

**Engineering Delivery Partner**

**Schedule A - Requirements**

 Effective Date: 22 Mar 18

*The Authority reserves the right to make changes to the EDP Service Catalogue and Engineering Role Profiles & Technical Disciplines as required.*

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1. enginEering delivery partner Requirements
2. Introduction
	1. Defence Equipment and Support (DE&S) requires a partner to assist in the delivery of Engineering[[1]](#footnote-2) Services comprising activities leading to defined products (such as System Requirements Documents (SRD), System Architectures and safety cases) as well as the temporary resourcing within the DE&S Engineering Function for specific assignments. The scope covers the full range of Engineering Services currently provided through existing routes and additional services that may be required in the future.
	2. The purpose of this Schedule is to provide the background to the Authority's Requirements (the "Requirements") and is not intended to be legally binding or to define the rights and obligations of the Parties under this Agreement.
	3. The requirements for the Engineering Delivery Partner (EDP) are set out in 3 main elements of this Schedule:

Figure 1 – Part A, B & C of the Engineering Delivery Partner Requirements

1. Aim
	1. The aim of this schedule is to set out the requirements for an EDP and the key obligations.
2. Background

3.1 DE&S is a Bespoke Trading Entity, an arm’s length body of the Ministry of Defence (MOD). It performs a vital, bespoke and challenging role in support of national security, equipping and supporting the UK’s Armed Forces for operations (and for other procurements) now and in the future. This is achieved through procuring new military equipment, commodities and services, supporting in-service equipment through-life and managing global logistics operations. DE&S is responsible for delivering some of the most complex products and services in the world.

3.2 DE&S employs a mix of civil servants and military personnel, plus contractor staff to perform specialist roles. Its workforce is deployed at numerous locations in the UK and overseas. The majority of the workforce is located at the main acquisition hub at Abbey Wood, Bristol.

3.3 DE&S’s activities range from the provision and support of complex equipment, such as nuclear submarines and combat aircraft, through to global logistics operations in hostile environments and high volume, low value items (such as clothing) and commodities (such as fuel and food). The DE&S currently spends circa £14Bn pa on behalf of its customer the Front Line Commands (FLCs) through 2,800 contractual arrangements with over 1000 suppliers. In fulfilling its role DE&S spends c.45% of its annual Operating Expenditure (OPEX) budget on Private Sector Support (PSS).

3.4 In line with many specialist organisations, and in recognition of the depth and breadth of skills required across our business, DE&S, through its Transformation programme, is moving to a balanced matrix, which will improve operational efficiency and resource management by separating the delivery and function support elements. Delivery teams in the five Domains (see below) focus on delivery of our Customers’ requirements against time and budget. The 11 Functions (including the DE&S Engineering Function) will ensure that the right people with the right skills can be provided at the right time. We call it a balanced matrix because it recognises that both our functions and delivery teams have an equal role in supporting delivery to our Customers.

3.5 We deliver our Programme of Work through our Domains (Ships, Land, Air and Joint Enablers), each of which is led by a Chief of Materiel; plus the new Submarine Delivery Agency (SDA) headed by a separate CEO. Our delivery activities are supported by our Function Management structure which allows the right people to be deployed to the right teams at the right time.

3.6 Function managers deploy our people according to their expertise and the tasks that need them most. This could mean working as part of a multi-disciplinary delivery team within a Domain, as part of Enabling Teams or directly for a Function. Team leaders are responsible for achieving successful outcomes agreed with our Customers, drawing on the expert resources from the Functions.

1. DE&S Engineering Function

4.1 The Engineering Function is at the heart of acquiring (procuring and supporting) the equipment, systems and commodities needed to generate military capability. Delivering the equipment & support programme requires a strong in-house engineering capability. This is because by the time a contract is placed on industry many of the key engineering decisions have already been made - decisions in determining the equipment and capability solution, the procurement and support strategies, and how it will operate within a system of systems to deliver the required capability. The Engineering Function enables the DE&S vision by managing technical risks. We provide qualified, experienced and capable professionals, define requirements and translate them into contracts with suppliers, and ensure the equipment meets the requirements. We make certain the in-service equipment operates effectively and safely, and that it is disposed of in an appropriate manner where necessary. It is the largest function within DE&S (circa 3,400 out of a total 12,500) and the most complex in breadth of disciplines and specialisms (inc. aerosystems, software and nuclear engineering). Key aspects of the Function’s responsibilities are:

* + Managing technical risks
	+ Managing engineering resources and services
	+ Defining and assuring engineering good practice
	1. The Engineering Function responsibilities are discharged through:

4.2.1 The Corporate Engineering Function Manager (CEFM) is responsible for the people, process and performance aspects of the entire engineering workforce, meeting current capability and capacity needs and planning for the future DE&S programme.

* + 1. The Domain Engineering Function Managers (DEFM) are responsible for delivering the function’s services and capabilities within DE&S Domains. The DEFM leads resourcing and deployment across their Domains.
		2. Engineering enabling teams (e.g. Quality, Safety and Environmental Protection (QSEP), DE&S Airworthiness Team (DAT) and Naval Authority Group (NAG)) provide tools, advice and expertise to DE&S on behalf of the Engineering Function.
		3. Principal Engineers within DE&S Operating Centres (OCs) lead in providing technical process assurance for the programmes and projects within their OC.
		4. Twelve Technical Discipline Leads (TDLs) across the DE&S business provide professional leadership for their discipline on behalf of the Engineering Function.
1. Engineering delivery partner – Overview

5.1 DE&S is developing the Commercial Model for the provision of an EDP and requires a partner to assist in the delivery of engineering tasks and temporary resourcing within the DE&S Engineering Function. This requirement will form part of DE&S’s Transformation strategy towards a-best-in-class delivery organisation. The EDP will meet the future requirements of DE&S and wider MOD for Engineering Services. The requirement will be for a wide range of Engineering activities and products, varying in complexity and criticality and will cover the full scope of Engineering Services currently provided through existing routes and also additional services which may be required in the future. The Partner will need to be responsive to the requests of DE&S and work closely with the Engineering Function to provide continuous improvement to the way Engineering Services are delivered in order to achieve a number of benefits including but not limited to:

* + 1. Reduced costs;
		2. Enhanced quality;
		3. Improving the way in which services are provided;
		4. Enhancing the forward planning of Engineering Services to Delivery Teams;
		5. Standardising the way in which services are requested and defined; and
		6. Standardising the delivery of specific tasks and resource.
	1. The requirements for the delivery of Engineering Services comprises 3 parts:
		1. Part A - Engineering Services. Comprising:
1. Resource (team or individual) for a specific assignment
2. Specific Task - activity leading to a defined product(s)
	* 1. Part B - Innovation. Provision of innovative approaches to enhance the services associated with the Engineering Function.
		2. Part C – EDP Contractor Delivery Team (CDT). Provision of continuous key personnel to ensure EDP operates and is manged effectively; and forms part of the Joint Programme Management Office (JPMO)
3. Key user requirements
	1. A range of engineering Key User Requirements (KURs) have been established to ensure that the EDP delivers the required outcomes. The KURs are:
		1. KUR 1 - The delivery of Engineering Services that meet the expectations of the Authority (inc Value for Money (VFM)).
		2. KUR 2 - The timely deployment of suitably Qualified and Experienced Personnel (SQEP) (inc Small and Medium-sized Enterprise (SME) Community) to meet the needs of the Authority.
		3. KUR 3 - Demonstration of continuous improvement in the delivery of engineering services.
		4. KUR 4 - The delivery of innovation through the delivery of Engineering Services.
4. Delivery of requirements
	1. The Contractor will be appointed to deliver Engineering Services to meet the DE&S requirements set out in this Schedule.
	2. The Authority shall not be bound to accept or pay for any Contractor Deliverables other than those actually ordered and / or authorised under the terms of the Agreement. The Authority has the right to award contracts separate from this Agreement for any or all of the Contractor Deliverables in the Requirement during the period of the Agreement*. [It is the Authority’s intention to place an initial package of work on contract placement. The Initial Approved Tasking Order will form part of the Tasking Schedule D]*
	3. Security - Some tasking orders under Part A & B (and managed under Part C) of the Contract may involve access to and handling & storage of, classified information at Official Sensitive and above. Personnel may also be required to be Developed Vetting (DV) Cleared for a small number of Tasking Orders. It is a requirement for the Contractor to have List X security clearance. Specific security requirements will be detailed in each Tasking Order.
5. Quality

8.1 The Contractor is to hold and maintain a certified quality management system to ISO/EN 9001 at no cost to the Authority.

8.2 The Contractor shall comply with the following quality standards:

* + 1. AQAP 2110 Edition D Version 1 - NATO Quality Assurance Requirements for Design, Development and Production; and
		2. AQAP 2105 Edition 2 - NATO Requirements For Deliverable Quality Plans;

*The quality plan for the EDP arrangement shall be delivered to the Quality Assurance Representative within 3 months of contract award*

* + 1. Clause 34 to this Agreement

8.3 The EDP is responsible for ensuring that all contractual quality and / or regulatory requirements, as detailed within the Approved Task Order, are adhered to and flowed down to the appropriate level within their sub-contracting arrangements.

1. part a - Engineering services

9.1 The Contractor is required to provide services to the Authority in two main categories:

9.1.1 **Resource** - The Authority may request one or more individuals to undertake specific assignment(s) (principally for Delivery Teams) commissioned through the DE&S Engineering Function; the cost of which will be payable monthly in accordance with the Approved Tasking Order.

*A Resource example may be where the Engineering Function received a demand signal for an individual or individuals to fulfil an assignment in a Delivery Team, perhaps as a result of a DE&S employee moving assignment. The contractor would be tasked to provide SQEP resource (from the range of specialisms eg Human Factors Integration (HFI)) for the duration of the assignment or until a permanent DE&S resource could be recruited.*

* + 1. Further details of the Resource specifications (sub-functions, disciplines and specialisms) to deliver against the Engineering Services (Resource) requirements are at Appendix 1, with Role Profile descriptions at Appendix 4 - see attached PDFs.
		2. Specific Task - The Authority may require activity leading to a defined Product(s) to be completed that has agreed success criteria. For a Specific Task the Authority may set the specifications and require the Contractor to manage and complete the Specific Task, with the Contractor taking the risk of completion of such Specific Task. Specific Tasks will be paid based on a Firm Price agreed in the Approved Tasking Order, such Firm Price to comprise a cost build up using the Rate Cards. Completion of the Specific Task shall be assessed and paid against achievement of Milestones (where appropriate).

*An example of a specific task may be a safety study on an existing piece of equipment which is being proposed for use in a different configuration or environment. The contractor would be expected to work with the Authority through the JPMO to fully scope and cost the task. Assuming the scope and cost were acceptable (probably to the DE&S Delivery Team), the Contractor would proceed with the task and deliver a conclusive report for acceptance by the Authority on the equipment’s safe use.*

9.1.4 Further detail of the scope of activities and products to be delivered is included at the ‘Extract’ Service Catalogue at Appendix 2.

9.2 There shall be no delegated powers or authority granted in respect of any personnel supplied through the EDP.

9.3 For the provision of resource as set out in Paragraph 9.1.1 controls regarding the reporting of costs incurred against budget will be set out in the Approved Tasking Order and the Authority shall have no liability for any costs in excess of the agreed budget (including in respect of Travel and Subsistence (T&S) Costs).

1. Surge

10.1 If the Authority seeks a surge in the provision of Engineering Services, due for example in meeting the needs of an Urgent Operational Requirement (UOR), the Authority shall complete a Tasking Order and mark it as “surge”. Any surge requirement will be processed through the JPMO. The Contractor will not be under a minimum obligation to provide surge capacity.

1. EDP SELF-SUPPORT SYSTEM

11.1 The Contractor shall acknowledge that very limited DE&S resource exists to ‘host’ personnel brought in through the EDP. The Contractor shall ensure that the impact on the business is minimised through the establishment of a "**Self-Support System"**. The Self-Support System will ensure that support requested from the Authority’s permanent employees is minimised.

11.2 Further details of the requirements of the "**Self-Support System”** is detailed at Appendix 3.

11.3 Contractor personnel undertaking Specific Tasks (who will not be working within the Authority), may not be subject to the ‘Self Support System’.

