UKSA/CEOI Strategy for EO Instrumentation Technology

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Objectives

- A fresh look at the EO Technology Strategy and identification of priorities for a refresh
- Update on future EO missions – national, bilateral and ESA:
  - EO Mission Capability Review (EOMCR) process
  - The TRUTHS mission proposal
- Where next with EO Technology Strategy?

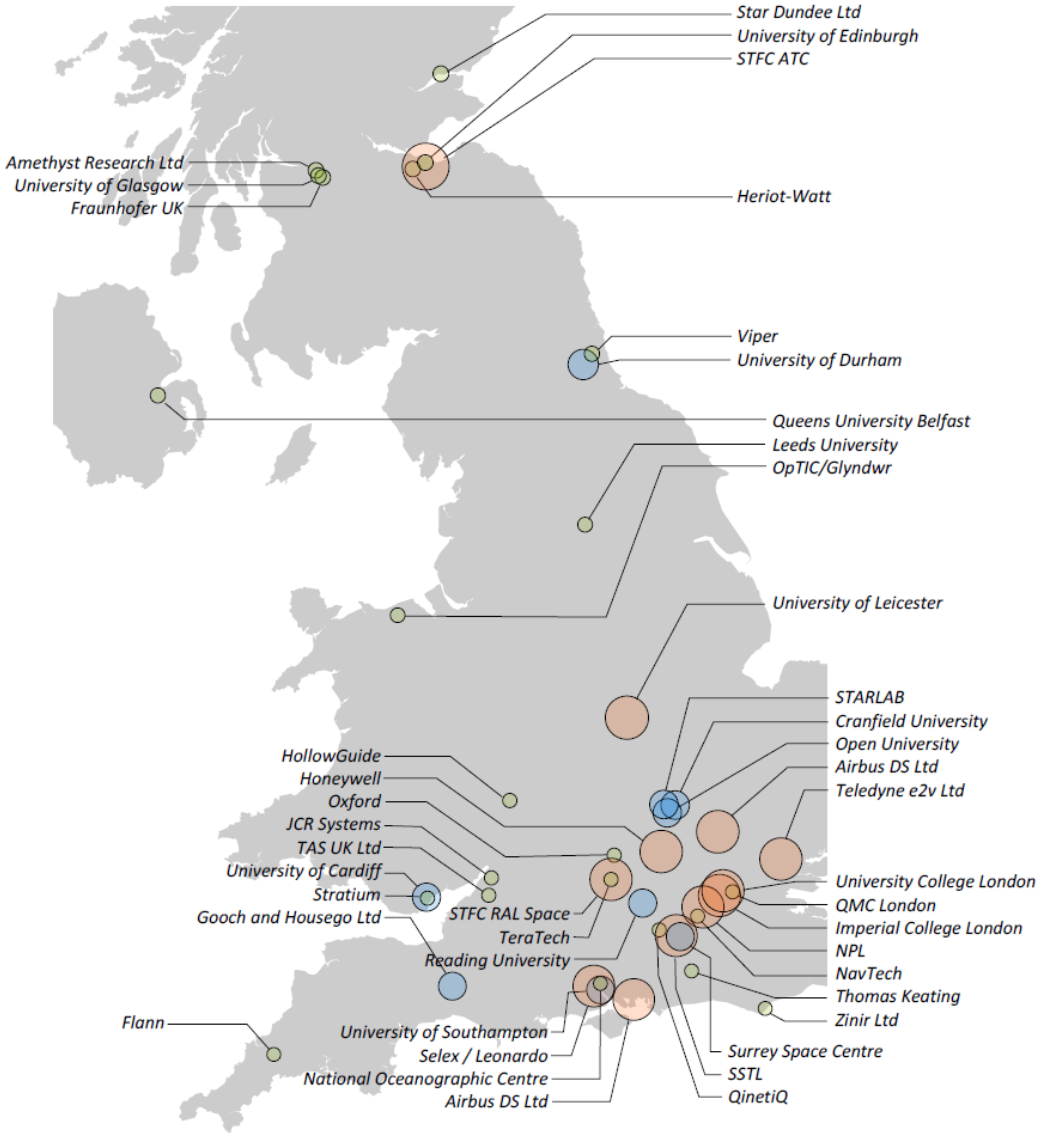
EO Technology Strategy
Vision and Objectives

