RCloud Tasking Form – Part B: Statement of Requirement (SoR)

Title of Requirement	**Ethics for Closed-Loop Adaptive Systems**
Requisition No.	**TBC**
SoR Version	**1.0**

1.	**Statement of Requirements**
1.1	**Summary and Background Information**
	There is a growing interest in the use of person-borne sensor technologies which can provide real-time information about the physiological and cognitive state of personnel in order to create closed-loop military systems which can outperform a human or system alone. There is a requirement to understand how data from wearable sensors in closed loop systems can be used in an operational and training capacity while complying with ethical and security standards (some of which do not exist yet due to the fast-developing nature of this area). Closed-loop adaptive systems (CLAS) use wearable sensors to collate human physiological data. This data can be used in an operational environment by MOD personnel in order to monitor and support human cognitive performance in real-time. This can be hugely significant to operator performance during periods of high workload and fatigue. Human-machine teaming will become increasingly more significant as future military systems are designed and become commonplace, systems which team humans with AI whilst providing appropriate cognitive prosthetics and an understanding of the human as a sensor will be key to future human-machine teaming. Wearable consumer technologies began as stand-alone items but are now often grouped and their outputs combined in apps which provide both real-time and historical data to users. Neurotechnology is a small but fast-developing area and there is evidence that wearable neural interfaces can be used to identify brain states in real-time. There is a real benefit to be gained from incorporating real-time information about the human user into closed-loop adaptive systems in order to facilitate bespoke automation for human-machine teaming, and to provide real-time information about work-state and mental fitness. These technologies could be developed to provide bespoke solutions for military personnel and are of interest to MOD, however the ethical and security background for such systems is nascent.
1.2	**Requirement**
	Dstl has a requirement to better understand the ethical operational use of person-borne sensor technologies for closed loop systems. In order to achieve this the following is required: • A review of the relevant ethical literature should be carried out to include relevant international ethical standards and recommendation documents with a focus on neurodata, neurorights, and neurodiscrimination in addition to generic data ethics for wearable data collection in the workplace. This review should have a military ethics focus with a view to operational deployment of equipment. • Engagement with the Dstl TP and relevant neuroscience SMEs will support the creation of use-case scenarios. • This baseline of literature review and case studies should then inform a series of SME interviews and focus-groups (and potentially surveys) to include military personnel at various ranks in order to understand their willingness to engage with wearable sensor systems and closed loop adaptive systems at the individual level and at the command

	level, and their view of the use of such systems in an operational and training capacity. These focus-groups should explore military personnel's willingness to wear such sensors both on and off-duty, their confidence to act on the information and recommendations presented both on and off-duty, and their trust in working with AI systems which could provide real-time operational support and training based on their neural data . The successful team will work with a Dstl technical partner who can provide relevant information on example technologies, so expertise in closed-loop adaptive technologies is not essential. The successful team will have expertise in military ethics and must be able to access a suitable military population in order to carry out interviews, workshops and potentially surveys. • The work should conclude with a full written report detailing the relevant literature, the outcomes of SME interviews and focus groups (plus surveys if relevant), and UK-focussed guidelines for the military use of person-borne sensor technologies. This report should include a short (10 page max) annex which is aimed at the military reader and which summarises the relevant outputs with a simple table or diagram in order to facilitate decision making and understanding. Dstl is looking for a bidder who has expertise in military ethics, who has strong links to UK military personnel and SMEs, and who can manage these links independently from Dstl.
1.3	**Options or follow on work** *(if none, write 'Not applicable')*
	N/A
1.4	**Contract Management Activities**
	N/A
1.5	**Health & Safety, Environmental, Social, Ethical, Regulatory or Legislative aspects of the requirement**
	N/A

1.6	Deliverables & Intellectual Property Rights (IPR)					
Ref.	**Title**	**Due by**	**Format**	**Expected classification (subject to change)**	**What information is required in the deliverable**	**IPR Condition**
D1	Monthly Progress and Technical Review (Monthly)	T0+1 Months	Presentation (.pptx)	Redacted under FOIA Exemption 24 - National Security	Meeting and progress pack to include but not limited to: • Update on technical progress • Progress report against project schedule. • Review of deliverables. • Risks/issues.	DEFCON 705 Full Rights
D - 2	Final Report	T0+12 Months	Report (Word/PDF)	Redacted under FOIA Exemption 24 - National Security	Final written report detailing the relevant literature, the outcomes of SME interviews and focus groups (surveys if relevant), and UK-focussed guidelines for the military use of person-bourne sensor technologies. This report should include a short (10 page max) annex which is aimed at the military reader and which summarises the relevant outputs with a simple table or diagram in order to facilitate decision making and understanding.	DEFCON 705 Full Rights

1.7	**Deliverable Acceptance Criteria**
	As per R-Cloud V4 Framework Terms and Conditions.

