Serapis Tasking Form

Tasking Form Part 1:

To:	Lot 4 QinetiQ Plc	**From:**	The Authority

Any Task placed as a result of your quotation will be subject to the Terms and Conditions of Framework Agreement Number:

LOT 4 DSTL/AGR/SERAPIS/AII/01

VERSION CONTROL
V1.2 Budget amended

REQUIREMENT			
Proposal Required by:	09/09/2022	**Task ID Number:**	AII151
The Authority Project Manager:	**Redacted**	**The Authority Technical Point of Contact:**	**Redacted**
Task Title:	Digital Backbone Experimentation		
Required Start Date:	16/09/2022	**Required End Date:**	28/02/2023
Requisition No:	RQ0000015972	**Budget Range**	£220k

TASK DESCRIPTION AND SPECIFICATION	
Serapis Framework Lot	☐ Lot 1: Collect ☐ Lot 2: Space systems ☐ Lot 3: Decide ☒ Lot 4: Assured information infrastructure ☐ Lot 5: Synthetic environment and simulation ☐ Lot 6: Understand

Statement of Requirements (SOR)
This RCA is intended to be the primary means of delivering the "Experimentation" element of work on the "Digital Backbone Analysis and Experimentation" work that StratCom Defence Digital (DD) requires from Dstl. The Digital Strategy for Defence defines a Digital Backbone to be "A secure, singular, modern Digital Backbone … connecting sensors, effectors and deciders across military and business domains and with partners, driving integration and interoperability across domains and platforms." It views the Digital Backbone (and all digital capability) through five lenses: people, processes, technology, data and cyber.

This work aims to:

- Define the Digital Backbone in ways that people (primarily Front-line Commands, Budget Holders, etc. in the first instance but also potential users, developers, etc.) can understand
- Find ways of attributing value to digital effect i.e. how can one assess the effectiveness of investing in digital capability in terms of, for example, faster decision-making, increased lethality, etc.

The main thrust of the work under this RCA will be towards the former of these aims, although it is anticipated that there will be some need to support Dstl in its efforts to deliver the latter. Defence Digital specify two tasks which, when combined, aim to achieve the former aim, as follows:

1. To begin a concept demonstrator which combines all the developing S&T that will be incorporated into the Digital Backbone to:

    a. Give a tangible and common appreciation of the Digital Backbone;
    b. demonstrate how the benefit of the whole of the Backbone exceeds the benefits of the sum of the parts;
    c. give a method to test some measures of effectiveness;
    d. inform understanding of how the Backbone can be truly exploited
    e. give a basis upon which to scale it up from.

2. Deliver bespoke analysis and experimentation. Directed by the IAEP[1] and coherent with the strategic demand signal, this will identify and deliver additional analysis and experimentation requirements along the current lenses of digital capabilities (people, data, processes, technology), focussing on cross-cutting experimentation not being delivered elsewhere. This will also then act as the effective handshake into the S&T enterprise, steering and leveraging activity either delivered under the existing CSA programme (e.g. Information Systems programme outputs) or in the upcoming programme (e.g. planned experimentation activity in the Comms and Nets programme).

To expedite the availability of a tangible system, a Proof of Concept architecture developed under the Single Information Environment interoperability (SIEi) project will be used. This architecture was built against the Single Information Environment's (SInfoE) requirement to allow information to flow freely from point of origin to point of need i.e. a very similar requirement to the Digital Backbone's aim to connect "sensors, effectors and deciders across military and business domains and with partners, driving integration and interoperability across domains and platforms." The intention in using this architecture is not to pre-judge what the architecture should be, but to give stakeholders a system with which they can interact, and that Defence Digital/Dstl can use to support experimentation, with the minimum of development time. The intention is to focus stakeholder's thoughts about a Digital Backbone – be that similar to or different from the system with which they interact. Annex A gives details of this technical architecture.

The contractor is expected to build Service Providers (see Annex A) to enable six[2] military systems to connect to the core components of the architecture and exchange information. This will meet Tasks 1a and 1e of the request above. While Dstl will lead 1b, 1c, 1d, the contractor will be invited to provide some contribution to these elements.

