SERAPIS TASKING FORM

COMPLETE SQUARE BRACKETS AND REMOVE COMMENTS BEFORE SENDING TO THE SUPPLIER

Tasking Form Part 1: *(to be completed by the Authority's Project Manager)*

To:	Lot 3 QinetiQ Plc	**From :**	Dstl
REQUIREMENT			
Proposal Required by:	17/06/2022	**Task ID Number:**	D37
Project Manager:	Redacted under FOIA Section 40 - Personal Information	**Technical Point of Contact:**	Redacted under FOIA Section 40 - Personal Information
Task Title:	Distributed Sensemaking	**New Task ☒**	**Change ☐**
Required Start Date:	01/07/22	**Required End Date:**	30/04/24
Requisition No:	RQ0000016965	**Budget Range**	£230,000
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		

Introduction

The Future Operating Environment (FOE) is likely to place additional cognitive demand onto individuals in teams who are conducting an already complex Command and Control (C2) task. This could be exacerbated by increases in technology (systems and information available), a wider range of potential threats and the expansion of battlespace domains to include cyber and space. Sensemaking is the skills, knowledge and behaviours used to determine when a routine situation is moving to non-routine or when the situation may not be as originally perceived. Klein et al. (2006) describe sensemaking as "A motivated, continuous effort to understand connections (which can be among people, places, and events) in order to anticipate their trajectories and act effectively."

Dispersed Military Teams work in separate locations with access to different information. In situations where teams do not have access to their higher command to give over sight of the whole situation, differences in interpretation can lead to conflicting demands on finite resources and an inconsistent response to events. Distributed sensemaking is the process by which people complete their sensemaking and share situation-pictures with other military units to achieve understanding and coordinated action. Through improving distributed sensemaking, the speed with which distributed groups achieve a common understanding, the quality and speed of their decision making could be improved.

Previous research, led by Trimetis and supported by Middlesex University, University of Birmingham and MASS Ltd, provided a definition of distributed sensemaking (which is a relatively new concept) and developed nine principles of distributed sensemaking based on a review of the literature and expertise within the research team.

An exploratory study was then conducted using a map exercise (MAPEX) (i.e. a map-based scripted scenario) in a dispersed operational context where units under a given command structure were geographically dispersed, each with their own objectives and views on different locations in a dynamic environment. The research questions were as follows:

RQ1. How do distributed groups negotiate distributed sensemaking problems and factors that affect this?

RQ2. How does an elaborated reporting format design impact upon DSM?

RQ3. What are the measurement issues associated with distributed sensemaking?

RQ4. What do the results say about the theoretical position?

RQ5. What do the results say about the principles?

The exploratory study was a success allowing the investigation of research questions outlined above. It also identified a number of variables (message elaboration, message medium, peer to peer chats, knowledge of other team members and previous command experience) were found to have an impact upon distributed sensemaking performance. However this was only an exploratory study with a limited number of participants and teams (15 participants assigned to five teams of three) so further research is required to develop the measures, interventions and to explore distributed sensemaking further as a concept.

Statement of Requirements (SOR)

The purpose of this SOR is to take this research forward through developing and refining suitable measures of distributed sensemaking, developing suitable interventions to support distributed sensemaking and designing and running experimental research to test these measures and interventions. This will also support further exploration of distributed sensemaking as a concept. The research is in two phases with a further option to provide costed options for additional research:

Phase 1:

1. Develop and validate the Individual Sensemaking Questionnaire (ISMQ) by generating suitable items to broaden the underlying factors of the ISMQ whilst removing redundant items. Conduct a qualitative assessment of the item set with representative individuals (both military and non-military) to check the language use is appropriate for this group and that none of the items are ambiguous. Distribute this survey to participants to conduct factor analysis, to assess Crohnbach's Alpha and to review construct validity. Remove redundant items.
2. Develop and validate the Distributed Sensemaking Interview Questions (DSMIQ) into a measure by generating suitable items for each of the nine principles whilst removing redundant items. Conduct a qualitative assessment of the item set with representative individuals (both military and non-military) to check the language use is appropriate for this group and that none of the items are ambiguous. Distribute this survey to participants to conduct factor analysis, to assess Crohnbach's Alpha and to review construct validity. Remove redundant items.
3. Based on the existing literature and relevant Dstl reports that will be provided as GFX, design a range of artefacts and interventions that might improve distributed sensemaking.
4. Design the experiment for Phase 2 of this research.
5. Complete MODREC process, aiming to achieve favourable opinion by the end of Phase 1.