1. Mobilisation

12.1 At the Agreement Commencement Date

* + 1. The contractor shall detail the personnel to be deployed as its EDP CDT and the period by which they will be brought in.
		2. The contractor shall detail the personnel to be deployed under the Initial Approved Tasking Order and the period by which they will be brought in.
	1. For each of the above, all pre-deployment activities, including any matter detailed in Appendix 3 Paragraphs 1.1.3 to 1.1.5 (inclusive), shall be completed.

12.3 All Personnel fulfilling subsequent Approved Tasking Orders shall be available to be deployed within [twenty five (25)] Business Days of the date that the relevant Approved Tasking Order takes effect in accordance with Schedule D - Part A Tasking Process. During this period all on-boarding activities, including any matter detailed in Appendix 3 Paragraphs 1.1.3 to 1.1.5 (inclusive) shall be completed.

1. Demobilisation

13.1 Prior to the end of each Approved Tasking Order, the Contractor shall ensure all cessation activities are completed by Personnel, including:

13.1.1 All filing and storing of information completed by personnel prior to departure;

13.1.2 Post placement review and debriefing, both with the personnel and the Task Order Lead (or their delegate notified by email);

13.1.3 All relevant knowledge captured and transferred to the Authority;

13.1.4 All activities detailed in Clause 3.2 of the Letter of Placement at Appendix 1 (*Letter of Placement*) to Schedule I (*Engaged Personnel Arrangements*); and

13.1.5 Any special conditions in the Approved Tasking Order.

14 **Data & Information**

14.1 The contractor will operate an information and knowledge management system which will include but not be limited to:

 14.1.1 Task management (initiation / agreement / execution / completion)

 14.1.2 Contract performance (inc Customer Satisfaction)

 14.1.3 GFx management system

 14.1.4 Library of Contractor Deliverables (and associated documents)

14.2 The information and knowledge management system will be compliant with the requisite data management legislation

1. mIGRATION
	1. The Authority is seeking to significantly reduce the multiple routes to contract (i.e. existing commercial frameworks, support contracts and tasking routes) that exist across DE&S for the provision of Resources or undertaking Specific Tasks. An integral part of the EDP Requirement covers the migration of existing Engineering activities to the new arrangements where it is technically, contractually and cost effective to do so.  The Authority is developing a comprehensive ‘Migration Strategy’ to address the numerous issues and challenges associated with this task and will engage in detail when the Preferred Bidder is confirmed.  Migration activity has two elements:
		1. Migration of Contractor Group Activities.  The Contractor shall maintain, resource and exercise a jointly agreed plan with the Authority, to migrate all their extant Authority contracts and taskings that fall within the scope of EDP Part A Engineering Services into this contract; a detailed narrative must be maintained where they do not believe activities should be migrated, and
		2. Migration of Non-Contractor Group Activities. Post Preferred Bidder stage, the EDP Contractor Delivery Team will work alongside the Authority Staffs to assess, plan and sequence the migration of all non-Contractor Group requirements that fall within the scope of EDP Part A Engineering Services into this Agreement.
	2. In both instances, migration activities will be taken forward by the EDP CDT in partnership with Authority staffs ensuring minimal disruption to business delivery and comprehensive tracking and reporting of savings/benefits; the latter element being a key factor in demonstrating Value For Money (VFM) for future Options periods.  All agreed migration activities are to be scheduled within [6] months of Contract placement.
2. Part B - innovation

16.1 The Contractor shall propose Contractor Generated Innovation Opportunities within the DE&S Engineering Function and wider MOD[[2]](#footnote-3).

16.2 The Contractor acknowledges that, outside of the DE&S Engineering Function, delivery of Approved Innovation Projects will be subject to wider stakeholder buy-in and approval.

16.3 The Contractor acknowledges that opportunities to improve efficiency and effectiveness of the DE&S Engineering Function will arise throughout the Term. The Authority anticipates that such opportunities will stem from:

16.3.1 generating the conditions for the transfer of knowledge and skills, organisationally and individually;

16.3.2 insight and application of best practice, tailored to the most appropriate use for the Authority;

16.3.3 improving consistency and coherence across the business by reducing wasted effort through relearning or revising practices to suit individual areas; and

16.3.4 technology and data insight to improve management information, increase the speed and capability to make timely decisions, improve the Authority's understanding of suppliers and supply chains and target effort where it will have the greatest effect and benefit. This may include procuring data mining, data analytics and data applications software.

16.4 The Contractor acknowledges and agrees that the Authority has identified, and will continue to identify, Authority Directed Innovation Opportunities and may request the Contractor’s assistance in scoping, maturing and implementing such opportunities, under an Approved Tasking Order.

16.5 The Contractor shall propose opportunities to build the capability of the Engineering Function, including but not limited to:

* + 1. Transfer of knowledge
		2. Job shadowing
		3. Technical coaching / mentoring
		4. Secondments
		5. Collaborative training schemes (inc. master classes)
1. Continuous Improvement

17.1 The Contractor will be expected to continuously improve the Services provided under Part A (*Requirements)* throughout the Term, through the implementation of more efficient and effective methods. Continuous improvement will have an effect on all aspects of the Agreement, but it will be evidenced and recorded through demonstrable changes in the Performance Reporting Regime[[3]](#footnote-4). This improvement will have a positive effect on the quality and responsiveness of the Services.

1. SME involvement

18.1 The Contractor shall develop and maintain an SME Plan/Charter to ensure the fair, appropriate and transparent treatment of SMEs and provide VFM for the Authority.

18.2 The Contractor shall develop and maintain a fair and transparent process to apportion tasks to SMEs according to the skills and expertise of the SME.

1. Part c – EDP contractor delivery team

19.1 The Contractor shall, as part of the Agreement, provide SQEP individuals to run the CDT within the JPMO. They are expected to work collaboratively with the Authority Delivery Team to ensure that the Services are delivered in accordance with the requirement, as detailed in the Contract Management Schedule C.

1. Engineering delivery partner – Organisational Construct, Governance and Operation
	1. The Parties are to agree an effective structure and process for governing the EDP project, including but not limited to managing the Engineering Services under Part A, proposing and commissioning agreed Innovation under a Part B Approved Tasking Order, and effective oversight of Part C and the EDP contract operation in general. This will be in accordance with Contract Management Schedule C.