The developed 'system of systems' will then form a testbed for analysis and experimentation, as requested in Task 2. The Digital Strategy for Defence states that the purpose of the Digital Backbone is to enable faster, better decisions and improved Defence outcomes (purpose taken from Digital Strategy for Defence). The 'system of systems" will need to be able to support information exchanges that contribute to supporting improved Defence Outcomes. It is anticipated that this work will be built on to support a more complete military scenario that enables the achievement of Defence Outcomes, and used for further experimentation beyond the end of the contract. It is therefore important not to compromise such future development in carrying out the current development.

This contract is to build on that implementation to show the SInfoE contributing to realistic military scenarios. This will require:

- the implementation of the SInfoE framework components being further matured,
- a set of realistic real or simulated military systems being connected with the SInfoE

[1] Integrated Analysis and Experiment Plan. Yet to be developed.
[2] Six connected systems demonstrate the value of a scalable architecture, whereas 3 or fewer do not.

- realistic C2 systems being modified so their users can properly exploit the capabilities of the SInfoE implementation through a suitable user interface.

AGILE PROCESS

The supplier is invited to suggest whether an agile approach should be adopted.

REQUIREMENTS

The Project will be split into two Work Packages:

WP1. Development of Concept Demonstrator

The work will construct interfaces to allow six military systems (Annex B suggests some systems, but the contractor is free to suggest others as long as they contribute to a realistic military scenario) to connect to the embryonic architecture described above, allowing the services those systems support to discover each other and exchange information. The systems may be real systems, simulated systems, or representative data from real systems. This will require the contractor to:

- Select military systems, system simulations or representative data from military systems that would realistically wish to interact, in collaboration with Dstl and Defence Digital,
- Develop interfaces (i.e. "Service Providers (SPs)" – see Annex A) to the architecture for the chosen systems
- Develop User Interfaces to the minimum required to allow users to interact with the connected systems/system representations
- Test the ability of the connected systems to discover each other and exchange information.
- Participate in Dstl or DD-run discussion fora on b-d above i.e.
    b. demonstrate how the benefit of the whole of the Backbone exceeds the benefits of the sum of the parts;
    c. give a method to test some measures of effectiveness, including generic Measures of Performance (MoPs) and Measures of Effectiveness (MoEs) for the Digital Backbone, as well as considering which MoEs can be applied to the experimentation to be conducted in WP2;
    d. inform understanding of how the Backbone can be truly exploited

The system built under this task will be demonstrated/experimented with in WP2.

Outputs:

1. A total system as described above, hosted on a network where Dstl and Defence Digital have visibility, and capable of supporting experimentation described in WP2 below.
2. Contribution to Dstl's reporting, including a description of work done, including the rationale behind the choice of systems and any lessons learned for the Digital Backbone, according to its definition which is likely to evolve in the course of this work.

WP2 - Deliver bespoke analysis and experimentation

Design a series of experiments that will test the MoEs and MoPs determined as described in WP1, then, in conjunction with Defence Digital and Dstl, decide which of them to carry out. Conduct the experiment(s). This will need to be viewed through lenses of the Digital Strategy[3] as follows:

People: Enable people to interact with the system to search for and discover information as described in WP1, to enable them to begin to get a feel for what a Digital Backbone is, how it might benefit them, and how it might be improved. Capture their reactions either objectively (i.e. how long does the process

[3] Note that this is only part of the definition of the lenses of the Digital Strategy for Defence – that deemed possible in the constraints of this contract.

take them) or subjectively (e.g. capturing their opinions by questionnaire) or both, so that the information may be analysed.

Data: Make the data handling visible to the observer[4] to aid their understanding, measure relevant data MoE/MoPs (e.g. does the metadata support finding the information in the way required). Capture the findings for analysis.

Processes: If the developed system is sufficiently "rich" to support a military process, run that process using the developed system and assess to what extent the ability to discover and exchange information across the Backbone improves the conduct of that process in terms of the MoEs determined in WP1.

Technology: Assess the ability of the technology to support a Digital Backbone. Capture any observations on development that is necessary. This will inform a "pull" statement on technology that is required to implement a Digital Strategy for Defence.

Cyber is the fifth lens of the Digital Strategy for Defence, but the system will not be sufficiently mature to enable any analysis of Cyber capability.

