Statement of Requirement (SoR)

Reference Number	1000167751
Version Number	1.0
Date	07/09/2021

1.	Requirement
1.1	Title
	Temporal Radio Frequency Hashing (Phase 2)
1.2	Summary

Phase 2 (this contract) will look to further develop the Technology Readiness Level (TRL) of the PoC through continued research into a number of topics that were identified at the end of Phase 1.

The main objectives of Phase 2 will be to;

1. Continue to challenge Temporal Hashing [REDACTED UNDER FOIA EXEMPTION] in a more realistic RF environments [REDACTED UNDER FOIA EXEMPTION]
   a. Investigating different [REDACTED UNDER FOIA EXEMPTION] to maximise performance of Temporal Hashing.
2. Develop an [REDACTED UNDER FOIA EXEMPTION] compliant application that utilises the FPGA for Hash Generation and ARM processor for Temporal Analysis
3. Implement the Temporal Hashing application on the [REDACTED UNDER FOIA EXEMPTION] compliant [REDACTED UNDER FOIA EXEMPTION] and/or [REDACTED UNDER FOIA EXEMPTION] Systems
4. Develop different ways to present the output data from Temporal Hashing other than a table, via rest API, in partnership with the users.
5. Develop a hierarchical implementation with different hashing configurations for different signals/modulations

Dependant on time scale and interest, some or all of the above steps may be completed, however, as noted in Phase 1 of the work, there may be scope to focus on certain aspects objectives listed above and dive deeper into the technical details should the option arise and is of interest to both the contractor and Dstl.

1.3	**Background**
	Phase 1 of the work looked to develop a Proof of Concept (PoC) to determine whether it is possible to provide a low Size Weight and Power (SWaP), broad-spectrum RF classification [REDACTED UNDER FOIA EXEMPTION] in real-time with novel and efficient algorithms deployed on an integrated Software Defined Radio (SDR) platform. The final deliverable consisted of a set of video reports, architecture design document and software. The video reports demonstrate the PoC ability to identify and produce hashes of test signals transmitted from the [REDACTED UNDER FOIA EXEMPTION] to the [REDACTED UNDER FOIA EXEMPTION] comparison of generated hashes against those stored in a database [REDACTED UNDER FOIA EXEMPTION] and then final output to the UI on a laptop.

1.4	**Requirement**
	As per the main objectives in section 1.2, work to start when contract has been put in place. Duration of work to be defined by contractor, though will need to be completed before the end of FY21/22.
	Work will be carried out in a sprint format, with a monthly review between the contractor and Dstl technical partnering team.
1.5	**Options or follow on work** *(if none, write 'Not applicable')*
	Additional research options (that were discussed at the end of Phase 1);
	1. Testing Temporal Hashing [REDACTED UNDER FOIA EXEMPTION]
	2. Developing a hierarchical implementation with different hashing configurations [REDACTED UNDER FOIA EXEMPTION]
	3. Account for multiple IQ data streams [REDACTED UNDER FOIA EXEMPTION] on one SDR.
	These are to be discussed with the contractor to determine whether they will be in scope or out of scope for a Phase 2 delivery.

1.6	Deliverables & Intellectual Property Rights (IPR)						
Ref.	Title	Due by	Format	TRL*	Expected classification (subject to change)	What information is required in the deliverable	IPR DEFCON/ Condition *(Commercial to enter later)*
Proposal	Phase 2 Demonstrator Proposal	T0	Word Document	N/A	OS	A fully costed proposal and schedule for conducting Phase 2 of the work including; • Description of demonstrator implementation and improvements over current PoC • Timescales	
Updates	Sprint Review	Monthly Review	PowerPoint	N/A	OS	Each month, the contractor will present a Sprint overview to Dstl which will include; • Review of of deliverables • Progress report against project schedule • Update on technical progress • Risks/Issues • Any Other Business (AOB)	

D-1	Design Document	T0+1m	PDF	n/a	OS	Design document detailing proposed modifications/impovements to the current PoC design.	
D-2	Report	T0+9m	PDF/Video	n/a	OS	Description of hardware, design implementation, limitations, testing, assurance and recommendations for next steps.	
D-3	Demonstrator	T0+9m	Hardware	TRL4/ 5	OS	Hardware with associated software and ancillaries.	

