

NUCLEAR

Optima Systems Consultancy is an independent Systems Engineering and Management Consultancy. We recognise the challenges involved in developing today's complex systems and understand the benefits that a structured Systems Engineering approach can provide, through all phases of a project's lifecycle.

We work with our clients to break down complexity, identifying and tackling underlying problems in a structured way, and managing the technical and programmatic challenges facing their projects. We pride ourselves on delivering the independent and impartial advice needed to make pragmatic decisions and develop a balanced system. In short, we enable client success.

Optima's team of SC- and DV-cleared consultants has substantial experience in Civil and Military Nuclear environments, within both public and private sectors. Our combined capability extends across all UK Defence domains, including those of nuclear submarine and weapons programmes. We also work with Civil Nuclear clients in the fields of nuclear generation, remote robotics and fusion energy. We understand the risks associated with the design of high-integrity and extended lifetime systems, and the associated challenges of obsolescence management. We are comfortable working in highly-regulated safety and security environments.

Optima specialises in deploying small, expert Systems Engineering and Management teams to work within client organisations. However, we can also undertake work at our security accredited premises in North Bristol.

















MILITARY NUCLEAR EXPERIENCE

Our consultants' combined experience includes:

Atomic Weapons Establishment

Systems Engineering within AWE's Capital Projects Organisation, supporting warhead production by replacing ageing nuclear facilities and processes.

We supported 2 Cat A programmes, contributing: development and delivery of Systems Engineering strategies; implementation of Systems Engineering and data management processes; ownership of requirements and V&V databases, MDAL and product breakdown structure; technical overview of system design and compliance; generation of Systems Engineering metrics for use by delivery organisation and AWE client; development of operating philosophies and Concepts of Operation; process modelling to optimise facility throughput; and contributions to Executive-level design reviews in support of internal Sanction Points and submissions to the MOD Customer and AWE's Regulators.

Requirements Management for the Replacement Warhead (Spiral 3)

programme, including: integration demonstrator; ownership of Spiral 3 requirements and interface management processes; management of the "Request for Clarification" process; management of the Spiral 3 DOORS database.

BAE Systems

Design Authority and Engineering Management for the Sonar 2076 programme, delivering 3 systems into 2 nuclear submarine classes and winning 3 awards. We undertook: requirements management; design specification; verification and certification; trade-offs; sub-system and system integration; acceptance; configuration management; tender assessment; technology insertion.



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CIVIL NUCLEAR EXPERIENCE

Culham Centre for Fusion Energy

Systems Engineering support across engineering programmes. The scope of the 5-year contract combined the long-term development of new, novel facilities with the short-term intensive upgrade, repair and replacement of existing systems.

We undertook the implementation of systems engineering tools, processes and data, consistent with internationally recognised standards. More specifically, Optima was responsible for: the development and implementation of systems engineering governance documents; system requirements elicitation and analysis; requirements management in DOORS; the functional analysis of stakeholder requirements; the development of systems architectures in Enterprise Architect; the development of bid assessment criteria; technical risk identification; and planning and scheduling.

Veolia Nuclear Solutions

Systems Engineering support to the design of a the In-Vessel-Viewing System (IVVS), a remotely operated viewing and metrology system destined for use in the ITER experimental nuclear fusion reactor. The IVVS will provide a real time viewing capability to inspect the internal surface of the ITER Tokamak vacuum vessel and a metrology capability to determine the erosion of plasma facing components.

Optima provided embedded engineers to support the VNS(UK) project team and their Barcelona-based client, Fusion for Energy (F4E). In preparation for the IVVS Preliminary Design Review (PDR), Optima delivered: requirements management and derivation; design verification planning; external and internal interface management; Failure Mode, Effects and Criticality. Analyses; Functional and System analysis; and support to VNS(UK) forward task planning.



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OUR SYSTEMS ENGINEERING SERVICES

At Optima we use a Systems Thinking approach to Systems Engineering and broader consultancy, typically applied to complex technologies and industries. Systems Thinking aims to successfully manage the complexity and risk in a multi-faceted project, defining needs through all stages from architecture and design to delivery, disposal & replacement. Examples of the activity we are asked to lead on include:

Systems Engineering best practice

- Engineering process development
- Systems Engineering & Engineering Management
- System Architecture design & review
- Requirements capture & management
- Trade-off studies
- Technology Maturity & Technical Risk assessment
- Technology Roadmaps and technology insertion planning
- Trials design, planning & conduct
- Data analysis
- System Verification & Validation
- Simulation & Modelling
- Management of Interfacing Programmes & Systems
- Programme & Project Management

Enterprise Change

- Engineering process development, best practice & training
- Governance
- Stakeholder management
- Negotiations & facilitation
- Systems Engineering Training

Independent Assessment & Assurance for Acquisition & Investment

- Independent Systems Analysis & Technical Assurance
- Technology Maturity & Technical Risk assessment
- Pan Defence Lines of Development assessments
- Tender assessment management
- Options assessment & Multi Criteria Decision
 Analysis





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