Contribute to Dstl and Defence Digital's analysis of the findings of the experiment(s).

Outputs

3. Design for a series of experiments as described above
4. Experiment(s) as chosen during the task
5. A report on the findings of the experiment, giving results from the measured MoPs and MoEs and conclusions for the Digital Backbone.

ANNEX A - Background on the existing Proof of Concept Architecture

The Dstl Single Information Environment interoperability Project explored ways of breaking down the technical and procedural barriers between the Information Systems of the Defence, Partners across Government, the UK and its Allies, and between security domains; to allow information to flow from its point of origin through these varied information environments to deliver assured information to its point of need.

A specification for, and a proof of concept implementation of, and architecture that could support a Future SInfoE Architecture was developed in 2021/22 under SERAPIS contract AII59 and demonstrated simple systems able to connect with a SInfoE, search for services available on the SInfoE and then use those services.

The embryonic architecture was built under Redacted, and specified to achieve the broad goals of:

1. Scalability (to enable large numbers of systems to connect to it without incurring undue complexity)
2. Operation where the network is Denied, Degraded, Intermittent or Low Bandwidth (on the assumption that if it works there, it will work in more favourable network conditions)
3. Agility (to allow evergreen capability, and to allow systems to be configured in different ways for different missions, organisations, participants, attached systems, etc.)
4. Assurance (such that users trust the information gained across the Backbone)
5. Operation in a Combined, Joint, Intra-Government, Inter-Agency and Multinational Environment (for burden-sharing and collaboration).

The framework consists of a set of core services-based logical components, whose functionality is to enable a Single Information Environment architecture capability across the MOD environment, whether strategic, operational or tactical and whether land, air, sea or space. Operational and tactical

[4] This would not necessarily be true of an operational Digital Backbone, but during development, it allows observers to understand the system better and developers to diagnose issues better.

communications bearers are considered to be degraded, denied, interrupted and low bandwidth (DDIL) in nature, so the SCP and all SInfoE components must perform appropriately in that environment.

The two main SInfoE framework components are the Point of Presence (PoP) and the Service Provider (SP), with communications between the components provided by the SInfoE Common Protocol (SCP).

These are defined as follows:

1. The Service Provider (SP) provides an interface to convert between the native protocols of a system and the protocols of the SInfoE. In the first phase PoC, several simple systems were linked to the SInfoE with SPs.

2. The Point of Presence (PoP) provides a catalogue of the systems and services currently available on the SInfoE. Each SP, at start-up, finds and registers with its local PoP. The registration process updates the PoP's catalogue with details of the system and a list of the services the system supports. PoPs share that information with other PoPs to create a distributed knowledge of the systems and services available. All exchanges happen using the SCP. At any point, a system can search through the catalogue on its local PoP for the services it requires, and once the relevant services has been found, the PoP provides the network address to use to access that service. The system can then utilise that service at the given address using the SCP.

3. The SInfoE Common Protocol (SCP), is a technique that facilitates communications between all SInfoE components, PoPs and SPs. All interactions with the SInfoE and between systems connected to the SInfoE use the SCP technique with the intent of reducing the implementation burden on all SPs and any other SInfoE components. It is expected that the SCP will provide a schema-based method to define the message contents for each SCP service. Using a schema approach allows different SCP services to be defined for every aspect of the SInfoE, both the control messages between SInfoE components (to keep the SInfoE operating) and the business messages passing between interfaced systems. As such, the SCP will be used to define services of a different types required for to meet the needs of scenarios under evaluation. Examples include:

    a. SInfoE control; services to maintain the internal operation of the SInfoE

    b. Situational awareness; e.g., live location, contract and logistic-holdings reporting

    c. Intelligence; e.g., requests for information and the return of INT information

    d. Imagery; e.g., exchange of imagery between systems.

