

Challenge Workshop

**Future Science for EO, 31st March 2015,
College Court, Leicester**

Challenge Workshops



The objective of the CEOI-ST challenge workshops is to horizon scan, and to explore new drivers, challenges and requirements for EO instrumentation and technology.

Additionally ...

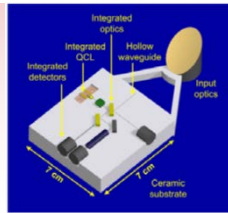
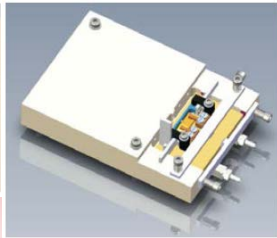
- To identify potential research needs, collaborative research or industrial application projects
- To support development of collaborative bid proposals.
- To identify UK / International sources of funding.
- To develop a longer term sustainable network(s) to grow research and industrial application capability.

BACKGROUND TO CEOI-ST

Some CEOI developments

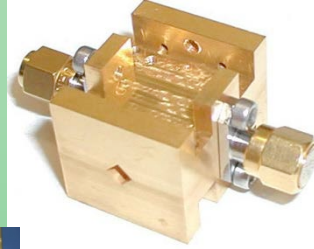
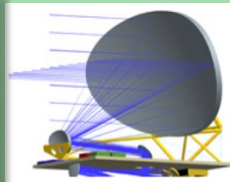


LIDAR & Laser Heterodyne Radiometry (LHR)

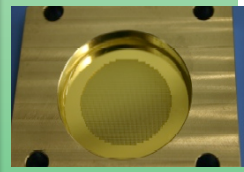


Hollow waveguide implementations
QinetiQ, Hollow Guide Ltd & RAL Space

Sub-millimetre wave technology



320-360 GHz sideband separating mixer showing (above left) the STEAM-R radiometer (SSC)
RAL Space, Airbus & QUB



Frequency Selective Surface
QUB



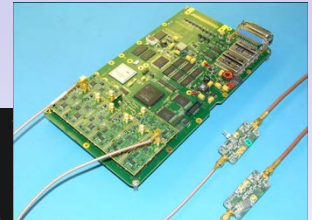
Meta-materials devices
Airbus, QMC



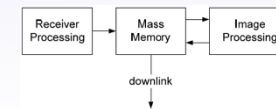
Wide-band spectrometer
STAR-Dundee

Microwave technologies

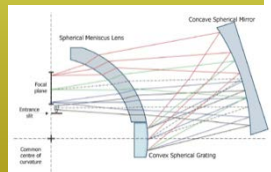
GNSS Reflectometry



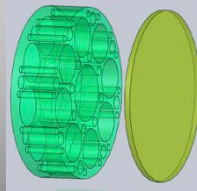
SSTL + NOC, Universities of Surrey & Bath



Compact concentric spectrometer for space and terrestrial use
U of Leicester & SSTL

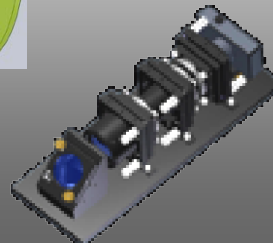


Optical instrumentation

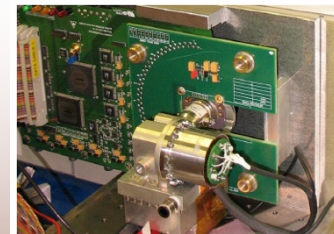


Lightweight mirror technologies
Gooch & Housego + SSTL

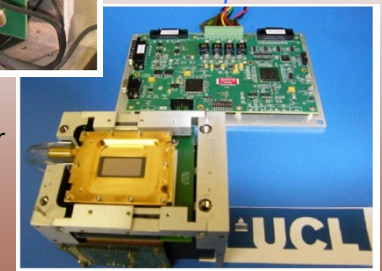
Microslice hyperspectral imager
U of Durham



