FRAZER-NASH CONSULTANCY
A KBR COMPANY

Model-Based Systems Engineering (MBSE)

Service Category: Cloud Migration Planning, Cloud Support Services

About Our Service

Frazer-Nash's systems engineering principles combine extensive skill sets with a structured, common sense, interdisciplinary approach, to solve complex engineering and cloud-based service delivery challenges. Model-based systems engineering (MBSE) delivers formalised, coherent and consistent sets of views to support the system's evolution from concept through design, delivery, verification, use and disposal.

Service Features

- Multi-disciplinary system integration through unified modelling
- Structured requirements management with full lifecycle traceability
- Comprehensive modelling of functional, behavioural, and structural aspects
- Integrated planning linking design, verification, and acceptance activities
- Consistent architecture aligned with MODAF/UAF standard
- Supports agile and iterative development for complex systems
- Use case and operating model development for system scenarios
- Data-flow, state transition, and process modelling capabilities
- Model-based analysis for design, verification, and validation activities
- Tool integration (e.g. requirements management platforms)

Service Benefits

- Improved traceability from user needs to delivered system
- Early validation reduces risk and costly late changes
- Clear visualisation of complex systems for stakeholder understanding
- Enhanced collaboration across multi-disciplinary teams and suppliers
- Better alignment between requirements, design, and implementation
- Enables confident decisions using accurate, model-driven system insights
- Optimises resources by integrating different engineering discipline models
- Accelerates organisational learning and knowledge reuse across projects

Detailed Service Definition

Many projects fail to deliver on time, cost, or quality and, even when delivered, often fall short of meeting all stakeholder needs. These failures typically stem from insufficient rigour during scope definition, requirements capture, system design, verification, validation, and lifecycle management.

Systems engineering addresses these challenges by applying an ISO 15288 based framework of standardised processes and a common language to manage complexity across the entire system lifecycle. This ensures structured requirements management, robust design integrity, and improved traceability from concept to disposal. MBSE enhances this approach by replacing fragmented documents with coherent, integrated models. These models provide clear visualisation of complex systems, enable early validation to reduce risk, and support informed decision-making throughout the lifecycle. MBSE ensures better alignment between user needs and system requirements, facilitates agile development, and improves collaboration across multi-disciplinary teams and suppliers.

Detailed Service Definition

This rigorous, model-driven approach delivers tangible benefits:

- **Improved quality and reduced risk through early verification and validation**
- **Optimised resource use by integrating models across engineering disciplines**
- **Enhanced stakeholder communication with visual, model-based representations**
- **Better traceability of decisions and requirements across all lifecycle stages**
- **Reduced through-life costs and accelerated organisational learning**

Our expertise spans defence, nuclear, energy, aerospace, transport, cyber, and commercial sectors. We apply systems engineering and MBSE at any level of a system hierarchy and across all lifecycle stages, tailoring processes to project needs.

Detailed Service Definition

Building on these benefits, Frazer-Nash offers a comprehensive suite of systems engineering and MBSE services, including:

- **Requirements decomposition and comprehensive requirements engineering**
- **Use case and operating model development**
- **Integrated Test, Evaluation, and Acceptance Planning (ITEAP)**
- **Formalised modelling for requirements, analysis, design, verification, and validation**
- **Structured modelling: data flow, state transitions, behavioural, entity relationships, analytical, and process models**
- **Architecture alignment with MODAF/UAF frameworks**
- **Tool integration (e.g. requirements management platforms)**

Why Frazer-Nash Consultancy?

Frazer-Nash Consultancy is an independent engineering and technology consultancy with over 35 years' experience delivering high-quality digital and cloud-enabled solutions. We support organisations operating in complex and regulated environments through our collaborative approach and deep expertise in digital engineering, software development and systems integration.

We are **solution and technology-agnostic**. We assess our clients' requirements and provide impartial advice and design solutions based solely on their needs. This independence enables us to select the most appropriate cloud technologies and architectures to deliver secure, resilient and value-for-money outcomes.

