



Maximizing the potential of Earth Observation for the economy, science and society.

A new era: 2017 – 2040

Beth Greenaway,
Head of Earth Observation

May 2017

<http://www.bis.gov.uk/ukspaceagency>



Earth Observation Team: with links to programmes and expertise across the Agency



Beth Greenaway
Head of EO

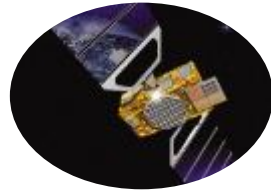
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**EO Data and Ground
Segment Advisor**

SEO post (Vacant)
**EO Industrial Sector
Lead**

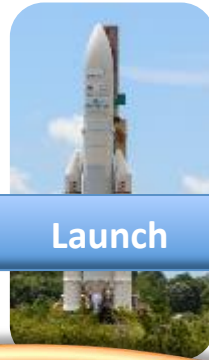
SEO post (Vacant)
**EO EU Programme
Advisor**

Working in partnership with EU, ESA, Defra and X Whitehall, Research Councils International Agencies , Industry and academia researching, building or using EO hardware, software and data.



Agency Ofcom

Spectrum & Licences



Launch



Academia Industry

Operations

ESA



Data & Ground Segment

Agency RAL Industry Non EO data

Industry ESA Global agencies National

Development

Local & Devolved Administrations



Space Infrastructure supporting Earth Observation enabled services

EU (H2020)

National

ESA

Research

Agency Research Councils Innovate UK



Central Government

Information & Services

Space Enabled markets

General Public

Academia

Industry

Local Government

Space Industry



EO Priority Actions 2015- 2017



- A. Define and Lead EO strategy and policy development
- B. Enable growth of the EO and related sectors
- C. Position UK as a global leader in use of EO in applications and services
- D. Sector sponsor for the EO community (nationally and internationally)



Achievements since June 2015

- Implementation Plan
- CMIN16- UK is the lead funder of EO activities in ESA – E285.8m
- Copernicus influence data and space elements
- French bilateral missions
- CEOS / GEO UK office and increased presence
- Climate Data Zone
- Space for Climate
- CEOI 2020
- Ground Segment Vision



A (subtle) changing philosophy



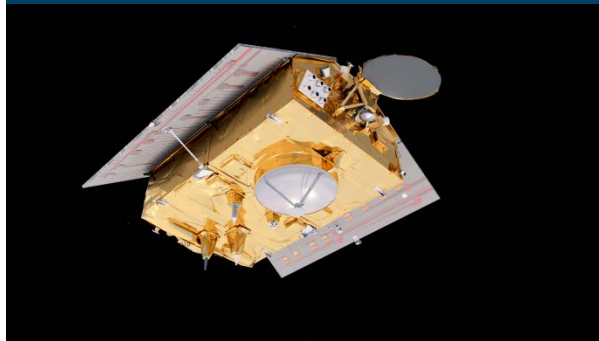
The UK Space Agency is seeking to ensure that the UK's participation in Earth observation is as strong as possible and that it is recognised for the role it can play in delivering a sustainable service based economy.

By 2040 satellite Earth Observations will provide the data underpinning mass market and business applications, global cutting edge science and policy and operational decision making.

Therefore ..in setting actions and priorities, we should exploit the fact the UK is the lead funder of EO in the European Space Agency to develop a broad and deep ecosystem of companies big and small dealing in the entire spectrum of earth observation issues from early research and technology development, through manufacture and launch, through the infrastructure and services needed to move, validate, share and interpret the data into a format suitable for use. We should export EO skills and technologies worldwide, negotiate a new relationship with Copernicus and plug the emerging EO skills gap to fill the jobs that will be created in the UK.