***Technology Readiness Level required**

Notes- IPR should be inserted / checked by commercial staff before sharing with the supplier(s) to ensure accuracy.

1.7	Standard Deliverable Acceptance Criteria
	This could be 'as per Framework T&C's' once an appropriate framework is later confirmed (links to section 13 of RCA). Consider the timeframe for our review of deliverable(s) (acceptance/rejection).
1.8	Specific Deliverable Acceptance Criteria
	N/A

2.	Quality Control and Assurance
2.1	Quality Control and Quality Assurance processes and standards that must be met by the contractor
	☒ **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 below)
2.2	Safety, Environmental, Social, Ethical, Regulatory or Legislative aspects of the requirement
	N/A

3.	Security
3.1	**Highest security classification**

	Of the work	OFFICIAL SENSITIVE
	Of the Deliverables/ Output	OFFICIAL SENSITIVE

3.2	**Security Aspects Letter (SAL)**

	Yes If yes, please see SAL reference- *Enter iCAS requisition number once obtained*

3.3	**Cyber Risk Level**

	Very low

3.4	**Cyber Risk Assessment (RA) Reference**

	549774382 If stated, this must be completed by the contractor before a contract can be awarded. In accordance with the [Supplier Cyber Protection Risk Assessment (RA) Workflow](#) please complete the Cyber Risk Assessment available at https://suppliercyberprotection.service.xgov.uk/

4.	Government Furnished Assets (GFA)

GFA to be Issued -   No

If 'yes' – add details below. If 'supplier to specify' or 'no,' delete all cells below.

GFA No.	Unique Identifier/ Serial No	Description: *Classification, type of GFA (GFE for equipment for example), previous MOD Contracts and link to deliverables*	Available Date	Issued by	Return Date or Disposal Date (T0+) *Please specify which*

GFA-1					

5.	Proposal Evaluation criteria
5.1	**Technical Evaluation Criteria**

Commercial Assistance needed here before or after a requisition is raised. Framework evaluation criteria as per T&C's may apply.

Essential:

- Conform to the requirements in section 2.
- Provide sufficiently detailed suitable technical information to allow a technical assessment to take place
- Pass/Fail: All deliverables to be provided to Dstl as DEFCON 705
- Pass/Fail: exceeds the funding limit
- Pass/Fail: Work to be completed in timescale stipulated
- Pass/Fail: Demonstrate that the output from the work will sit in the TRL 3-6 space
- List any required GFA

Desirable:

- Require limited or, ideally, no GFA
- Achieve TRL level 5-6
- Desirable: Demonstrate strategic fit, end User support/pull
- Feasible: Not limited to but including - technical credibility, innovation, risk, expertise of team/capability
- Viable: costs and value for money, project delivery/plan

Marking scheme:

Technical assessors and stakeholders will use the following marking scheme.

ID	Criteria	Score	Weight
1	The bidder organisation has staff with relevant technical experience and knowledge in the area of ECM development being proposed This expertise should be demonstrated/outlined in the proposal	0 - 10	25%
2	The bidder organisation has undertaken similar technical activities/work previously, This experience should be demonstrated/outlined in the proposal	0 - 10	25%
3	The proposal describes a technically valid approach, and can be feasibly delivered within the given time and cost constraints	0 - 10	25%
4	The proposal provides an approach which has sufficient support /pull from the User community. The proposal address a challenge presented in the background.	0 - 10	25%

5.	**Proposal Evaluation criteria**
5.1	**Technical Evaluation Criteria**
	The scoring scheme is; 0 – The bidder has failed to address or meet the criteria in the marking scheme 3 – The bidder has addressed the criteria but has failed to provide adequate evidence that the bid/proposal could meet the criteria/criterion. 7 – The bidder has met the criteria. 10 – The bidder has exceeded the criteria Such proposals will be evaluated through the Most Economically Advantageous Tender – the highest combined technically and financially scored tender.
5.2	**Commercial Evaluation Criteria**
	Commercial Assistance needed here before or after a requisition is raised. Framework evaluation criteria as per T&C's may apply.