Fourier Transform Spectroscopy with 2D TIR detectors
Airbus, SELEX & RAL Space



TIR Imaging for clouds
UCL



CEOI-ST Meetings and Workshops



Date	Event	Venue	Objective
31-Mar-15	Challenge Workshop: Future Science for EO - Needs and Missions	Leicester	To identify technology needs for ESA Earth Explorer 9 and other science-driven EO missions
21/22 Apr 15	CEOI Technology Conference	Cosener's House	2 day residential conference to show case current and emerging EO instrument technologies, and the needs of future EO missions
07-May-15	Industrial Consultation Workshop	London	By invitation. A networking opportunity to investigate microwave / millimetre wave & terahertz instrumentation.
May 2015	SME Event	Cardiff	Joint workshop with Welsh Government to promote space instrumentation opportunities to space industry and academia
04-Jun-15	Training Workshop - What makes a good proposal for an EO space mission?	Sheffield	Aimed at potential Principal Investigators and teams for next ESA Earth Explorer Call
8 th to 11 th Sep 15	National EO Conference	Southampton	Joint national EO conference with RSPSoc and NCEO, title 'Earth Observation in the Sentinel Era'
07-Oct-15	Challenge Workshop -Airborne Demonstrators	Edinburgh	To investigate the potential offered by airborne demonstrators as a step to space qualification and to learn from the practical experience of others

Technology Calls

Call	Grant Value	Closing Date	Outcome/Comments
7 th EO Call	£2.2M	Dec 2013	18 Fast Track/Pathfinder projects funded
8 th EO Call	£3.2M	Sep 2014	4 Flagship EO projects and one Feasibility study
1 st NSTP2 Call	£3M	Oct 2014	29 Fast Track/Pathfinder projects funded so far
NSTP2 GEI Calls	£200K pa	Quarterly	11 mini-studies selected in first 2 calls
NSTP2 Flagship	£2M	Jun 2015	Call now underway
EO Mission	£0.5M	July 2015 tbc	Details to be confirmed
9 th EO Call	£2M tbc	July 2015 tbc	Details to be confirmed
2 nd NSTP2 Call	£3M tbc	Jul 2015 tbc	Details to be confirmed

EO Calls target developments and technologies for future EO missions

NSTP calls support a broad range of technologies for space

NSTP2 Flagship Call

- Targets high business/growth impact ‘Flagship’ space technology research and development projects
- Projects must align with the National Space Technology Strategy and the related technology roadmaps
- Budget is £2M
 - Agency preference is to fund two £1M projects
- Projects to start ~Sept 2014, 24 months max. duration
- Call closes 2nd June 2015
 - Intention to Bid by 27th April 2015
- Full details on www.ceoi.ac.uk

NSTP2 GFEI Calls

- Grants for Exploratory Ideas are mini studies of up to £10K value and up to 6 months duration
- Aimed at space technology activities such as: early TRL innovation; technology proof of concept; small technology developments; establishing new industrial research collaborations; market studies; or studies into spin in or out of technologies for space.

Closing date for the 4th Round: 2nd June 2015

See www.ceoi.ac.uk for further details



Science Missions

- What makes a good science mission?
- Clear funding route through ESA
EOEP
- Future roles for bilaterals & national?
- Links to Copernicus and Met missions

Aims for the Day



1. To explore the future science needs for Earth Observation
2. To understand need for support for ESA EE9 and other Science-driven Missions
3. To develop an understanding of how CEOI-ST can further support science-driven EO missions

Agenda



- 10.30am Introduction and aims (PSM/MJ)
- 10.40am Science directions for EO – an NCEO perspective
Prof. John Remedios
- 11.10am New ESA strategy what does it mean for EO?
Prof. Chris Merchant
- 11.40am The UKSA view on future EO directions – Maria Adams
- 12.10am What has CEOI supported to date?
Paul Monks/Mick Johnson
- 12.30 -1.30 Lunch.
- 1.30-3.30 Breakout Sessions – science themed
(Atmosphere, Ocean, Cryosphere, Solid Earth & Land)
- 3.00pm Coffee and tea
- 4.00pm Summary of discussions
- 4.30pm Close of Meeting

Question for Breakouts



- What are the science areas of greatest importance to UK researchers for future Earth Explorer (EE) style missions?
- What game changing technologies could UK organisations offer that could enable future science driven missions?
- How can CEOI-ST and UKSA best support EE9 bids?

Outcomes

- The output of these workshops will be a short challenge report with a view to actionable outputs
- Feed through of main points of discussions to UKSA and NCEO/NERC