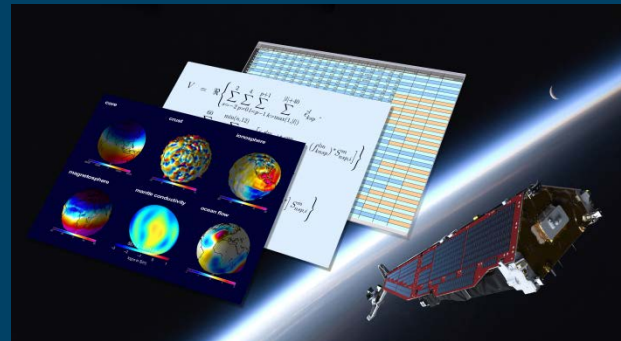
What will EO look like in 2040

► Missions Data use and processing Use



2000 Public

2040 Public / private



Public

Public / private



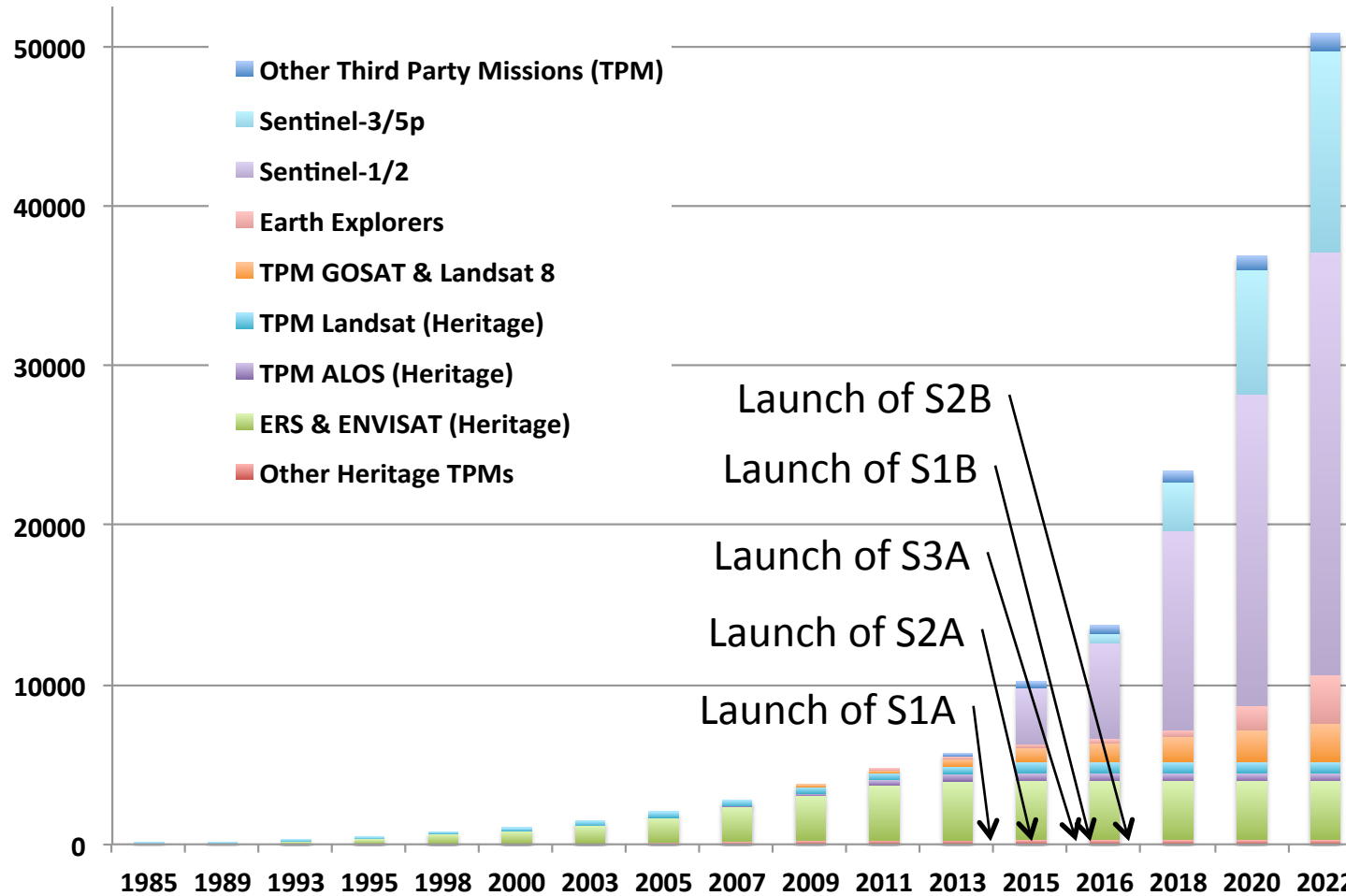
Science and Met applications

Mass markets & Big business/
public policy, Met and science

EO Data Volume is increasing



Terabytes
(TB)



What are the Game changers?



- Data – high res / high frequency / video / commercial constellations
- Digital economy IT / cloud computing / big data analytics
- Brexit – industrial landscape
- Copernicus long term guaranteed operational data
- Space launch capability
- International policy
- Etc etc
- PARADIGM SHIFTS IN EO ESA ESRIN 11th May

EO Plan 2017 - 2040



Contents

- What is Earth Observation?
- The Importance of EO
- The future EO market / ecosystem in 2040
- Key partners – global and national
- The UKSA roles
- Key actions and priorities
- Evaluation Plan



Key Priorities 2017-2021



Markets	Technology	Data		
X	X	X	1	Leveraging return from ESA - £ and European positioning
X	X	X	2	Maximising the Opportunities in Copernicus and EU programmes and ensuring optimal data access post Brexit
X	X	X	3	Positioning EO as a fundamental infrastructure and tool underpinning industrial strategy , policy and societal needs
X	X	X	4	Foster global innovation and growth (applications , technology, bilateral etc)
x	x	X	5	Skills and education plan

Thematic Areas

- Markets – from Space Growth Partnership reports
 - Climate services
 - Polar and ice regions services
 - AN OTHER
- Technologies – from CEOI Technology Strategy
 - Synthetic Aperture Radar
 - Passive microwave
 - Optical imaging
 - UV/visible/NIR spectroscopy
 - IR radiometry
 - IR spectroscopy
 - Applications and Services

Thematic Areas



➤ Data Access and Use

- Creating a sustainable supply via
 - Policy and regulations (CEOS and GEO data groups, ESA and Commission relationships, high res data security policy)
 - bilateral and commercial suppliers relationship,
- Enabling infrastructure – new programme?

