

**Centre for  
EO Instrumentation**



**CEOI Industry Consultation Workshop  
Summary Report**

**Opportunities for Earth Observation Remote Sensing  
Technologies in Humanitarian Aid & Disaster Relief (HADR)**

**24<sup>th</sup> February 2022**

**London**



## 1. Introduction

Following grant support for a wide range of projects developing the next generation of Earth Observation technologies, CEOI ran this Workshop to inform senior industrial technical directors / managers of scientific progress. It also provided the opportunity to discuss the technical developments in the context of Humanitarian Aid and Disaster Relief (HADR), an application area with common interests for many sectors.

The consultation brought together industry representatives and leading academics across the fields of academia, aerospace, communications, defence, environment, instrumentation, and New Space organisations. It provided a fascinating opportunity for participants to contribute ideas, identify future needs, learn, discuss, and network.

The outputs will inform the focus of future CEOI and UKSA funding programmes. Specifically targeting remote sensing applications, the meeting aimed to:

- Understand the latest science and technology developments in remote sensing for EO;
- Discuss their adoption in HADR, an application area of interest to many sectors;
- Identify key barriers and technical challenges to their adoption;
- Investigate the possibility of brokering relationships with interested parties along the supply chains for promising new applications / markets;
- Create opportunities for attendees to network across the different communities.

The meeting was held under Chatham House rules; attributions of individual comments were not recorded and the input from the participants has been synthesised into a composite of views from the meeting. This report summarises those views, which will be incorporated, along with the science needs, into the CEOI strategy for the next generation of Earth observation / remote sensing instruments.

To set the scene, one HADR and three academic presentations were given:

- “Real World” Situational Awareness Challenges in HADR (Flt Lt James Payne - Ministry of Defence Strategic Command)
- Emerging mm / mw Sensing Technologies (Dr. Peter Huggard - Millimetre-Wave Technology (MMT) Group, RAL Space)
- Emerging SAR Sensing Technologies (Prof Stephen Hobbs - Cranfield University)
- Emerging IR / TIR Sensing Technologies (Dr Rob Wilson – Leonardo)

Early questions and discussion identified a wide range of challenges and application interests in the field. These were explored more deeply in the main discussion.

## 3 Conclusions – Areas of Synergy

Space science is able to explore new sensing modalities and technology improvements prospectively, enabling a wider range of innovations to be trialled earlier before development and deployment. Multi-user applications should be considered, but they should not act as a constraint at this stage of the innovation process.



Space science is a good driver of innovation at low TRL levels in this area. Once proof of concept has been established, the innovation can be picked up for commercial, defence or dual-use applications

Dual use of in-orbit demonstrators will deliver proof of concept earlier for the science, commercial and defence communities enabling earlier exploitation and deployment.

Common technical challenges include:

- Inter-satellite links and download speeds need improving to meet the latency requirements of many applications.
- Dynamic sensing and real-time communication for activity based & change monitoring
- Multiple use of apertures on a given platform for improve sensing performance & functionality
- Situational awareness in-orbit
- On-Board processing, miniaturisation, intersatellite links are all good candidates for industry “dual use” synergies.
- Multi-functionality is an area of interest

## **2. CEOI Technology Strategy**

CEOI will continue to support development of relevant Earth Observation technologies for the space sector, and to continue to look for non-space applications. The inputs and conclusions of the workshop, as summarised in this report, will provide an important input into the strategy development process for the CEOI programme.

Further information about CEOI projects and programmes can be found at <https://ceoi.ac.uk/>. You can also contact the CEOI Director, Dr Chris Brownsword, Tel: +44 (0)7825762527, Email: [cbrownsword@qinetiq.com](mailto:cbrownsword@qinetiq.com).