



Department  
for Environment  
Food & Rural Affairs

# The Opportunities from Space

**Ian Davidson**  
**25<sup>th</sup> March 2015**

# Defra Responsibilities for UK EO policy

- The EU environmental monitoring programme



Voluntary global partnership

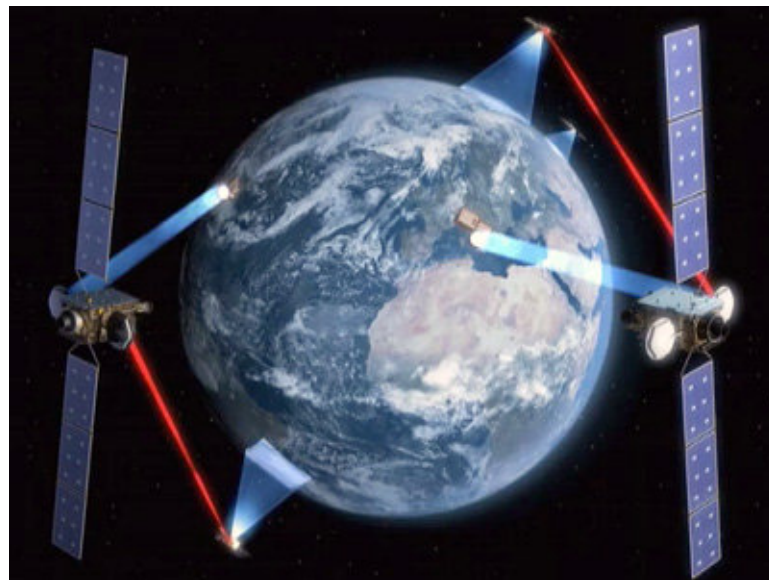


# Defra Opportunities from EO & Copernicus

## EO dual purpose:

- Operational tool
- Sources of evidence

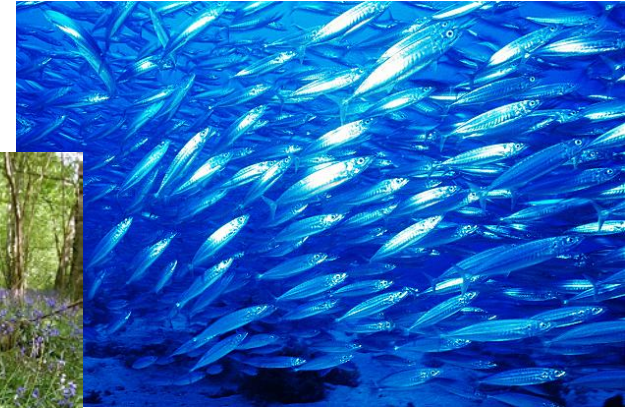
New operational sources of data such as from Copernicus offers multiple opportunities to develop new means of monitoring environmental health and condition.



# Satellites and Defra

## Use of GPS technology for research and monitoring -

- Forestry Commission
- Marine Management Organisation
- Rural Payments Agency
- Environment Agency