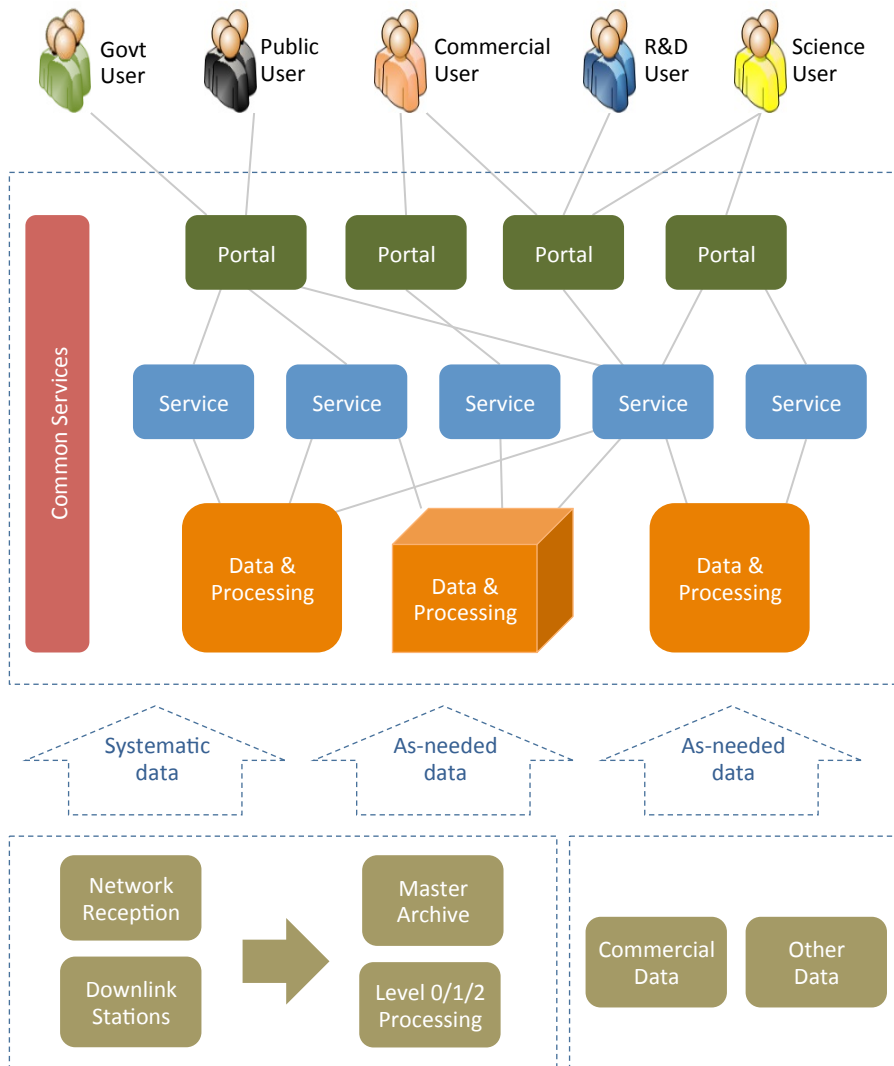
Data Access and Exploitation Vision



“The UK will be the first choice access point for global users and providers of satellite data, *leveraging the UK’s leading roles in Climate Science, Land and Coastal Monitoring* for example*, delivering growth over the long term by maximising the exploitation of EO data and services by public, academic, and private sector users, through a reliable, open, secure and sustainable capability.”

*subject to the output of the Space Growth Partnership.

User driven data access system



- Schematic models similar to ESA, EC, and industry
- Driven by *users* need from the ground segment (to do their research, conduct business, set policy etc.)
- All stakeholders should be able to participate and contribute . This implies flexibility and interoperability.
- 4 options under discussion
 - Cost Benefits analysis complete
 - Details and way forward by Summer 2017

Users are served through *portals* which connect them to *services* which make use of underlying *data and processing* infrastructure

Data is collected from satellites and other sources and piped in to this infrastructure, on an operational basis with timely availability.

So what will change?

- Emphasis on International programmes
 - CEOS and GEO coordination office at NECO. Technical groups draw on and export UK strengths.
- Strategic approach to ESA
 - Using the ECSAT presence
 - Thinking about the long term (getting in early, proactive promotion of UK priorities)
 - Using domestic funding wisely - Technology Strategy.
- Skills and Education Plan – what do we need to do?
- Proactive dissemination of ‘good news’ to the non specialist

Evaluation Plan

- What will success look like?
- How do we know we are on track?
- How do we collect the data we need on the way?
 - ❖ Number of people interested in EO
 - ❖ Value of the EO market
 - ❖ Strategically important returns from ESA EO subscription
 - ❖ Awareness of EO and value to society
 - ❖ Potential for EO post Brexit – a broader and deeper market?
 - ❖ Economic and society value?

What does success look like to you?

Finally



 @spacegovuk



Essential: EO is an essential component of the infrastructure and contributor of economic growth, data and science.



