A Systems Engineering Framework for Defence Acquisition

Requirements Engineering
BMT is delivering expert Systems Engineering support to the UK Ministry of Defence customer on a number of submarine programmes. We include safety functions in the design process from the start, assuring the customer that platform safety targets will be met and helping to drive down costs by reducing unnecessary duplication of systems. The progressive requirements review process we champion was recently recognised as Best Practice by Lloyds Register.

Application of Systems Engineering Framework
BMT is helping major shipbuilding companies implement Systems Engineering methods throughout the design and build stages. We are establishing a common set of high level data structures and processes to coordinate the entire project. By tailoring standard Systems Engineering techniques to the needs of the project, we are producing a ‘lean’ set of processes that will amalgamate the designers, manufacturers, purchasers, integrators and managers into an efficient and effective project team.

Options Analysis
BMT provides the Lead Systems Engineer role for the UK’s mine countermeasures, hydrography and patrol capability, taking responsibility for the project’s systems engineering strategy throughout the Concept Phase. The project is exploring the potential of autonomous off-board vehicles to reduce the range of tasks taking people into the minefield and relies on the systems engineering framework to conduct a process for the generation and evaluation of suitable concepts.

BMT Group
BMT Group is an international design, engineering and risk management consultancy, working principally in the defence, energy and environment, marine risk and insurance, maritime transport and ports and logistics sectors.
BMT invests significantly in research. Its customers are served through a network of international subsidiary companies. The assets are held in beneficial ownership for its staff.
BMT Defence Services is the leading independent centre of naval design excellence and through-life support in Europe, with expertise in platform design for surface warships, submarines and auxiliaries. A wide range of government and industry customers engaged in the development of technically complex, highly integrated systems rely on BMT Defence Services for its systems engineering and information systems expertise. The company is based in Bath, Fareham and Weymouth in the United Kingdom. It employs over 200 naval architects, marine engineers, engineering consultants and support staff.

www.bmtdsl.co.uk
A Tailorable Systems Engineering Framework

Studies show that on major projects, Systems Engineering improves cost and schedule compliance, and increases the ability of the delivered solutions to meet customer needs. Structured techniques help to create a coherent and cost-effective approach to meet the challenges of developing systems of unprecedented complexity. The benefits delivered by Systems Engineering depend on the quality of the people and processes. By employing renowned experts and high-calibre engineers, BMT Defence Services offers thought leadership for the most demanding problems, a tailorable Systems Engineering Framework to integrate with existing organization processes, and a cost-effective team to deliver significant benefits.

Requirements

Translating customer aspirations into clear, achievable and testable requirements. Identifying how best to choose between alternative approaches by considering the whole platform within its operational and enterprise context. Developing a common model that captures the different viewpoints of all stakeholders throughout the platform lifecycle.

System Requirements & Architecture

Ensuring customers and contractors share a common understanding of the developing design and its capabilities. Identifying, defining and controlling physical, information and programme interfaces. Coordinating effort across multidisciplinary teams into a coherent programme that balances technical, schedule and financial risk.

Sub-System Specification & Definition

Ensuring capability upgrades will be available to the customer when required to counter emerging threats or new situations. Managing the impact of changes to the customer’s requirements. Helping technology providers implement a development programme that matures different aspects of their designs in a coherent manner to manage technical and financial risks.

Develop & Test Technologies and Sub-systems

Planning for technology insertion and obsolescence management to deliver through-life cost and performance improvements. Identifying and helping to mature promising technologies to ensure they will meet stringent performance, safety, survivability, environmental and cost specifications.

Component / Platform Integration & Test

Developing the progressive acceptance programme to minimize risk and identify explicit acceptance criteria and method. Helping both customer and prime get off contract.

System Integration & Test

Showing how the detailed technical specification will meet the customer’s requirements, and identifying any gaps that need further work. Helping dispersed teams understand how their work affects and is affected by work elsewhere on the project and by external factors.

Acceptance

Showing how the customer requirements will satisfy the operational need. Developing the progressive acceptance programme to minimize risk and identify explicit acceptance criteria and method. Helping both customer and prime get off contract.

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Case Studies

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