Appendix 1

PART A – Engineering services (Resource)

1. **Introduction**
	1. In line with DE&S’s implementation of Function Management, the Engineering Function uses Role Profiles (Levels and Sub-functions), Disciplines and Specialisms as its “currency” for delivery teams to define assignment requirements and resourcing plans. The Engineering Function also uses them to help define the requirements in external recruitment campaigns.
	2. The Engineering Delivery Partner will be expected to map to the same Sub-functions, Disciplines, Specialisms and Levels in the provision of resources provided under Part A.
2. **Resource**
	1. The figure below shows the framework of Engineering Function Role Profiles used by the business. Roles are broken down by sub-function and Level. Role profiles describe the type of activities, expected behaviours, skills, experience of staff at a specific level within the Organization. They are not project or task-specific. Within the Engineering Function the role profiles exist within each of the six sub-functions but not at all levels. This reflects the fact that certain sub-functions do not require either the upper or lower levels of accountability / responsibility covered by the balanced matrix. *The 21 Role Profiles typically contracted to augment DE&S internal capability are highlighted in YELLOW – these are provided in separate PDF Documents listed at Appendix 4.*

**ENGINEERING ROLE PROFILES**

**Grade Level**

|  |  |
| --- | --- |
| **Senior****Leadership****Group** | **SLG Engineers (Head of Engineering Management)** |
| **Senior****Professional** | **Engineering****Manager**  |  | **Technical** **Specialist** | **Acquisition Safety &** **Environmental** **Protection (ASEP)** | **Quality** **Assurance****(QA)** | **Scientist** |
| **Professional I** | **Engineering** **Manager** |  | **Technical** **Specialist** | **Acquisition Safety &** **Environmental** **Protection (ASEP)** | **Quality** **Assurance****(QA)** | **Scientist** |
| **Professional II** | **Engineering** **Manager** |  | **Technical Specialist** | **Acquisition Safety &** **Environmental** **Protection (ASEP)** | **Quality** **Assurance****(QA)** | **Scientist** |
| **Senior****Specialist** | **Engineering** **Manager** | **Foreman** | **Technical** **Specialist** | **Acquisition Safety &** **Environmental** **Protection (ASEP)** | **Quality** **Assurance****(QA)** | **Scientist** |
| **Technician****Level 2** |
| **Specialist** | **Engineer** | **Technician** **Level 1** | **Technical** **Specialist**  | **Acquisition Safety &** **Environmental** **Protection (ASEP)** |  |  |
| **Apprentice** |
| **Undergraduate****Apprentice** | **Tradesman** |
| **Graduate** |

**Sub-Functions**

Figure 1-1 – Engineering Role Profiles

2.2 The Engineering sub-functions are further divided into disciplines and specialisms as shown in the table below. It is expected that we will require access to the complete range of specialisms listed, however the more frequently sourced specialisms are highlighted GREEN (Specialisms bought in last 6 Months), YELLOW (Specialisms bought in over the last 2 years).

|  |
| --- |
| **ENGINEERING FUNCTION SUB\_FUNCTIONS, DISCIPLINES AND SPECIALISMS**Runners (Specialisms bought in last 6 Months), Repeaters (Specialisms bought in over the last 2 years), non-highlighted (Specialisms bought-in less frequently) |
| **Sub-Function** | **Engineering Manager / Technical Specialist / Craftsman & Technician** | **Science** | **Acquisition Safety and Environment** |  **Quality Assurance**  |
| **Technical Discipline** | **Maritime Platforms** | **Mechanical**  | **Electrical Power and Distribution** | **Aerosystems** | **Systems Eng & Integration** | **Mission and Operational Support** | **Software, Sensors and Electronic Systems** | **Nuclear** | **Ordnance, Munitions & Explosives (OME)** |
|  | Ship and Submarine Structures | Structures | Motors & rotating machines | Airframes | System of systems & capability engineering (incl SOSA) | Command and control  | Tx & Rx Antenna & propagation | Core Design | Propulsion, actuation | Physics | Policy and Governance | Governance: Planning for Acquisition |
|  | Hydrodynamics & Platform Dynamics | Prime Movers | HV and High Power Systems | Propulsion (incl APU) | Requirements engineering, management & systems architecture (incl MODAF) | Geo-Spatial Data and Information processing | Circuits and systems | Fuel Cycles & Nuclear Liabilities | Warheads, effects | Chemistry & Energetics | Systems Safety Management (POSMS) | Governance: Requirements Preparation |
|  | Hydrostatics & Stability | Transmission | Switchboards and converters | Flight Dynamics | Modelling and simulation | Sensor fusion | Communications technology | Shielding | Pyrotechnic Devices | Human Factors | Systems Environmental Management (POEMS) |  |
|  | Ship and Submarine Design | Lifting & Handling equipment | Power Distribution and control | Aerosystem Design | Platform Systems Engineering - Aerospace | Data fusion | Signal generation and analysis | Nuclear Science | Storage & Transport | Mathematics | Assurance and Audit |  |
|  | Habitation and Husbandry | Fuels and Lub Systems | Insulation, Protection and integrity | Avionics | Platform systems engineering - Marine | IS related HMI | EMC/EMI | Nuclear Essential Systems | Fuzing & Initiation Systems | Biology & Medicine  | ISA  |  |
|  | Boats, ANVs, UUV/USV & Integration | Heating, Ventilation, Air Conditioning & Air Treatment | Energy storage | General Aircraft Systems | Platform systems engineering - Land | Targeting and Fire Control | Remote sensing & Imaging | Nuclear Warhead | OME/Platform Integration | Materials & coatings |   | Improvement: Acquisition Conclusion |
|  **Specialisms**  | Construction and Repair | Firefighting | Power electronics | Aircrew Equipment & Escape Systems | Integration Engineering | Stealth Engineering Management | Instrumentation & measurement | Nuclear Safety Management Systems | Energetic Materials | Computer science |   | Configuration Management |
|  | Escape and Evacuation and Rescue | Automotive | Lighting | Aircraft Certification | Test & Evaluation Engineering |  Mission Support | Complex Electronic Hardware & Safety Critical Software | Nuclear Infrastructure | Electromagnetic Environmental Effects |  Acoustics |   |   |
|  | Combat & Aviation System Integration incl Ship Magazines | Hydraulics & Pneumatics |  Control and Instrumentation Systems | Continuing Airworthiness | Operational Assurance | Intelligence gathering and processing | Electronic Warfare |   | Life Assessment | Vibration |   |   |
|  | Anchoring; Mooring and Towing | Shock |   | Equipment not basic to aircraft | Standardization Management | Mission Data Reprogramming | Sonar Systems |   | Mathematical Modelling  |   |   |   |
|  | Salvage | Fluid Systems |   |   | Reliability Analysis | On-platform & deployed systems Networks, Computers, Software, AI and Crypto |   |   | Vulnerability | Modelling |   |   |
|  | Platform Survivability incl CBRN defence |   |   |   |   |   |   |   |   |   |   |   |