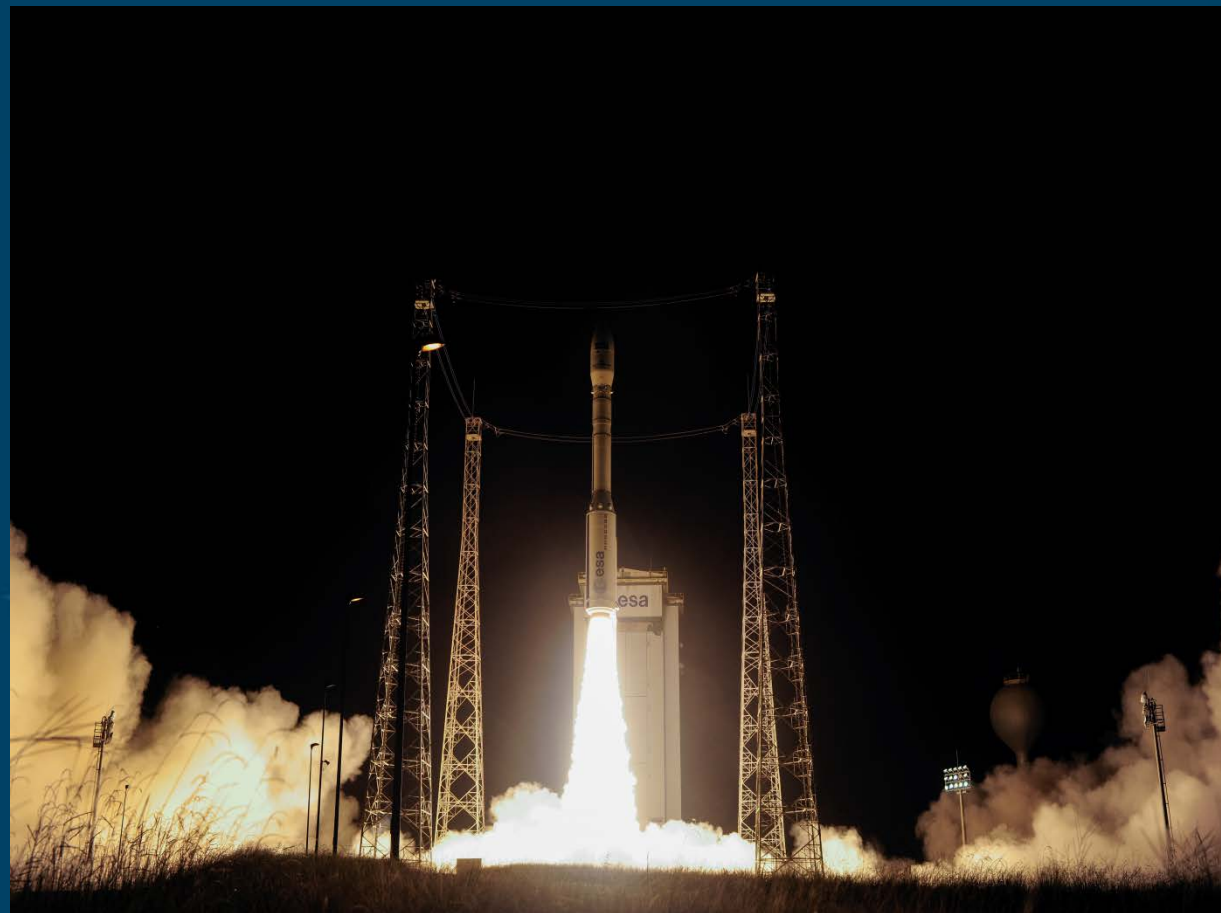
Exciting: The UK has secured a lead funding position of EO in ESA and we can rightly and proudly grow the sector



Exponential potential: Technology and business models are changing. Partnerships are essential to realize the next generation of science policy and economic benefits of EO can bring but it all starts with an idea.

**If you have an
idea / barrier/ issue
and you think we can help,
Talk to us at
UK Space Agency or CEOI**

Any Questions?



EO Strategic Implementation Plan

- EO Strategy 2013 – 2016 and EO Strategic Implementation Plan.
- New plan needed 2017-2040
- Sits under the
 - National Space Policy,
 - Space Growth Strategy (Industrial Strategy)
 - Accounts for the UKSA EO actions in the Space Growth Partnership

