery teams in order to effectively manage the interdependencies in the system of systems.

### Technology Planning

Sula has worked with both the Aerospace and Defence industries to provide Technology Planning services that include:

- Identification of key (driving ) technologies
- Independent technology maturity assessment
- Early identification of technology risk and mitigation, including review and decision points, fallback options, dependencies etc
- Visualisation techniques, including preparation of Technology Roadmaps etc.

This work has enabled our customers to take an impartial view on the maturity of their projects and develop through-life plans for technology insertion that both satisfy the needs of the User and have a realistic probability of being delivered.

### Requirements Coherence

Capability Integration must be underpinned by a clear understanding of how the Customer's highest level capability requirements are directly satisfied at project level. This is necessary in order for Defence to understand if the capability being delivered satisfies the User need and in order to understand the impact of trade-offs.

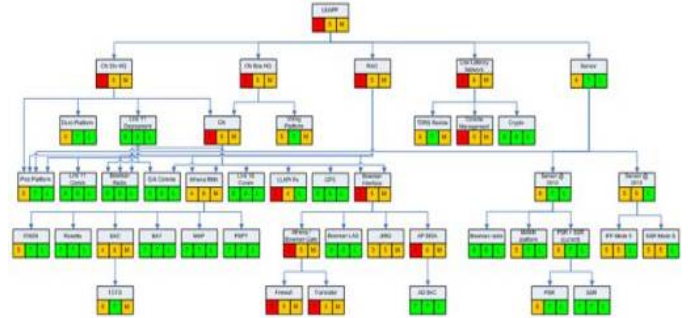


Figure 4: TRL Tree-diagram produced for LEAPP

Sula have worked with DEC UWE to develop techniques, based upon a MooD visualisation tool and underpinned by MODAF views, that allow DEC and IPT staff to have full visibility of the linkage between all of these requirements documentation to ensure coherent Capability Integration.

### Sula Strengths:

- Provision and tailoring of established processes and tools
- Advice on 'best practice' CSFs, i.e. what evidence projects should have
- Independent advice on DLOD maturity
- Insight to PMs and CIWGs on underlying issues

**For more information** about Sula and how we can help you, please contact us on 01453 844660 or email [info@sula.co.uk](mailto:info@sula.co.uk)