Phase 2:

6. Conduct experimental research to further investigate and validate the principles of distributed sensemaking when applied to command organisations. Test the measures and the down-selected interventions developed in Phase 1.
7. Design a pilot to run at a suitable Headquarters to test out the tools and measures and gather feedback on their usability and validity.

Costed Option

8. Provide a costed option to deliver the pilot outlined in point 7 above.
9. Provide a further costed option(s) to design and deliver further research to develop or exploit distributed sensemaking research.

The research is to be run in two phases:

Phase 1: Develop and validate the measurement tools to be used in the experiment. Design a number of artefacts and interventions that might improve distributed sensemaking. Review previous experimental research in the area to design the experiment for Phase 2. During this phase the hypotheses, number of participants, toolsets and facilities required for the research will be confirmed. (C3Fires is a firefighting simulation tool that has been developed to support research in this area and can be used for the purposes of the experiment if required. Dstl can provide a demo of the current simulation set-up in Phase 1. If changes are required for the purposes of the experiment this will need to be flagged early in Phase 1.) Complete MODREC process, aiming to achieve favourable opinion by the end of Phase 1.

Phase 2: Experimental phase. Following MODREC favourable opinion in Phase 1, participants will be recruited, the experiment(s) run, data collected, results analysed and final technical report produced. (Assume Dstl will provide access to the facilities and hardware – although suppliers who have access to suitable facilities and hardware will be looked upon favourably; see Issue of equipment/material/information below.)

A focus on the exploitation of this research to support military end-users is encouraged throughout this research.

References

Klein, G., Moon, B., & Hoffman, R. R. (2006). Making sense of sensemaking 1: Alternative perspectives. *IEEE intelligent systems, 21(4),* 70-73.

GFX Available

Redacted under FOIA Section 26 – Defence

Other GFX available on request.

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

DEFCON 703 ☐ or DEFCON 705 ☒ DEFCON 91 (Software) ☐

DELIVERABLES

D1 A technical report at the end of Phase 1 outlining the research, findings and recommendations for the development of the ISMQ, the DSMIQ and the distributed sensemaking artefacts and interventions. This should also include the final version of the ISMQ and DSMIQ survey questions.

D2 A technical report at the end of the Phase 1 scoping phase outlining the background research and experimental design for Phase 2.

D3 A final technical report to outline the research, findings and recommendations. This to be produced at the end of the study but should focus on the work in Phase 2.

D4 The Raw data set produced during the Experimental Phase 2.

D5 Design for a pilot to test the tools and measures and gather feedback on their usability and validity.

D6 Costed option to deliver the pilot outlined at the end of Phase 2.

D7 At the end of Phase 2, a plan to support further exploitation of the measures, interventions and findings from this research.

Deliverable: Acceptance / Rejection Criteria *(30 business days unless agreed otherwise)*

DEFCON 524 Rejection ☒ period [30] days DEFCON 525 Acceptance ☒ period [30] days

ISSUE OF EQUIPMENT/MATERIAL/INFORMATION

There are a number of facilities at Porton and Portsdown West that could support experimental research on distributed sensemaking. During the initial scoping phase the supplier and Dstl will be able to discuss the facilities available in line with the requirements based on the scoping study findings. (Suppliers may also wish to use their own facilities which can also be discussed during the scoping phase.)

C3Fires is a firefighting simulation tool that has been developed to support research in this area and can be used for the purposes of the experiment if required. Dstl have the required license to use C3Fires for the experiment. Dstl can also provide access to laptops for the purposes of running the Phase 2 experiment, however certain conditions will apply so early discussions on this requirement would be advised.