Figure 1-2 – Engineering Sub-Functions, disciplines & Specialisms

further definition of the engineering sub-funtions and disciplines applicable to the edp resources requirement

1. **Engineering Sub-Functions**
	1. **Engineering Manager** - Engineering Managers are responsible for bringing together the technological problem-solving capability of engineering (including science and technology) and the Organisational, administrative, and planning abilities of management in order to oversee complex enterprises from conception to completion. They develop and deliver (or manage delivery of) plans to help the Customer[[4]](#footnote-5) define their technical needs and meet their technical requirements for equipment procurement, support or disposal. They may also manage enabling of technical services to support projects or the Engineering Function. This includes pre-concept activity. At a fundamental level they apply engineering theories, concepts, practices, principles and approaches and resolve technical and performance issues for a platform, product or service growing to responsibility for management of delivery of an engineering science or technology project.
	2. **Technical Specialist** - Technical Specialists are responsible for applying specialist technical expertise to solve real world application problems in a military environment. Based on a depth of experience, they provide expert advice, guidance, decision-making and ‘specialism’ leadership in their technical area to solve highly complex problems, support engineering strategies and solutions and exert ‘specialism’ influence within the business. They sponsor technology development and are involved in managing links with national and international industry, academic establishments, and research Organisations in order to exert influence on behalf of the business, other government departments and nations, keep abreast of developments & developing options, and opportunities for application within the business.
	3. **Science** -Scientists are responsible for engaging in systematic examination and/ or experimentation with the purpose of proving or disproving a hypothesis – principally to gain a conclusion or knowledge to advance understanding/ technology or informing policy, guidance or standards. Scientists provide advice on the performance and behaviour of components and systems. Scientists may also directly conduct or sponsor research in pursuance of this, or with the aim of developing a new solution for specific situations.
	4. **Acquisition Safety and Environment (AS&E)** -AS&E is responsible for providing expert advice and guidance in supporting the delivery of Acquisition Safety / Acquisition Environment and/or Sustainable Procurement strategy, policy and solutions relevant to their specialist area. This will include regular interaction with both internal and external parties and advising customers on engineering design and development. It involves through life management of complex project safety and environment risk management delivery in support of safe and suitable equipment, systems, and services to Front Line Commands.
	5. **Quality Assurance (QA)** - QA is responsible for assuring the Quality of Defence Equipment by deploying the Government Quality Assurance (GQA) framework within the Delivery Team and across the contractual boundary. Also for, informing risk management and contractor selection, identifying contractual QA requirements and verifying adequacy of contractor’s quality planning, providing independent assurance of supplier and supply chain capability, performance and risk management, providing independent assurance to support acceptance, and promoting continual improvement within the supply chain.
2. **Technical Disciplines**
	1. Nine main technical disciplines have been identified within the three sub-functions Engineering Manager, Technical Specialist and Technician / Tradesmen. The Science, AS&E and QA Sub-Functions don’t have the same scale (staff numbers) and diversity of skill-sets, so for convenience, the Sub-Function and Discipline are regarded as one and the same and so bring the total number of disciplines to twelve. All twelve disciplines have associated Specialisms to illustrate the typical skills and activities covered and the types of platforms, systems and equipment that people typically work on. They will also help people identify the discipline that most closely matches their skills and experience.
	2. Sub-functions and disciplines are used as the “currency” for delivery teams to define their staffing requirements in their staffing plans and to help define assignment requirements. The Engineering Function also uses them to help define the requirements in external recruitment campaigns.
	3. The matrix at Fig 1-2 was developed using a set of broad design principles and through extensive consultation with subject matter experts across DE&S. The main design principles were that the sub-divisions should be:
		1. Defined in ways that the business will recognise so that teams can specify the people resources they require and so that Function Managers can identify and assign suitably qualified and experienced people;
		2. Sufficiently generic/flexible to enable the deployment of engineering function staff across all DE&S Domains;
		3. Ideally chosen to align with professional institutes and competency frameworks to allow people to identify a professional home that best fits their qualifications, experience and chosen future career path;
		4. Be of a “manageable” size - that is large enough to be “viable” as a distinct Sub-Function and where necessary sub-divided into specialisms to make leadership manageable and meaningful.
	4. The table below provides more detail on each of the Technical Disciplines:

|  |  |
| --- | --- |
| Technical Discipline  | Summary  |
| Maritime Platforms  | A Fleet-centric Discipline that coves the specialisms related to Marine Platforms. In addition to covering the usual naval architect professional specialisms such as warship stability, this discipline also includes a range of what have traditionally been termed the “Constructive” specialism and a few Fleet Domain specific specialisms that do not have a natural home elsewhere such as Anchoring: Mooring & Towing.  |
| Mechanical  | A pan-Domain Discipline that covers the full range of mechanical engineering disciplines and specialisms that are applied across all Domains but particularly Fleet and Land (e.g. Automotive Engineering). It covers the majority of fluid systems, lifting and handling equipment and prime movers (except those used in aircraft). The aim is to maintain and maximise opportunities for engineers in this discipline to be assigned across all Domains.  |
| Electrical Power and Distribution  | A pan-Domain Discipline that covers the full range of electrical engineering disciplines and specialisms that are applied across all Domains. It covers the full range of electrical systems specialisms from HV propulsion systems used in warships through to low voltage control and instrumentation systems. The aim is to maintain and maximise opportunities for engineers in this discipline to be assigned across all Domains. |
| Aerosystems  | A Discipline principally applicable to Air and JE (Helicopters). It covers all the specialisms applicable to the design, engineering and safety of air vehicles including Unmanned Air Vehicles (UAVs).  |
| Systems Engineering and Integration  | A pan-Domain Discipline that covers the Systems Engineering professional specialisms such as requirements engineering but also systems integration activity across all Domains. The aim is to maintain opportunities for engineers in this discipline to be assigned across all Domains.  |
| Mission and Operational support  | The first of two electronic “Combat Systems” disciplines that is applicable across all Domains. This one is focussed on Command, Control, Communication and Intelligence (C4I) systems specialisms. It also includes stealth engineering management. |
| Software, Sensors and Electronic Systems  | The second of the two electronic “Combat Systems” disciplines that is applicable across all Domains. This one is focussed on all specialisms related to sensors and Electronic Warfare (EW) (passive and active *as* well as their integration into C4I systems). The aim is to maintain and maximise opportunities for engineers in this discipline to be assigned across all Domains.  |
| Nuclear  | A Fleet-centric Discipline that covers the specialist nuclear science, technology and engineering specialisms applicable to nuclear propulsion systems, nuclear warheads and their safe handling and storage. Other engineering disciplines and specialisms that work on nuclear submarines and their weapon systems such as naval architects and strategic weapon system engineers (even if Nuclear SQEP) will be aligned to their relevant primary discipline rather than here.  |
| Ordnance, Munitions and Explosives  | Covers the specialisms related to design, maintenance, use, storage, disposal, transport and handling of energetic materials and systems.  |

1. **Staff Alignment to Disciplines**
	1. All DE&S Engineering Staff have been aligned to an Engineering Sub-Function. Staff will also be aligned to a primary Discipline (and some may have a secondary discipline). Staff will be able to move between disciplines if they subsequently decide to take their career in a different direction.

**GLOSSARY**

AI Artificial Intelligence

ANV Advanced Naval Vehicle

APU Auxiliary Power Unit

ARM Availability, Reliability & Maintainability

AS&E Acquisition Safety & Environment

BPSS Baseline Personnel Security Standard

CBRN Chemical, Biological, Radiological & Nuclear

CEFM Corporate Engineering Function Manager

COEIA Combined Operational Effectiveness & Investment Appraisal

CONEMP Concept of Employment

CONUSE Concept of Use

DAT DE&S Airworthiness Team

DE&S Defence Equipment & Support

DEFM Domain Engineering Function Manager

DRACAS Data Reporting, Analysis & Corrective Action System

DV Developed Vetting

EDP Engineering Delivery Partner

EHFA Early Human Factors Analysis

EMP Engineering Management Plan

EW Electronic Warfare

FMECA Failure Modes, Effects & Criticality Analysis

FLC Front Line Command

GEAR Guide to Engineering Activities & Review

GQA Government Quality Assurance

HFI Human Factors Integration

HMI/HCI Human Machine Interaction / Human Computer Interaction

HR Human Resources

ITEAP Integrated Test, Evaluation & Acceptance Plan

IT/IS Information Technology / Information Systems

JPMO Joint Programme Management Office

KUR Key User Requirement

LORA Level of Repair Analysis

MDAL Master Data and Assumptions List

MOD Ministry of Defence

MODAF Ministry of Defence Architecture Framework

NAG Naval Authority Group

OME Ordnance, Munitions & Explosives

OC Operating Centre

OPEX Operating Expenditure

POEMS Project-Oriented Environmental Management System

POSMS Project-Oriented Safety Management System

PSS Private Sector Support

PUID Personal User Identifier

PUMA Pre-Upkeep Maintenance Assessment

QA Quality Assurance

QSEP Quality, Safety & Environmental Protection

RAMP Requirements and Acceptance Management Plan

RCM Reliability Centred Maintenance

R&M Reliability & Maintainability

RMADS Risk Management & Accreditation Documentation Set

SC Security Cleared

SDA Submarine Delivery Agency

SME Small and Medium-sized Enterprises

SOR Schedule of Requirement

SOSA Systems of Systems Architecture

SQEP Suitably Qualified & Experienced Personnel

SRD System Requirements Document

SRL System Readiness Level

T&S Travel and Subsistence

TDL Technical Discipline Lead

TRL Technology Readiness Level

UAV Unmanned Air Vehicle

UOR Urgent Operational Requirement

USV Unmanned Surface Vehicle

UUV Unmanned Underwater Vehicle

VFM Value For Money

Appendix 2

PART A – Engineering services (specific task)

1. The EDP Service Catalogue (table below) is a sub-set of the DE&S Engineering Function Service Catalogue and outlines the scope of activities leading to defined products that are expected through EDP at the Agreement Commencement Date. These requirements will be reviewed prior to contract award and during the duration of the Agreement to ensure they meet the developing needs of the Authority. **Further detail on the activities and descriptions contained in the EDP Service Catalogue are provided in the Guide to Engineering Activities & Review (GEAR):**