These components are illustrated in Figure 1 below:

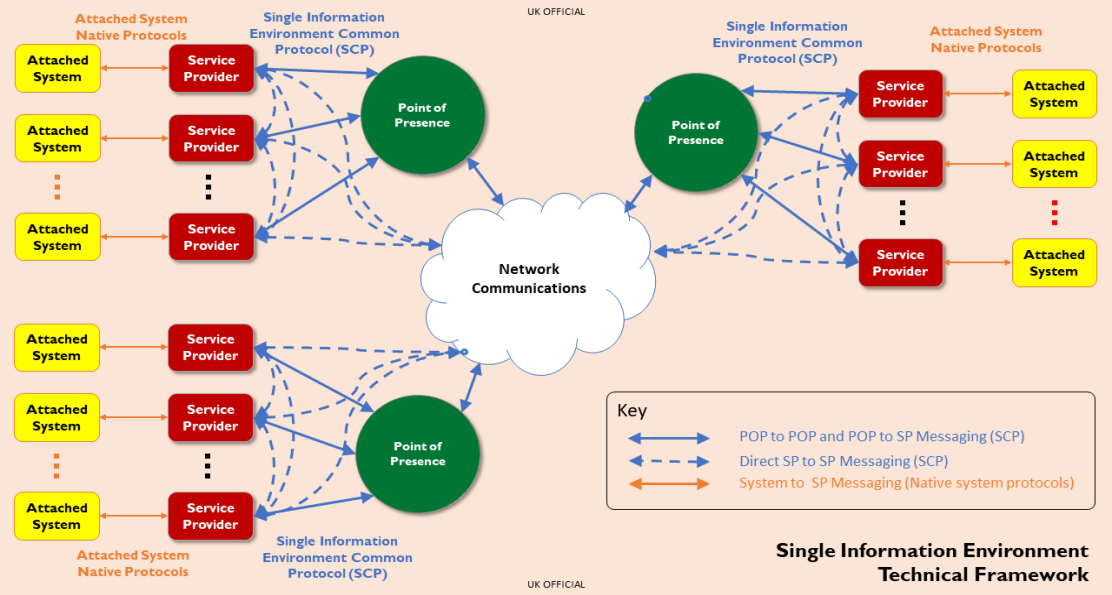

Figure 1 - SInfoE Technical Framework

The first phase implementation output included the software code for the SPs, PoPs and the SCP, which will be available to the contractor.

ANNEX B – Suggested systems

The following systems could be considered

a. A representative C2 system based on NATO FAS Applications or on US tactical C2 systems such as ATAK

b. Representative sources of track information

c. SAPIENT; to provide configurable sensors and fusion analysis reporting to the SInfoE

d. MAPLE

e. EC2 Spearhead

f. Information Broker; to provide GEOINT and other product types to the SInfoE

g. NEBULA; to provide fused intelligence information to the SInfoE

h. Generic Vehicle Architecture (GVA); to provide vehicle information to the SInfoE

Procurement Strategy

☐ Lot Lead to recommend ☒Single Source / Direct Award

Pricing:

☒ Firm Pricing ☐ Ascertained Costs* ☐ Other*

Firm Pricing shall be in accordance with DEFCON 127 and DEFCON 643

Ascertained Costs shall be in accordance with DEFCON 653 or DEFCON 802.

*only at Authority's discretion

Task IP Conditions

Task IP Conditions (Follow the NIPPY guide to identify your information and IP requirements for each deliverable)	**Summary of the Authority's rights in foreground generated by the supplier in performance o contract)**
DEFCON 703 ☐	Vests ownership with the Authority
DEFCON 705 Full Rights ☐	Enables MOD to share in confidence as GFI or IRC certain types of agreements. Can be shared in confidence within UK Governmer
OTHER IP DEFCONS: 14* ☐, 15* ☐, 16* ☐, 90* ☐, 91* ☐, 126* ☐	Generally only suitable for deliverables at TRL above.
BESPOKE IP Clause ☐ *	Details to be added and agreed by IP Group
* Do not use without IPG advice and approval	

DELIVERABLES

Ref	Title	Due by	Format	TRL	Expected classification (subject to change)	Information required in deliverable	IPR DEFCON
D1	Experimentation Test Bed				Redacted	Including the core components and Service Providers for six systems	Redacted
D2	Contribution to Dstl report				Redacted	To describe the built system, rationale for choices made and lessons learned for the Digital Backbone.	Redacted
D3	Software source code with Software Delivery Note				Redacted	To include build instructions, license conditions and sufficient documentation to allow Dstl and its subcontractors to further develop the solution Git history is not mandated but would be valued	Redacted

