

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

<b>Title of Requirement</b>	MBECM Design Additional Transforms and Publish Events
<b>Requisition No.</b>	RQ0000018204
<b>SoR Version</b>	0.1

<b>1.</b>	<b>Statement of Requirements</b>
<b>1.1</b>	<b>Summary and Background Information</b>
	<p>This requirement concerns additional elements of work to be added the existing contract DSTL0000005304.</p> <p>The development of the Model-Based ECM Design approach shall be extended to accommodate the implementation of the following 2 additional maths transforms:</p> <ol style="list-style-type: none"> <li>1. Fourier Synchro Squeezed Transform (FSST).</li> <li>2. Wigner Ville Transform (WVT)</li> </ol> <p>Implementing these transforms is likely to require increased processing capacity on the target Software Defined Radio (SDR) and therefore migration from the current target SDR (USRP E310) to an USRP N320 is recommended.</p> <p>In addition, the Model-Based ECM Design approach shall to be extended to include the logging and publishing of events.</p> <p>[Redacted] under FOIA exemption</p> <p>Outputs will form a base example of best practice that can be exploited by internal to government and external industry staff developing in this field.</p>

1.2	<b>Requirement</b>
	<p><u>Additional Maths Transforms:</u></p> <p>A transmit and receive ECM architecture shall be implemented using USRP N320 SDR incorporating the FSST and WVT transforms. These alternative transforms shall provide plug-in alternatives within the SDR architecture (i.e. the current FFT transform model can be simply replaced by an alternative).</p> <p>The design process shall use a model-based design approach within the MATLAB and Simulink frameworks (version 2021a).</p> <p>[Redacted] under FOIA exemption</p> <p>[Redacted] under FOIA exemption</p> <p>[Redacted] under FOIA exemption</p> <p>[Redacted] under FOIA exemption</p> <p><u>Publish Events:</u></p> <p>The design shall log events. Publishing of these events shall be implemented to an event streaming platform. This shall be undertaken in `near real-time` with events reported as architectural decisions are made.</p> <p><u>Approach:</u></p> <p>Progress shall be monitored through quarterly technical reviews and Sprint planning meetings.</p> <p>The project will be delivered by Industry but closely supported by Dstl.</p> <p>Through the use of 1-4 week Sprint planning meetings (interval determined by goals set in the meeting) a collaborative and guided development process can be adopted. And compromises discussed and alternative implementations agreed as and when required.</p> <p>The use of MATLAB and Simulink is required and an understanding of these platform's toolboxes to support Model-Based Design architecture development. Toolboxes may include but are not limited to Simulink Design Verifier, Simulink Check, Model Advisor, HDL Coder, Simulink Coder.</p>
1.3	<b>Options or follow on work</b> <i>(if none, write 'Not applicable')</i>
	<p><b>Option 1</b></p> <p><b>The analysis of spectral content and the decision making based on this analysis will continue to be an area of interest.</b></p>

[Redacted] under FOIA exemption

	<p>The option to investigate and implement alternative transforms on the USRP N320 architecture will be considered in future work. The implemented transforms shall conform to the plug-in architecture delivered in previous work strands.</p> <p>The following shows a list of math transforms that have previously been down selected by Dstl for more in depth analysis and could be considered in this option:</p> <ul style="list-style-type: none"> <li>• Walsh-Hadamard Transform (WHT)</li> <li>• Continuous Wavelet Transform (CWT)</li> <li>• Fractional Fourier Transform (FRFT)</li> <li>• Hilbert Huang Transform (HHT)</li> </ul> <p>This should not be considered a definitive list and could evolve before this option is undertaken.</p> <p><b>Option 2</b> The implementation of event reporting will allow the communication of URSP decisions in near `real-time`. A future option shall consider the aggregation of this information into an larger system.</p> <p>[Redacted] under FOIA exemption</p> <p>[Redacted]</p> <p>[Redacted]</p> <ul style="list-style-type: none"> <li>• [Redacted]</li> <li>• [Redacted]</li> </ul> <p>[Redacted]</p> <p>[Redacted]</p>
1.4	<b>Contract Management Activities</b>
	<b>Bronze Contract Management</b>
1.5	<b>Health &amp; Safety, Environmental, Social, Ethical, Regulatory or Legislative aspects of the requirement</b>
	N/A

[Redacted] under FOIA exemption

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 Condition
D – 1	Working implementation of FSST Transform	T0+8 Months	Demonstration & Design Documentation	TRL4	[Redacted] under FOIA exemption	The successful demonstration of an RF transmit and receive architecture, incorporating the FSST transform deployed onto an USRP N320 SDR.  Acceptance of a MATLAB Live Script documenting the implementation and design decisions made in this package of work.	[Redacted] under FOIA exemption

[Redacted] under FOIA exemption

D - 2	Working implementation of WVT Transform	T0+10	MS Teams	TRL4	[Redacted] under FOIA exemption	<p>The successful demonstration of an RF transmit and receive architecture, incorporating the WVT transform deployed onto an USRP N320 SDR.</p> <p>Acceptance of a MATLAB Live Script documenting the implementation and design decisions made in this package of work.</p>	[Redacted] under FOIA exemption
D - 3	Working implementation of Publish Events functionality	T0+12 Months	Demonstration	TRL4	[Redacted] under FOIA exemption	<p>The successful demonstration of an RF transmit and receive architecture incorporating the logging and publishing</p>	[Redacted] under FOIA exemption

[Redacted] under FOIA exemption

						<p>of events deployed onto an USRP N320 SDR.</p> <p>Acceptance of a MATLAB Live Script documenting the implementation and design decisions made in this package of work.</p>	
D – 4	Architecture Models	T0+12 Months	MATLAB Project	n/a	[Redacted] under FOIA exemption	<p>Receipt of a MATLAB Project containing all models and model artefacts.</p>	[Redacted] under FOIA exemption

<b>1.7</b>	<b>Deliverable Acceptance Criteria</b>
	As per Framework T&Cs.

<b>2</b>	<b>Evaluation Criteria</b>
2.1	Method Explanation
	The Contractor's Technical Proposals shall be reviewed for compliance with the Statement of Requirements and may be subject to clarification and re-submission if not found to fully address the requirements, Commercial submissions will be assessed as Pass/Fail.
2.2	Technical Evaluation Criteria
	As this requirement is Single Source, Technical compliance with the SoR and broad vfm check
2.3	Commercial Evaluation Criteria
	<p>The commercial evaluation shall consists of the following Pass / Fail questions:</p> <ol style="list-style-type: none"> <li>1. Has the proposal been submitted a firm price, using the accepted RCloud rate card for non-competitive tasks?</li> <li>2. The proposal is fully compliant, and accepts, the RCloud v4 terms in full</li> <li>3. The proposal has included a Supplier Assurance Questionnaire (SAQ) in response to the specified Cyber Risk Assessment detailed in RCloud Document Part A, and the response has included the DCPD correspondence.</li> <li>4. The supplier has submitted One (1) Full Technical proposal excluding all commercial and price details, and has submitted One (1) Full Commercial and Technical proposal including all price data.</li> <li>5. The Supplier has acknowledged and shows content with the additional terms outlined in Part A as part of their proposal.</li> </ol>