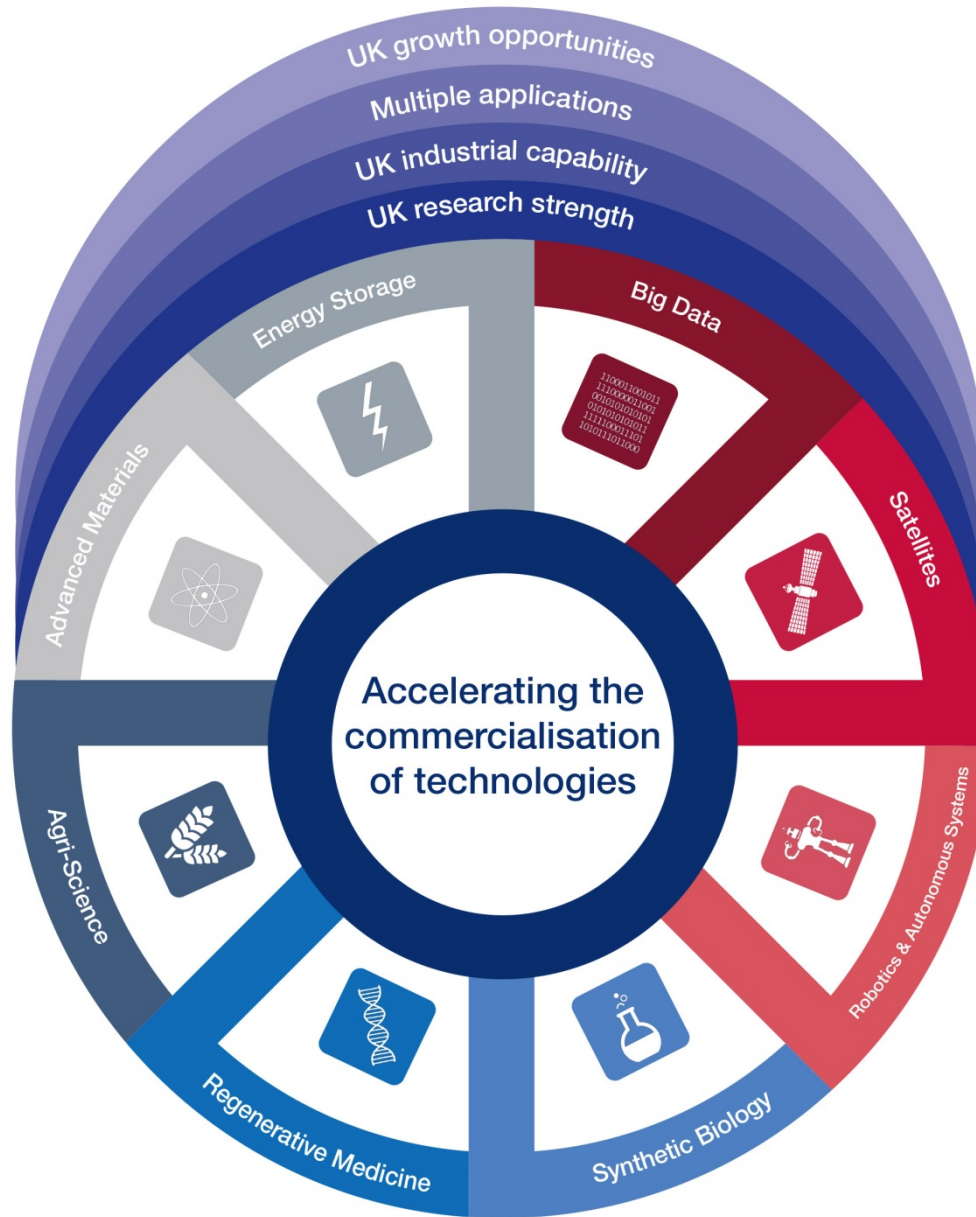
thetimes.co.uk



## Earth Observation data -

- Environmental Agency
- Forestry Commission
- Rural Payments Agency

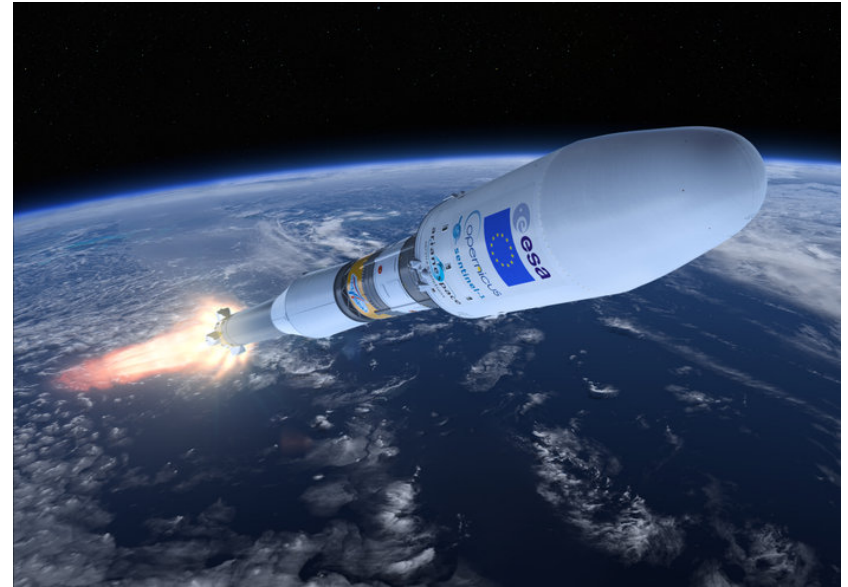
# Eight Great Technologies



**Technologies  
in which the  
UK is set to  
be a global  
leader**

# The Perfect Storm....

€3.8bn investment in Copernicus will result in 8TB/day of new free data on the environment



The UKSA is investing in Government to ensure optimum uptake of satellite technologies

# Copernicus Space Infrastructure

---

## Sentinels

Five EO missions developed specifically for Copernicus



Sentinel 1



Sentinel-2



Sentinel-3



Sentinel-4



Sentinel-5

**PLUS**

## Contributing Missions

Third party EO missions offering their data to Copernicus (EU/ESA MSs, EUMETSAT, commercial, international)