Our 10-year vision is for the UK to become the world leader in new EO technologies

The four key objectives of the UK EO Technology Strategy are:

- **Economic Impact:** Develop EO technologies which lead to increased exports and economic growth
- **Innovation**: Keep the UK at the forefront of EO technology development by supporting new and innovative ideas that offer tangible benefit to future missions
- **Capability**: Strengthen capability where the UK already leads, has the potential to build a lead or to overtake existing capability elsewhere
- **Return on UK Government Investment:** Maximise the benefit to be derived from the UK funding to ESA and other institutional bodies

UK EO Technology Capability Mapping



Assessment of UK Strength vs Market

Technology Theme	UK Strength	Market Trend	Comments
Radar/SAR	✓✓✓	✓✓✓	Excellent & established UK capability; Significant commercial/operational markets
Passive microwave	✓✓✓	✓✓✓	Excellent and broad UK capability; Ongoing operational/science markets
Optical imaging	✓✓✓	✓✓✓	Excellent & established UK capability; Significant commercial/operational markets
Optical spectroscopy	✓✓✓	✓✓✓	Excellent and established UK capability; Significant commercial/operational markets
IR imaging	✓✓	✓✓✓	Growing UK capability; Growing commercial/operational markets
IR radiometry	✓✓✓	✓✓✓	Excellent and broad UK capability; Ongoing operational/science markets
IR spectroscopy	✓✓	✓✓✓	Growing UK capability Ongoing operational/science markets
LIDAR	✓	✓✓	Some UK capability; Viability of space-based LIDAR sensing to be established
Radar Altimetry	✓	✓	Some UK capability; Strong competition within Europe
UV spectroscopy	✓✓	✓	Good UK capability Limited user pull and mission opportunities

Selection of Proposed UK Earth Watch Mission

1. Initial Mission List

- 34 EO Missions proposed to EOMCR

2. Down select by UKSA Panel

- Purpose: EO operational, commercial missions not suitable as Earth Watch
- Timing: mission can be ready when needed
- Size: fit to the cost profile and delivery timeframe
- Risk: low risk mission (SRL/TRL/MRL at least 3)

3. CEOI funded Mission Studies

- Five 4-month mission studies (£36 K each)
- Mission definition and business case development

4. Final Mission Selection

- Interim outputs from studies used to assess mission suitability
- Final selection of TRUTHS based on best fit to Earth Watch criteria

5. Preparation of Proposal to ESA CMin 2019

- In progress

CEOI Funding of TRUTHS critical technologies

EO Technology Strategy implementation

TRUTHS

- Proposed as an Earth Watch mission to next PBEO (May 2019)
- If approved, will be put forward to ESA CMin19 in November
- CEOI funded critical technology developments
- Link to TRUTHS Presentation

EO Technology Strategy Refresh

Main Activities:

- Review contents of strategy document
    - New Technology Areas
        - E.g. Quantum Technologies, Lidar
    - New Space/Low Cost EO
    - EO sensors for HAPS
  - Assessment of EO technology strategy implementation
  - Effectiveness, positives and negatives
  - Updated capability review

Discussion

- What needs to be updated, what is missing?
- How can we keep the strategy relevant in a changing space world – ESA (CMin19), EU/Copernicus and a national programme?
- How could we make more use of the EO Technology Strategy?
- What ‘programme’ should UKSA have – is CEOI enough – should it expand / do other things?
- What can others do to ensure we get to the vision?
- How can we measure success?