QUALITY STANDARDS

SECURITY CLASSIFICATION OF THE WORK *(A Security Aspects Letter (SAL) will be required for each Task above Official-Sensitive, Quotes are covered by the Framework SAL)*

The highest classification of this SOR

Redacted under FOIA Section 26 – Defence

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

Redacted under FOIA Section 26 – Defence

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.

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

LOT 3 DSTL/AGR/SERAPIS/DEC/01

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

To: The Authority Redacted under FOIA Section 40 - Personal	**From:** The Lot Lead

Proposal Reference **QINETIQ/22/02624** **(attached)**

Delivery of the requirement:

Our proposal includes:

- A full technical proposal included as an attachment.
- A Breakdown of Deliverables and Interim Payments (Milestone/stage) due dates.
- A work breakdown structure with key dates and Deliverables identified including required delivery dates for Government Furnished Assets.
- A clear identification of Dependencies, Assumptions, Risks and Exclusions which underpin our Technical Proposal.

PRICE BREAKDOWN

The prices in this proposal are based on our current agreed rates which are valid until July 2023 only. Any work beyond this date will therefore be subject to review and amended to include any agreed rates uplift as set out under Clause 8 (Variation in Price) in the Serapis Framework Agreement LOT 3 DSTL/AGR/SERAPIS/DEC/01.

Detailed Firm Price Breakdowns are provided on the following pages for the Core piece of work and the four options:

Core: £318,094.04 (Three Hundred and Eighteen thousand and Ninety Four pounds and Four pence);

Costed Option_A: £107,822.77 (One Hundred and Seven Thousand and Eight Hundred and Twenty Two pounds and Seventy Seven pence)

Costed Option_B: £289,334.21 (Two Hundred and Eighty Nine Thousand and Three Hundred and Thirty Four pounds and Twenty One pence);

Costed Option_C2: £51,893.91 (Fifty One Thousand and Eight Hundred and Ninety Three pounds and Ninety One pence);

Costed Option_D: £3,978.86 (Three Thousand Nine Hundred and Seventy Eight Pounds and Eighty Six Pence).

Total Proposal Price in £	Distributed Sensemaking_Core: £318,094.04 Costed Option_A: £107,822.77 Costed Option_B: £289,334.21 Costed Option_C2: £51,893.91 Costed Option_D: £3,978.86		(ex VAT)
Start Date:	**October 2022**	**End Date:**	**Feb 2026 (inc. Options)**

Lot Leads Representative	Name	Redacted under FOIA Section 40 - Personal Information
	Tel	
	Email	
	Date	12th September 2022
Position in Company	Assistant Commercial Manager	
Signature	Redacted under FOIA Section 40 - Personal Information	

D37 Distributed Sensemaking - Core - Contractor's Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Core - Contractor's Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Core - Sub-Contractors Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

Redacted under FOIA Section 43 – Commercial Interest

D37 Core - Detailed Milestone Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_A – Deliver Pilot - Contractor's Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_A - Contractor's Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_A - Sub-Contractors Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

Redacted under FOIA Section 43 – Commercial Interest

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_A – Detailed Milestone Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_B – Further Research - Contractor's Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_B Further Research – Contractor's Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_B - Sub-Contractors Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_B – Detailed Milestone Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_C2 Speech Heavy - Contractor's Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_C2 - Contractor's Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_C2 - Sub-Contractors Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_C2 – Detailed Milestone Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_D – Additional Experiment Days - Contractor's Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 Costed Option_D - Contractor's Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_D - Sub-Contractors Detailed Price Breakdown

Redacted under FOIA Section 43 – Commercial Interest

D37 CO_D – Detailed Milestone Breakdown

Redacted under FOIA Section 43 – Commercial Interest

End of Costed Proposal

Tasking Form Part 3:

1. **Offer of Contract:** *(to be completed by the Authority's Commercial Officer or Contract Manager and copied to the Authority's Project Manager)*		
Authority's Commercial Officer	Name	Redacted under FOIA Section 40 - Personal Information
	Tel	
	Email	
	Date	6th October 2022
Requisition Number		RQ0000016965
Contractor's Proposal Number		**QINETIQ/22/02624**
Purchase Order Number		DSTL0000008451
Signature		Redacted under FOIA Section 40 -
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.		