**Engineering Delivery Partner - Service Catalogue**

| **Ser.** | **Activity Description** | **Engineering Products** |
| --- | --- | --- |
| 1 | **Define the Work** |  |
|  | 1.1 **Plan Engineering Activities**1.1.1 Plan system lifecycle approach and tailoring1.1.2 Identify tools & techniques required1.1.3 Plan engineering organisation & governance1.1.4 Plan approach to meeting assured capability & exportability policies | * Engineering Management Plan (EMP)
 |
|  | 1.1.5. Define the approach to developing technical maturity | * Technology Management Plan
* Technology Road Map
 |
|  | 1.1.6 Plan engineering controls | * Configuration Management Plan
* Government Quality Assurance Plan
 |
|  | 1.1.7 Plan speciality engineering activities,  | * Safety & Environmental Management Plan
* HFI Plan
* Standardization Management Plan
* Software Acquisition Management Plan
* Spectrum Management Plan
* R&M Plan
* Modelling & Simulation Plan
* Electromagnetic Environmental Effects Management Plan
* Spatial Data Management Plan
* Security and information Accreditation
* Equipment Training Needs Analysis
 |
|  | 1.1.8 Plan activities to meet regulatory requirements | * Certification Plan
* Generate alternative means of compliance
 |
|  | 1.1.9 Plan system verification activities | * Verification Plan
* RAMP
* ITEAP
 |
|  | 1.2 **Plan Support Activities** | * Engineering Input to:
	+ ILS Plan
	+ Disposal Plan
	+ Obsolescence Management Plan
 |
|  | 1.3 **Identify, Manage & Mitigate Risks**1.3.1 Identify, manage & mitigate technical or delivery risks | * Engineering Input to:
	+ Risk Management Plan
	+ ARM Risk Register
 |
|  | 1.4 **Set the Performance Baseline**1.4.1 Manage the assumptions1.4.2 Create schedules | * EMP Workbook
* Engineering input to:
	+ Master Data & Assumptions List (MDAL)
	+ Resourced Schedule
	+ Work Breakdown Structure
	+ Product Breakdown Structure
 |
| 2 | **Execute the Work** |  |
|  | 2.1 **Produce Business Cases**2.1.1 Define the options and how down-select will be achieved2.1.2 Set out procurement options2.1.3 Set out methodology for support2.1.4 Set out methodology for realising the benefits | * Engineering input to:
	+ Concept of Analysis
	+ Procurement Strategy
	+ Commercial Strategy
	+ Support Strategy
	+ Benefits Realisation Strategy
 |
|  | 2.2 **Manage Architecture & Design Definition**2.2.1 Define & Analyse Stakeholder Requirements2.2.2 Provide Capability Definition Service2.2.3 Provide SOSA Services2.2.4 Identify User Functions | * User Requirements Document
* Capability Reference Frameworks
* Capability Concept Demonstrators
* Force Development Experiments
* CONEMP
* CONUSE
* User Function Allocation inc Use Case and Target Audience Descriptions
* Early Human Factors Analysis (EHFA)
* Task Analysis
* HMI / HCI Style Guide
* GEAR User Requirements Review Report
 |
|  | 2.2.5 Define system logical architecture | * Logical System Architecture
* GEAR System Function Review
 |
|  | 2.2.6 Define System Physical Architecture options2.2.7 Identify technology and system integration risks2.2.8 Ensure legislative compliance | * Physical Architecture Options
* TRL & SRL assessment
* Technology Demonstrator
* R&M Strategy
* Configuration Management Strategy
* HFI Strategy
* Baseline SRD
* GEAR System Requirements Review Report
 |
|  | 2.3 **Manage System Analysis**2.3.1 Conduct Operational Effectiveness Analysis2.3.2 Conduct Option down-select | * Options Down-select
* Traded SRD
* Solution Architecture
* Engineering Input to:
	+ Combined Operational Effectiveness and Investment Appraisal (COEIA)
 |
|  | 2.4 **Maintain the Build Standard**2.4.1 Undertake configuration management activities including configuration audits | * System Architecture
* System Specification
* Build Standard
* Technical Information
 |
|  | 2.5 ***Place Contracts* (Input to Contract Documentation)** | * Engineering Input to:
	+ Statement of Work
	+ Schedule of Deliverables
 |
|  | 2.6 **Manage Implementation**2.6.1 Monitor technical outputs2.6.2 Participate in industry-led design reviews2.6.3 Manufacture Planning | * GEAR Technical Quality Audits
* Specialist input to Design Reviews
* Realised system architecture & specification (ie the Manufactured System)
* Manufacturing Process Definition
* GEAR Manufacture Readiness Review Report
* GEAR Manufacture Quality Audit Reports
* GEAR Manufacture Acceptance Audit
 |
|  | 2.6.4 Monitor & deliver technical outputs for support of realised system | * R&M Case
* LORA Report
* RCM Report
* FMECA Report
* Technical Documentation content
* Maintenance Plan
* Maintenance Schedule
* Maintenance Log
* DRACAS Log
* Support & Test Equipment
* Tie Down Schemes
* HFI Case
 |
|  | 2.6.5 Produce & maintain the Safety Case | * Input to: Safety Management System
* Safety Case Report / Equipment Safety Assessment Report
* Safety Assessment
* Hazard Log
* Hazard identification & Analysis
* Cost Benefit Analysis
* Software Safety Integrity Levels
* Legislation Compliance Matrix
* Independent Safety Audit Report
* Incident/Accident Reports
* Condition testing
 |
|  | 2.6.6 Produce & maintain the Environmental Case | * Input to: Environmental Management System
* Environmental Features Matrix
* Register of Environmental Standards
* Environmental Impact Screening & Scoping Report
* Environmental Impact Management Report
* Environmental Case Report
 |
|  | 2.6.7 Provide evidence to obtain Regulatory approvals | * Input to obtaining:
	+ Platform/Equipment Certification
	+ Certificates of Clearance for use / Release to service
	+ Navel Authority Submissions & Certificates
 |
|  | 2.6.8 Produce and maintain the security case | * Security Risk Assessment
* Security Aspects Letter
* Technical Grading Guide
* Risk Management & Accreditation Documentation Set (RMADS)
 |
|  | 2.7 **Manage Integration**2.7.1 Define & Integrate the functional and non-functional specifications, associated with interfaces between system elements and/or the System of Interest and its dependent systems/services | * Interface Control Document
 |
|  | 2.8 **Manage Validation & Verification**2.8.1 Manage Verification activities with the supplier via modelling and simulation, tests and trials (iaw the agreed ITEAP and detailed plans) | * Model
* Data
* Simulation Report
* Factory Acceptance Statement
* Test Reports
* Trials Reports;
* Acceptance Log
* Provision of Test & Trials facilities
* Conduct Performance Modelling
 |
|  | 2.8.2 Support user validation trials, support the user to integrate system with all DLODs | * Trials Reports
* Acceptance Log
* GEAR User Acceptance Review
* Provision of Test & Trials facilities
 |
|  | 2.9 **Manage In-service Support**2.9,1 Manage System Installation2.9.2 Deliver the realised system for installation2.9.3 Install system | * Installation Log
* Installation Acceptance Statement
* GEAR System Installation Review Report
* GEAR In-Service Support Audit Report
* Operation Log
 |
|  | 2.9.4 Advise on changes to the Maintenance Schedule inc Concessions2.9.5 Advise on changes to the Maintenance Procedures2.9.6 Assess hazards | * Maintenance Concessions
* Engineering Input to:
	+ DRACAS Log
 |
|  | 2.9.7 Manage technical obsolescence2.9.8 Advise on use of part-life components2.9.9 Conduct equipment inspections | * Pre-Upkeep Maintenance Assessment (PUMA) Reports
* Engineering Input to:
	+ DRACAS Log
 |
|  | 2.9.10 Identify technical causes of failures2.9.11 Assess hazards2.9.12 Initiate/evaluate modifications (post-design support)2.9.13 Advise on BER categorisation2.9.14 Advise on repair methods | * Technical Report
* Modification Request
* Design Change Package
* Engineering Input to:
	+ DRACAS Log
 |
|  | 2.9.15 Provision of salvage engineering services2.9.16 Provision of underwater engineering services | * Inspection Report
 |
|  | 2.10 **Dispose of Assets** | * GEAR Retirement Audit Report
* Engineering Input to:
	+ Disposal Log
 |
|  | 2.11 **Provide Advice & Guidance to DE&S Domains and the wider MOD** | * Technical Report
 |
| 3 | **Manage Function Capability**  |  |
|  | 3.1 **Conduct Learning & Development*** + 1. Author Competence frameworks
		2. Provide Training Courses or Blended Learning materials
 | * Competence Framework documents
* Learning and Development materials
 |
| 4 | **Manage Engineering Policy, Process & Compliance** |  |
|  | 4.1 Author & maintain the policy & Process owned by the Engineering Function, including provision/sponsorship of tools required by the processes | * DE&S Engineering Policy
* DE&S Engineering Processes
* DE&S Engineering Tools
 |