						To include design, deployment and operation instructions		
D4	Experimentation Plan				Redacted	Design for a series of experiments that will test the MoEs and MoPs determined as described in WP1	Redacted	
D5	Experiment				Redacted	To test some MoPs and MoEs as chosen in WP1	Redacted	
D6	Experimentation Report				Redacted	Providing results from the measured MoPs and MoEs and conclusions for the Digital Backbone.	Redacted	

DELIVERABLE: ACCEPTANCE / REJECTION CRITERIA

Unless otherwise stated below, Standard Deliverable Acceptance / Rejection applies. This is 30 business days, in accordance with DEFCON 524 Rejection, and DEFCON 525 Acceptance.

Standard Deliverable Acceptance / Rejection:-

Yes ☒ (DEFCON 524 Rejection, and DEFCON 525 Acceptance)

No ☐ (if no, please state details of applicable criteria below)

Deliverable Acceptance / Rejection Criteria:-

Government Furnished Assets (GFA)

ISSUE OF EQUIPMENT/RESOURCES/INFORMATION/FACILITIES (*if not applicable, delete table and insert "None" in this text box)*

Unique Identifier/ Serial No	Description	Classification	Type	Available Date	Issued by	Return or Disposal Date	Any restrictions?
Serial no	*Description*	*Official-Sensitive*	*Equipment*	*00/00/0000*	*Issuer*	*00/00/0000*	*Include d here*
	Experimentation Environment i.e. laptops, servers and networking to perform the experimentation including any software licenses required to allow						

	contributors to access and perform their roles.							
	Dstl Systems to be interfaced. Dstl systems will be provided as required by the scenario including their Interface Control Documents and required metadata definitions.							
	Documentation on the embryonic architecture. Sufficient to enable the contractor to link systems to it and to develop that architecture if the aims of the project require it.							
	Software from the embryonic architecture. The existing software code and dependencies are available in a Github repository and all tooling, build instructions and documentation will be made available.							

QUALITY STANDARDS

☒ **ISO9001** (Quality Management Systems)

☐ **ISO14001** (Environment Management Systems)

☒ **ISO12207** (Systems and software engineering — software life cycle)

☐ **TickITPlus** (Integrated approach to software and IT development)

☐ **Other:** (Please specify in free text below)

SECURITY CLASSIFICATION OF THE WORK

The highest classification of this SOR

OFFICIAL ☐ OFFICIAL-SENSITIVE ☐ SECRET ☐ TOP SECRET ☐ STRAP ☐ SA

The highest expected classification of the work carried out by the contractor

OFFICIAL ☐ OFFICIAL-SENSITIVE ☐ SECRET ☐ TOP SECRET ☐ STRAP ☐ SA

The highest expected classification of Deliverables/Output

OFFICIAL ☐ OFFICIAL-SENSITIVE ☐ SECRET ☐ TOP SECRET ☐ STRAP ☐ SA

Is a Security Aspects Letter (SAL) required? *(A Security Aspects Letter (SAL) will be required for each Task above Official-Sensitive and above)*

Yes ☐ No ☐

TASK CYBER RISK ASSESSMENT. *(In accordance with DEF STAN 05-138 and the* Risk Assessment Workflow)

Cyber Risk Level	Redacted
Risk Assessment Reference	Redacted

ADDITIONAL TERMS AND CONDITIONS APPLICABLE TO THIS CONTRACT

Please ensure all completed forms are copied to DSTLSERAPIS@dstl.gov.uk when sending to the Lot Lead.

Tasking Form Part 2: *(To be completed by the Lot Lead)*

To: The Authority	From: The Lot Lead

Proposal Reference QINETIQ/22/04002

Delivery of the requirement:

The proposal <u>shall</u> include, but not be limited to:

- A full technical proposal that meets the individual activities that are detailed in Statement of Requirements (Part 1 to Tasking Form).
- Breakdown of individual Deliverables, with corresponding Intellectual Property rights applied.
- Breakdown of Interim Milestone Payments, with corresponding due dates.
- A work breakdown structure/project plan with key dates and deliverables identified.
- A list of required Government Furnished Assets from the Authority, including required delivery dates.
- A clear identification of Dependencies, Assumptions, Risks and Exclusions which underpin your Technical Proposal.
- Sub-Contractors Personnel Particulars Research Worker Form and security clearances (if applicable)