**AND**

## High Precision Ocean Altimetry (HPOA) mission

Sentinel-6 = Jason-CS

# Six Copernicus services

---

## Services monitoring Earth systems



Land Monitoring



Marine Monitoring



Atmosphere Monitoring

---

## Horizontal services



Emergency Management



Security



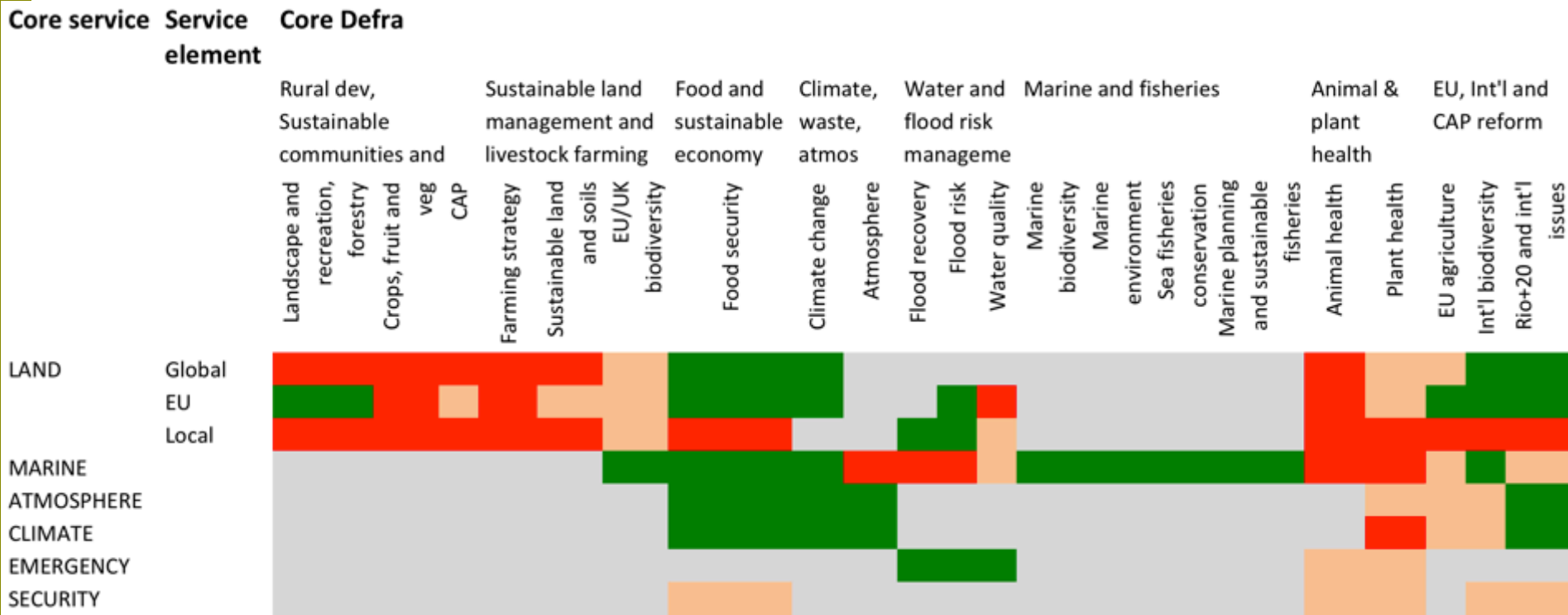
Climate Change

---

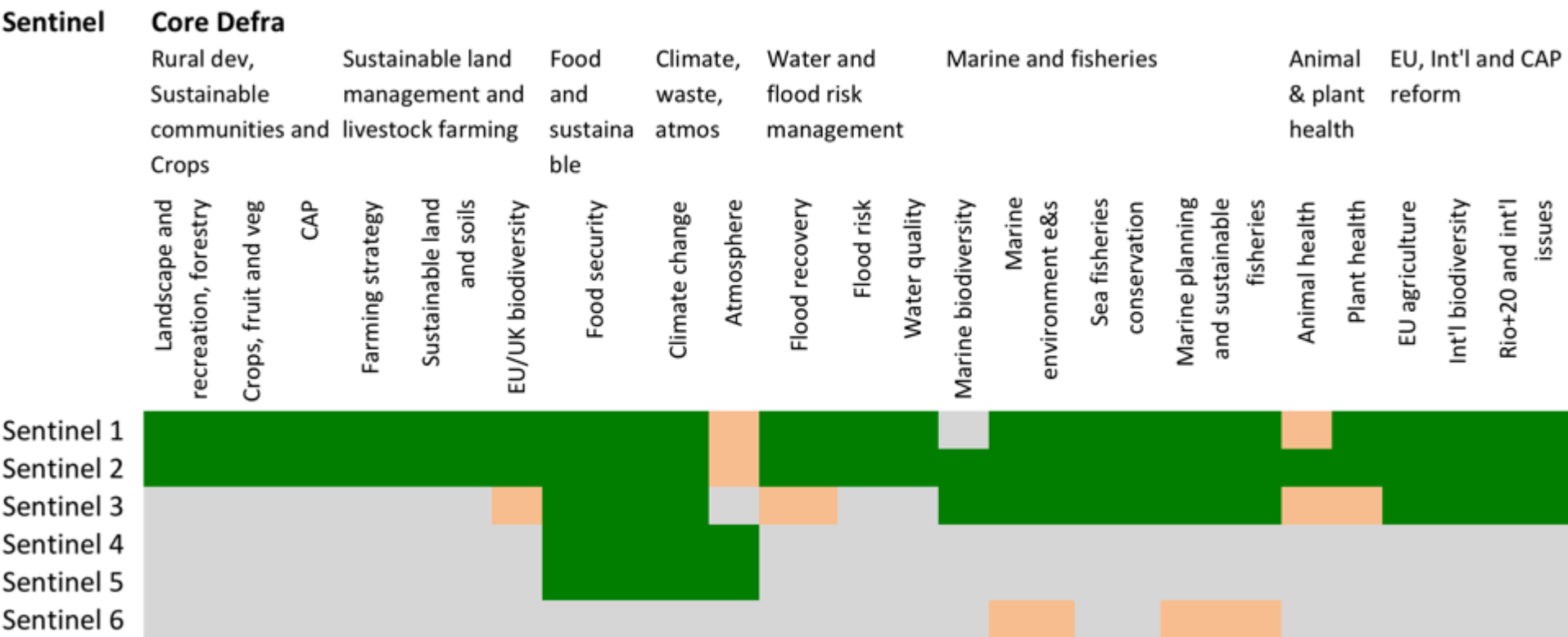
⇒ **Output: Value-Added Information**



# Copernicus service mapping - by policy area



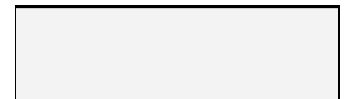
# Sentinel data matching – by policy area