2	**Evaluation Criteria**
2.1	Method Explanation
	This requirement will be competed and awarded on the basis of the Value for Money Index (VFM Index) evaluating Technical and Price using a lowest price per technical point scored. This will be ascertained by dividing each bidder's quoted price by their own final moderated technical score. All bids received by the closing date will be assessed against the tender evaluation process detailed below. The Authority will use an evaluation model consisting of three criteria as follows: • Commercial: PASS / FAIL • Technical • Pricing
2.2	Technical Evaluation Criteria
	Technical evaluation will be carried out by a team of between 3 and 5 assessors who will review the technical proposals independently and then bring their scores to a moderation meeting. The moderation meeting will be chaired by the Dstl Project Manager. The moderation meeting will discuss each Tenderers response in turn and attribute a moderated technical score to each of the technical criteria and a final score calculated. Technical criteria is provided below.

Ref	Criteria	Available Score	Weighting	Total Available Score
T1	The proposal clearly demonstrates that the Contractor understands the requirement.	0-5	1	5

T2	The proposal provides details of key risks, dependencies, assumptions and any relevant ethical issues the Contractor has identified.	0-5	1	5
T3	The proposal clearly demonstrates that the Contractor has the expertise and knowledge to successfully deliver the requirement.	0-5	2	10
T4	The proposal clearly demonstrates that the personnel the Contractor has nominated to work on the requirement have the relevant experience to successfully deliver it.	0-5	2	10
T5	The proposal clearly demonstrates that the Contractors proposed approach will fully address all the key research questions / mandatory requirements stated in the RCA. Proposal should include the following: a detailed work breakdown structure, schedule, roles and responsibilities.	0-5	6	30
				60

Technical Scoring Guide - Definition of Terms:

Word or phase	Meaning
Comprehensive	Including or dealing with all or nearly all elements or aspects
Close to comprehensive	Including or dealing with slightly less elements or aspects than comprehensive
Satisfactory	Acceptable
Limited	Missing some minor / important elements
Inadequate	Missing some major / important elements

T1. The proposal clearly demonstrates that the Contractor understands the requirement.	
Score	**Key Indicators**
5 = Exceeds	• Demonstrates a comprehensive understanding of the Authority's requirements and objectives, – illustrating knowledge that goes significantly beyond that presented in this Statement of Requirement; • Provides excellent insights into how the context and associated requirements may evolve - going well beyond the material presented in the statement of requirement.
4 = Fully meets	• Demonstrate**s a** close to comprehensive understanding of the Authority's requirements – illustrating knowledge that goes beyond that presented in this Statement of Requirement; • Provide good insights into how the context and associated requirements may evolve - going beyond the material presented in the statement of requirement.
3 = Adequately meets	• Demonstrate**s** an understanding of the Authority's requirements;

	• Provide some insights into how the context and associated requirements may evolve - going beyond the material presented in this statement of requirement.
2 = Fails to meet in a minor respect	• Has shortfalls in demonstrating an understanding of the question area / requirement – for example, simply mirroring the information presented in this Statement of Requirement; • Offers little insight into how the context and associated requirements may evolve.
1 = Fails to meet in a major respect	• Fails to demonstrate understanding of the question area / requirement; • Offers no insights into how the context and associated requirements may evolve.

T2. The proposal provides details of key risks, dependencies, assumptions and any relevant ethical issues.	
Score	**Key Indicators**
5 = Exceeds	• Provides a comprehensive overview of key risks, dependencies, assumptions.
4 = Fully meets	• Provides a close to comprehensive overview of key risks, dependencies, assumptions.
3 = Adequately meets	• Provides a satisfactory overview of key risks, dependencies, assumptions.
2 = Fails to meet in a minor respect	• Provides a limited overview of key risks, dependencies, assumptions.
1 = Fails to meet in a major respect	• Provides an inadequate overview of key risks, dependencies, assumptions.

T3. The proposal clearly demonstrates that the Contractor has the expertise and knowledge to successfully deliver the requirement.	
Score	**Key Indicators**
5 = Exceeds	• Demonstrates comprehensive expertise of relevance to the requirement.
4 = Fully meets	• Demonstrates close to comprehensive expertise of relevance to the requirement.
3 = Adequately meets	• Demonstrates satisfactory expertise of relevance to the requirement.
2 = Fails to meet in a minor respect	• Demonstrates limited expertise of relevance to the requirement.
1 = Fails to meet in a major respect	• Demonstrates inadequate expertise of relevance to the requirement.