Our cloud solutions are informed by experience gained across multiple platforms, sectors and use cases. We combine proven engineering discipline with a strong understanding of integration and whole-system design to support and enable cloud adoption while managing risk and ensuring long-term sustainability.

Our Commitment to Quality

Frazer-Nash is committed to delivering consistently high-quality services and outputs that **often exceed customer expectations**. Quality is embedded throughout our ways of working, from engagement and communication through to delivery and assurance.

We actively monitor progress using our robust, proportionate controls, ensuring key decisions are subject to appropriate challenge. Each project is allocated a dedicated Project Manager, a Project Supervisor who independently reviews and approves monthly reports, and a Project Auditor for ongoing quality assurance.

We ensure accuracy and suitability for purpose of all deliverables, with independent verification by two reviewers. Our Quality Management System is certified to **ISO 9001 and TickITplus** (for software development), providing customers with confidence that our quality standards are externally assured and continuously maintained.

Our Security

Frazer-Nash operates robust security processes and controls suitable for handling sensitive and classified information **above OFFICIAL** up to and including **Top Secret**. Security is embedded across our people, processes and systems, ensuring information is protected throughout delivery.

We support sensitive and critical programmes across government and national infrastructure by applying strict information-segregation controls, including team separation to address security, or conflict-of-interest considerations

All 1500 staff hold **BPSS clearance as a minimum**, with the majority cleared to **SC and over 225 consultants holding DV clearance**.

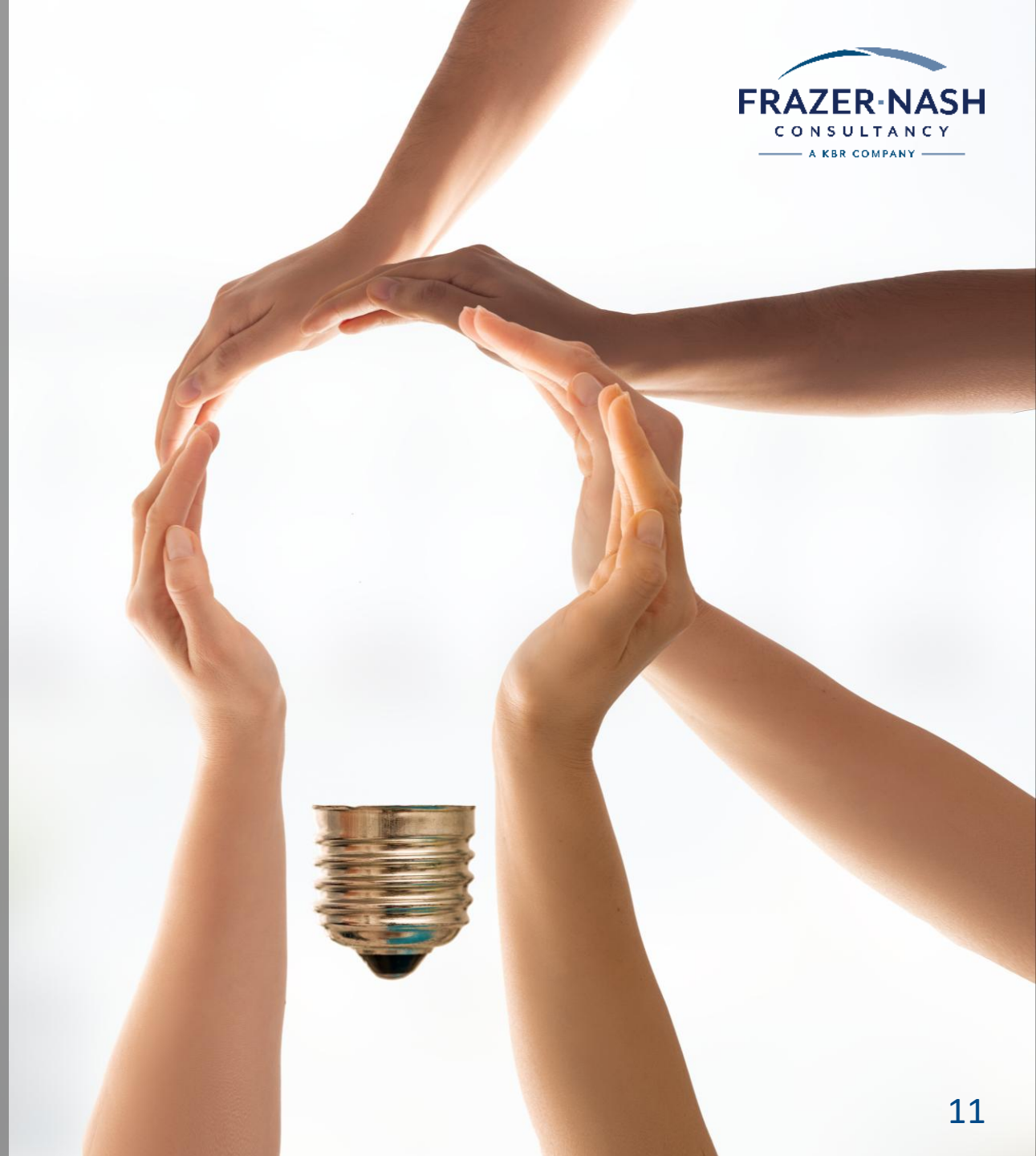
Our IT systems are certified to **ISO 27001 and Cyber Essentials Plus**, providing assurance that information security risks are proactively managed in line with recognised industry standards.