# Areas for 'quick wins'

#	Application project	Description	Target benefits	Value (p.a)	Policy beneficiary
1	Avoiding disallowance	Test RPA LPIS system for potential disallowance. Prescribe remedies to improve system prior to audit.	Efficiency: Reduce disallowance by 10-20%. Policy: Better customer service	10-20% saving on disallowance would save £4-8m per annum	CAP reform, RPA
2	Streamlining inspection regime	Provide current data to the FindIT map system for situational awareness	Efficiency: Two-level approach - fulfil certain inspections 100% - save Inspector time Policy: Better customer service	5% efficiency gain could save £0.5-1m p.a.	CAP reform, Better regulation, Inspection Agencies
3	National Forest Inventory updates	Regular updates to Inventory and input to risk analysis system	Value to Inventory		Forestry Commission
4	Implement the MEOW framework	Develop enhanced nationwide habitat products	Policy: - Better policy decisions - Optimised local and national decision making	Difficult to estimate the economic value.	EU/UK biodiversity
5	Develop rapid flood mapping response system	Combine Sentinel 1 with commercial SAR to provide daily coverage of flood scenarios allowing response planning and targeted relief effort.	Save airborne flights Produce daily flood extent and depth mapping	Work required to evaluate potential savings on a per-incident basis.	Flood risk and recovery, EA

#



# Summary

- Range of applications and scale of potential benefits demands coordinated approach
  - Tackling large benefit areas (e.g. avoiding disallowance) could unlock range of smaller ‘wins’
- Benefits to Defra will be many £10m’s over the next 10 years
  - But will take time to develop right applications and engender new ways of operating
- Many Copernicus services inappropriate to UK needs
  - Need to develop UK-specific datasets and services
- Wide range of skills and expertise required to extract maximum value from EO
  - Need to work smartly across Network and with external partners

# How is the Defra network preparing to ensure benefits from Copernicus data?

## EO Data Steering Group

Bringing together those responsible for IT systems and data management with experts in the use of EO data to solve challenges together

## EO Policy Group

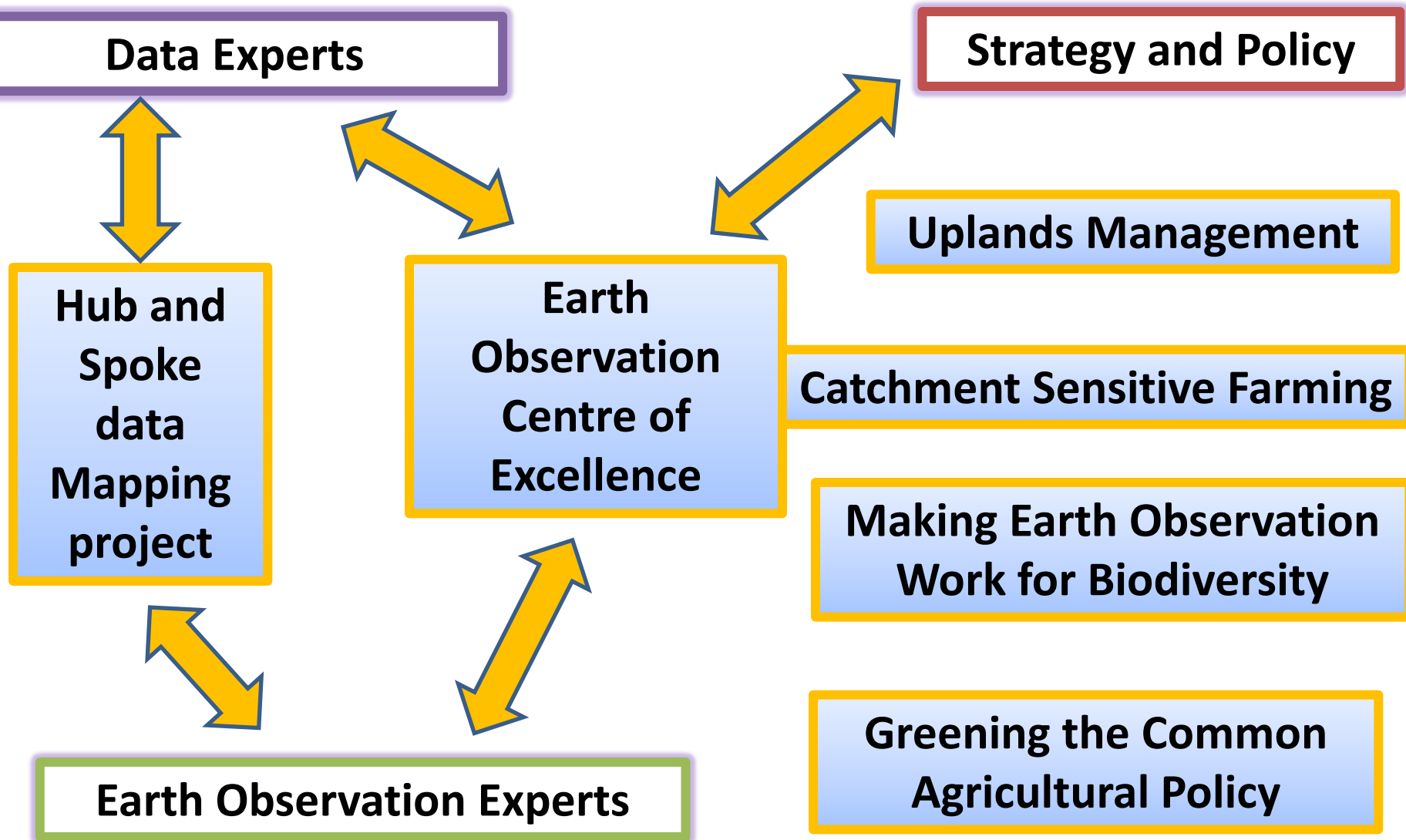
Bringing together policy experts from across Defra and teaching them how their policy area could benefit from the use of Copernicus / EO data