T4. The proposal clearly demonstrates that the personnel the Contractor has nominated to work on the requirement have the relevant experience to successfully deliver it.	
Score	**Key Indicators**

5 = Exceeds	• Demonstrates that the project team has comprehensive expertise and relevant experience to successfully deliver this requirement.
4 = Fully meets	• Demonstrates that the project team has close to comprehensive expertise and relevant experience to successfully deliver this requirement.
3 = Adequately meets	• Demonstrates that the project team has satisfactory expertise and relevant experience to successfully deliver this requirement.
2 = Fails to meet in a minor respect	• Demonstrates that the project team has limited expertise and relevant experience to successfully deliver this requirement.
1 = Fails to meet in a major respect	• Demonstrates that the project team has inadequate expertise and relevant experience to successfully deliver this requirement.

T5. The proposal clearly demonstrates that the Contractors proposed approach will fully address the key research questions / mandatory requirements stated in the RCA. Proposal should include the following: a detailed work breakdown structure, schedule, roles and responsibilities.

Score	**Key Indicators**
5 = Exceeds	• Provides a comprehensively detailed technical approach, illustrating how it may evolve during the life of the contract; • Comprehensively addresses all of the key research questions / mandatory requirements; • Provides significant additional relevant information and clear insights; • Provides strong examples and reasoning to back up any arguments presented, including reference sources; • Demonstrates excellent awareness of key challenges and provides significant detail on how they may be addressed.
4 = Fully meets	• Provides a comprehensively detailed technical approach; • Comprehensively addresses all of the key research questions / mandatory requirements; • Provides some additional relevant information or insights; • Provides some examples and reasoning to back up any arguments presented, including reference sources; • Demonstrates good awareness of key challenges and how they may be addressed.
3 = Adequately meets	• Provides a satisfactorily detailed technical approach; • Satisfactorily addresses all of the key research questions / mandatory requirements; • Provides little additional relevant information or insights; • Provides few examples and reasoning to back up any arguments presented, including reference sources; • Demonstrates awareness of some of the key challenges and how they may be addressed.
2 = Fails to meet in a minor respect	• Provides limited detail in the technical approach; • Limited consideration of the key research questions / mandatory requirements; • Provides no additional relevant information or insights; • Provides insufficient examples, and/ or little reasoning, to back up any arguments presented; • Demonstrates only limited awareness of key challenges and how these may be addressed.

	1 = Fails to meet in a major respect	• Provides an inadequately detailed technical approach; • Inadequate consideration of the key research questions / mandatory requirements; • Provides no additional relevant information or insights; • Provides no examples or reasoning, to back up any arguments presented; • Demonstrate no awareness of key challenges and how these may be addressed.

The weighted scores on each limb will be added together to give a final technical score. Each technical assessor will perform an individual evaluation and then a final moderated technical score will be arrived at in the moderation meeting.

2.3 Commercial Evaluation Criteria

Evaluation of Commercial bids will be undertaken against responses to the sub-criteria detailed below and scored in accordance with the 'Commercial Scoring Definitions' underneath.

The Authority reserves the right to reject any Tender if a supplier scores a 'Fail' in any of the criteria below.

Ref	Sub-Criteria Description	Scoring Range	Sub-Criteria Weighting	Maximum Weighted Score
C1	Please submit your full firm price breakdown for all costs to be incurred, including: • What rates are being used for what Grade • Quantity of manpower hours per Grade • Travel & Subsistence costs • Journal publication fees • Any Materials costs • Any Facility costs • Any sub-contractor costs	Pass/Fail	n/a	Pass/Fail

	• Any other costs			
C2	Compliance with the Task specific terms and conditions as stated within the Statement of Requirement and Tasking Form.	Pass/Fail	n/a	Pass/Fail
	Subtotal Available Weighted Mark			**Pass/Fail**

The score (Pass/Fail) awarded to each of the Commercial Sub-criteria will be in accordance with the following definitions:

Score	**Definition**
Pass	Fully meets the Authority's requirement. Provision and acceptance of the sub-criteria information in the format requested, which is clear, unambiguous and transparent.
Fail	Unacceptable/Nil Return. Tenderer did not respond to the question or the response wholly failed to demonstrate an ability to meet the sub-criteria requirement.

Pricing

The price of each proposal will subsequently be divided by the final moderated technical score to arrive at the lowest price per technical point scored. The bidder with the lowest price per technical point scored will be adjudged as the winner.

Example:

Supplier A submits a proposal costing £150,000. Their proposal receives a final moderated score of 50.

£150,000/50 = £3000 per technical point scored.

Supplier B submits a proposal costing £125,000. Their proposal receives a final moderated score of 40.

£125,000/40 = £3125 per technical point scored.

	In this scenario, Supplier A would be the winner as their price is lower per technical point scored.