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

Title of Requirement	Redacted under FOI Exemption
Requisition No.	Redacted under FOI Exemption
SoR Version	0.1

1.	Statement of Requirements
1.1	Summary and Background Information
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4.0	
1.2	Requirement
	Spaceborne distributed SAR offer a number of potential benefits, such as very-high azimuth resolution exploiting PRF/waveform diversity, single pass interferometry and tomography, 3D target point cloud generation, advanced clutter removal for GMTI, etc. However, several challenges need to be addressed in order to make possible the integration of the multistatic return in the formation of a coherently integrated product. Assuming a sufficiently accurate synchronization between the local oscillators on board of the platforms, the coherent integration challenge translates in a phase centre estimation problem, meaning that it is fundamental to have accurate knowledge of the instantaneous baseline. This is not always possible and advanced signal processing are required to compensate in uncertainties in the 3D baseline between a Tx/Rx pairs.
	This PhD will investigate state of the art techniques in radar signal processing to develop accurate multi-static SAR imaging. The techniques investigated will be applied in different domains, raw, range compressed and range-Doppler in order to identify the best solution to estimate baseline errors to be compensated in order to make the imaging coherent. Example of techniques



considered will be Digital Beamforming, Generalized MIMO ambiguity function [1], sub-sample registration techniques in the range-time domain [2], fine bistatic Doppler estimation using Fractional Fourier transform and Chebyshev based bistatic phase history [3]. The output of this PhD will be a framework able to integrate a number of solutions applicable to different of imaging modes of the multi-static

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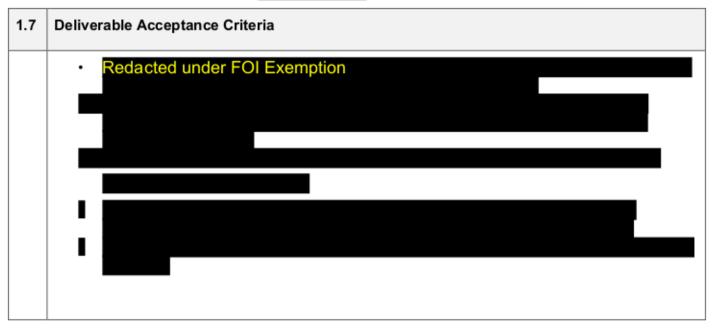
1.6	Deliverables & Intellectual Property Rights (IPR)					
Ref.	Title	Due by	Format	Expected classification (subject to change)	What information is r deliverab	
D – 1	Customer presentations	T0+6 Months and every 3 months thereafter	Presentation (.pptx)	Redacted under FOI Exempton	Presentation pack to include Update on technical progre	
D - 2	Technical reports (Reports at end of years 1 and 2, PhD thesis)	T0+12 T0+24 T0+36	Report	Reducted under FOI Exemptor	Technical details sufficient t as appropriate for academic	
D - 3	Redacted under FOI Exemption	T0+36	s/w	Redacted under FOI Exempton	Prototype s/w	

RCloud (version 4) Tasking Form – Part B (Statement of Requirement (SoR)

Version 1.0 (December 2020)

Page 4 of 5





2	Evaluation Criteria			
2.1	Method Explanation			
	Evaluating this based on technical compliance and affordability.			
2.2	Technical Evaluation Criteria			
	Confirmation that the proposal fully meets the Authority's Statement of Requirement. Pass/Fail			
2.3	Commercial Evaluation Criteria			
	The commercial evaluation shall be based on the following Pass / Fail questions:			
	Tenderer has submitted a commercially compliant bid.			
	Has the bidder submitted one (1) completed copy of RCloud Form Part C – Task Response Form (Firm priced proposal within a budget of Labour rates and price as per single source rates uploaded to R Cloud Pass/Fail Completion of Research Workers Forms Pass/Fail Completion of Statement Relating to Good Standing Pass/Fail Confirm acceptance of R Cloud Version 4 Terms and Conditions Pass/Fail Completion of DEFFORM 711 Pass/Fail			