Defra  
EO  
Team

## Forum on EO Applications

Bringing together the users of EO / Copernicus data to share best practice, avoid duplication and facilitate collaboration

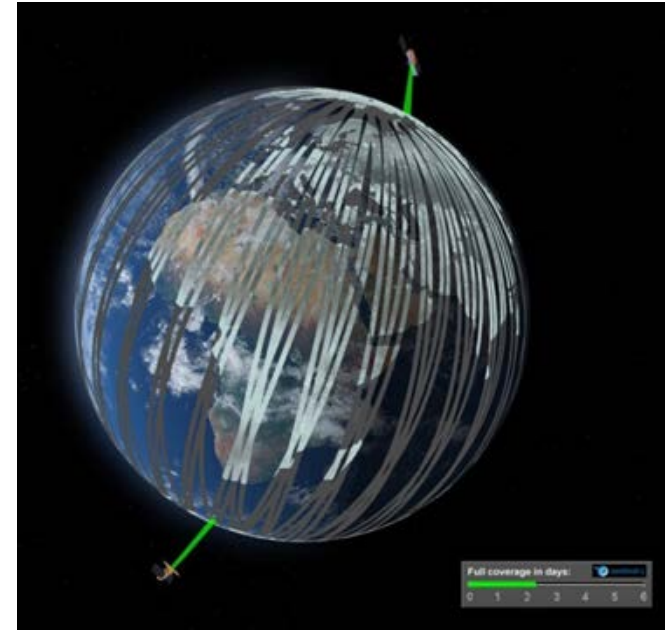
# Current Defra work for EO and Copernicus



# Defra EO Roadmap

UKSA SSGP requirement:  
Roadmap for the use of  
Earth Observation in Defra  
and the wider network

**Vision:** By 2020 satellite  
data are playing an  
indispensable role in policy  
development and  
operations across the Defra  
network





# Maximising UK opportunities from EO and Copernicus

- ❑ Increased partnership working - policy, research and industry
- ❑ Shared EO vision and capabilities - national & international
- ❑ Engagement between policy end users and industry
- ❑ Transformation in data analysis
- ❑ Investment in EO skills base: Training and development
- ❑ Citizen education