COMMERCIAL

As per the Serapis Limitation of Liability Discussion Paper Agreement, this task will fall under the band of a cap on liabilities of **Redacted**

PRICE BREAKDOWN

You are to use the costs detailed in Item 2 Table I in the Schedule of Requirement and at Annex E Table 2 of the Serapis Framework Agreement. Please also provide a price breakdown which should include, but is not limited to: Lot Lead Rates, Sub-contractors costs and rates, travel and subsistence. In support of your Proposal you are requested to provide clear details of all Dependencies, Assumptions, Risks and Exclusions that underpin your price.

Offer of Contract: *(to be completed and signed by the Contractor's Commercial or Contract Manager)*

Total Proposal Price in £	**£219,995**		(ex VAT)
Start Date:	30/11/22	**End Date:**	31/03/23 (FY22/23)
Lot Leads Representative	Name	**Redacted**	
	Tel	**Redacted**	
	Email	**Redacted**	
	Date	22nd November 2022	
Position in Company	Assistant Commercial Manager		
Signature	**Redacted**		

Core Work – Breakdown

Lot Lead Rates for Task Management Services (TMS)

Please insert/delete rows as necessary

Redacted

Work Delivered by Sub-Contractor(s)

We recognise that suppliers may fit into multiple categories, please choose the drop down that categorises the supplier by the definition that is lowest on the list (i.e. a Defence Supplier Academic would be treated as an Academic.

Please insert/delete rows as necessary

Name of Sub-Contractor	Supplier Type	Activity Description	Rate (£)	Total Hours	Total Cost (£)

Redacted

Travel, Subsistence, Materials & Equipment

Please insert/delete rows as necessary

Supplier Name	Spend Type	Description / Rationale	Unit Cost (£)	Qty	Total Cost (£)

Redacted

Core Work – Milestone breakdown costs

Proposed Milestones Payments

Your TMS bid costs shall be included in milestone 1.

The final Milestone must reflect the actual cost of the deliverable, and be greater than 20% of the Task value, unless otherwise agreed with your Commercial POC

Please duplicate the template per milestone table format below as necessary, and rename milestone number accordingly.

Milestone 1						
Description	**TMS cost (£)**	**Self-Delivery cost (£)**	**Sub-contractor cost (£)**	**Total milestone cost (£)**	**Milestone due date**	**DEFCON**
Minutes of Start-up Meeting	Redacted			Redacted	T0+ 1wk	Redacted
Travel/Subsistence						
Materials/Equipment						
Milestone LMS recovery (£)	Redacted					

Milestone 2						
Description	**TMS cost (£)**	**Self-Delivery cost (£)**	**Sub-contractor cost (£)**	**Total milestone cost (£)**	**Milestone due date**	**DEFCON**
WP1: D1 - SInfoE Service Provider Software	Redacted		Redacted	Redacted	T0+3m	Redacted
Travel/Subsistence						
Materials/Equipment						
Milestone LMS recovery (£)	Redacted					

Milestone 3						
Description	**TMS cost (£)**	**Self-Delivery cost (£)**	**Sub-contractor cost (£)**	**Total milestone cost (£)**	**Milestone due date**	**DEFCON**
WP2: D2 - SInfoE Digital Backbone Experimentation Report	Redacted		Redacted	Redacted	T0+4m	Redacted
Travel/Subsistence				Redacted		
Materials/Equipment						
Milestone LMS recovery (£)	Redacted					

Tasking Form Part 3:

To be completed by the Authority's Commercial Officer and copied to the Authority's Project Manager.

1. **Acceptance of Contract:**		
Authority's Commercial Officer	Name	Redacted
	Tel	Redacted

	Email	**Redacted**
	Date	25 Nov 2022
Requisition Number		RQ0000015972
Contractor's Proposal Number		QINETIQ/22/04002
Purchase Order Number		DSTL0000010483
Signature		**Redacted**
Please Note: Task authorisation to be issued by the Authority's Commercial Officer or Contract Manager. Any work carried out prior to authorisation is at the Contractor's own risk.		