Figure 1-3 – Engineering Delivery Partner – Service Catalogue

Appendix 3

EDP SELF-SUPPORT SYSTEM

1.1 The Contractor shall ensure that prior to providing resource for a specific assignment(s) each personnel under an Approved Tasking Order has met the following specifications:

1.1.1 the Role Profile / Level identified in the Approved Tasking Order;

1.1.2 Security Cleared (SC) security status as a minimum (unless the Authority expressly states that Baseline Personnel Security Standard (BPSS) is permitted);

1.1.3 successful completion of all Contractor-required mandatory training;

1.1.4 successful completion of all Authority-required mandatory training as follows:

* + - 1. DE&S corporate induction and DE&S site induction;
			2. general security threat brief;
			3. basic fire awareness;
			4. counter fraud, bribery and corruption;

(E) display screen equipment;

(F) equality and diversity essentials;

(G) unconscious bias;

(H) defence information management passport;

(I) health & safety;

(J) business continuity;

* + - 1. office safety; and
			2. any additional training required by the Authority from time to time;

1.1.5 successful completion of all DE&S Engineering Function specific pre-deployment training as follows:

(A) introduction to the Engineering Function (Engineering Function Welcome Pack); and

(B) any additional training required by the Authority from time to time; and

1.1.6 signed and returned to the Part A Leads an individual Letter of Placement, such letters to be returned by the Contractor and made available for audit by the Authority or an Authority Related Party from time to time on request by the Authority.

1.2 The Contractor shall ensure that prior to commencing a Task, each member of the Personnel under an Approved Tasking Order meets any additional standards where specified in the Tasking Order, including:

* + 1. obtaining a higher level of security standard and in some circumstances ensuring that work is undertaken by UK nationals only; or
		2. Task-specific skills, competences, qualifications or functional training.

1.3 The Contractor shall ensure that, prior to commencing a Task, each Member of the Personnel is provided with:

1.3.1 the details of their Task Order Line Manager or delegate and details of where/when to arrive;

* + 1. IT system access in accordance with the requirements of the Approved Tasking Order; and
		2. access to the Self-Support System.
	1. The Contractor shall ensure that, no later than five (5) Business Days prior to a Member of the Personnel commencing a Task under an Approved Tasking Order, the Task Order Line Manager has been provided with the following information for that individual:
		1. full name;
		2. entity email address;
		3. mobile telephone number;
		4. personal unique identifier (**"PUID"**) (if applicable);
		5. security clearance level and nationality; and
		6. the Contractor Delivery Team point of contact for the Personnel.

**APPENDIX 4**

**Engineering Function – Role Profile Descriptions**

*See attached PDF documents for the following Engineering Function – Role Profile Descriptions:*

Senior Leadership Group – Head of Engineering Management

Senior Professional – Engineering Manager

Professional I – Engineering Manager

Professional II – Engineering Manager

Senior Specialist – Engineering Manager

Senior Professional – Technical Specialist

Professional I – Technical Specialist

Professional II – Technical Specialist

Senior Specialist – Technical Specialist

Senior Professional – Acquisition Safety & Environmental Protection

Professional I – Acquisition Safety & Environmental Protection

Professional II – Acquisition Safety & Environmental Protection

Senior Specialist – Acquisition Safety & Environmental Protection

Senior Professional – Quality Assurance

Professional I – Quality Assurance

Professional II – Quality Assurance

Senior Specialist – Quality Assurance

Senior Professional – Scientist

Professional I – Scientist

Professional II – Scientist

Senior Specialist – Scientist

1. The term ‘Engineering’ is used to cover a number of **sub-functions**, disciplines and specialisms including **Engineering Manager/Technical Specialist Craftsman & Technician** for the disciplines: *Maritime Platforms, Mechanical, Electrical & Power Distribution, Aerosystems, Systems Engineering & Integration, Mission and Operational Support, Software Sensors and Electronic Systems, Nuclear, and Ordnance, Munitions and Explosives (OME)*; **Science**, **Acquisition Safety and Environment** and **Quality Assurance** [↑](#footnote-ref-2)
2. Method of operation to be referenced in the Contract Management Schedule and Tasking Schedule [↑](#footnote-ref-3)
3. Referenced in the Continuous Improvement Plan (Appendix 2) of the Contract Management Schedule C [↑](#footnote-ref-4)
4. In this instance ‘Customer’ refers to the Equipment or Support End User [↑](#footnote-ref-5)