Our Approach to Subcontracting

Frazer-Nash primarily delivers services through our large base of permanent staff, supplementing this capability where required with trusted partner organisations to provide additional flexibility, specialist expertise and scale while retaining full delivery control.

We are experienced in engaging and managing subcontractors across the full project lifecycle, ranging from sole traders to large multinational organisations. Our structured approach ensures the right supplier is selected for each requirement and integrated effectively into the delivery team.

Our subcontracting processes focus on robust supplier identification and assessment, clear definition of scope, appropriate flow-down of contractual terms and conditions, and proactive risk management. All subcontractors are subject to proportionate commercial and technical due diligence to ensure they meet our standards for security, quality and delivery, enabling us to deliver outcomes on time, within budget and to the required quality.



Resourcing

Frazer-Nash employs over **1,500 technical specialists** across all grades, from **Follow to Set Strategy**, providing depth, continuity and scalability across a wide range of disciplines, backgrounds and experience levels.

To support agile and flexible delivery, our people are organised into defined **technical delivery areas** (including Information Systems, Cyber, Modelling and Software), which are deployed across multiple sectors such as central and local government, policing, health and energy. This structure, combined with strong portfolio, programme and project management (P3M), enables us to actively monitor demand and adapt resourcing throughout the project lifecycle.

We deliver complex requirements efficiently, consistently and at pace by forming tailored, multi-disciplinary teams led by a single accountable Project Manager.

Our consultants regularly work across different sectors, enabling us to cross-pollinate ideas, tools and best practice between domains. Drawing on in-house expertise, such as information security and human factors, we ensure effective and responsive delivery for every client.

Our Commercial Approach

Frazer-Nash adopts a flexible and transparent commercial approach to ensure best value and a model that aligns to each client's specific requirements. We collaborate with customers to clearly define the scope of services and agree a commercial structure that is predictable, proportionate and aligned to your required outcomes and effective delivery.

Depending on the requirement, this may include a **fixed-price model for clearly defined scopes**, or **time and materials using agreed day rates** where flexibility is required to accommodate evolving needs.

For longer-term or ongoing service requirements, and where we have control over resource flexibility, we can also offer a **single blended day rate** covering a range of grades. This provides simplicity, transparency and ease of management while maintaining access to the appropriate skills at the right time.

Next Steps

To discuss your requirements in more detail or request an order for services, please contact **ccs@fnc.co.uk**