Dstl R-Cloud
Commercial Services
Porton Down
Salisbury
Wiltshire
SP4 0JQ

E-mail: dstlrcloud@dstl.gov.uk

Statement of Requirement for the R-Cloud Sensing Strategic Capability

Introduction:

The Defence Science and Technology Laboratory (Dstl), which is part of the UK Ministry of Defence (MOD), is refreshing its commercial agreement for Science and Technology (S&T) research contracts, known as R-Cloud (Research Cloud).
MOD places extensive fundamental, experimental and applied research with industry and academic suppliers and wants to broaden access for this supply base, reducing the cost of trading with MOD and enabling agile contracting. R-Cloud complements MOD's other contracting mechanisms and academic and industry suppliers of S&T research are now invited to apply to join MOD's research supplier community within the Sensing Strategic Capability.

This statement of requirement relates to suppliers joining R-Cloud within the Sensing capability area. R-Cloud provides a low barrier to entry for potential suppliers and offers direct access to MOD's current and future research requirements. Academic and industrial suppliers of Sensing research are invited to apply to R-Cloud if you are a supplier of Science and Technology Research in this area.

Sensing encompasses a broad range of sensing approaches to: detect, track, recognise and identify threats; quantify threat materiel; support situational awareness; and provide information to tactical and strategic decision-makers. Support is required across MOD's products and services:

- **Research**. Original research and concepts to create new and enhanced capabilities for Defence & Security.

- **Requirements & Evaluation.** S&T support to the assessment, evaluation and delivery of current and next generation capabilities.

- **Specialist Advice & Services**. Specialist knowledge and facilities at readiness to meet priority needs.

- **Operational Support.** Rapid and deployed S&T to meet the urgency of operations.

Below is a summary of overarching research requirements for Sensing by capability element:

- **Sensor Hardware.** S&T to develop and de-risk sensor hardware to support ISR, situational awareness and threat detection. To provide passive and active: electro-optic, radar, X-ray, EM inductance and resonance; and electronic surveillance

collection capabilities. To include: wideband, multi-function detectors and antennas; low size weight and power (SWAP) collectors; sensor hardening, low observable apertures and the exploitation of novel materials.

- **Sensor Processing.** S&T to develop and demonstrate the extraction of information from sensors systems to support the detection, tracking and identification of objects, targets, activities and threats. To include processing methods to support autonomous collection and decision making, mitigation of EM threats to sensing capabilities, distributed sensing and multi-sensor fusion.

- **Autonomous Sensor Management, Interoperability, & Architectures.** S&T to enable the automated cueing, tasking and management of sensor systems, both within individual platforms, as part of distributed systems and within broader enterprises or collaborative partners. To include the development of interfaces, architectures and standards.

- **Novel Sensor Technology and System Concepts.** S&T to develop, model, experiment with, and assess, novel sensing technology and sensor system concepts. To include the development of capabilities to overmatch adversary threats to critical UK systems and provide Defence and Security with unique capabilities.

- **Position, Navigation and Timing (PNT).** S&T to develop and deliver technology to provide resilient position, navigation and timing capabilities in all environments. Includes support to UK Global Navigation Satellite Systems (GNSS), robust receiver technology, methods to reduce our dependency on GNSS (alternative navigation or 'Alt-Nav' techniques) and methods to generate and distribute time and frequency for Defence and Security applications.

- **Covert Imaging & Tagging, Tracking and Locating (TTL).** S&T to develop and deliver covert imaging and TTL solutions to support Def and Security operations. This capability draws across other Sensing capabilities.

- **Quantum Sensing.** S&T to develop and de-risk emerging quantum technologies for Defence and Security sensing applications. To include quantum enabled EM sensors (magnetometers, EO detectors and RF devices), atomic clocks, accelerometers, gyros and gravitational imagers.