EO in the context of UK Space Agency policy and actions in 2014

Update for NCEO/CEOI-ST 2014

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CEO, UK Space Agency

26 June 2014

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

Agenda

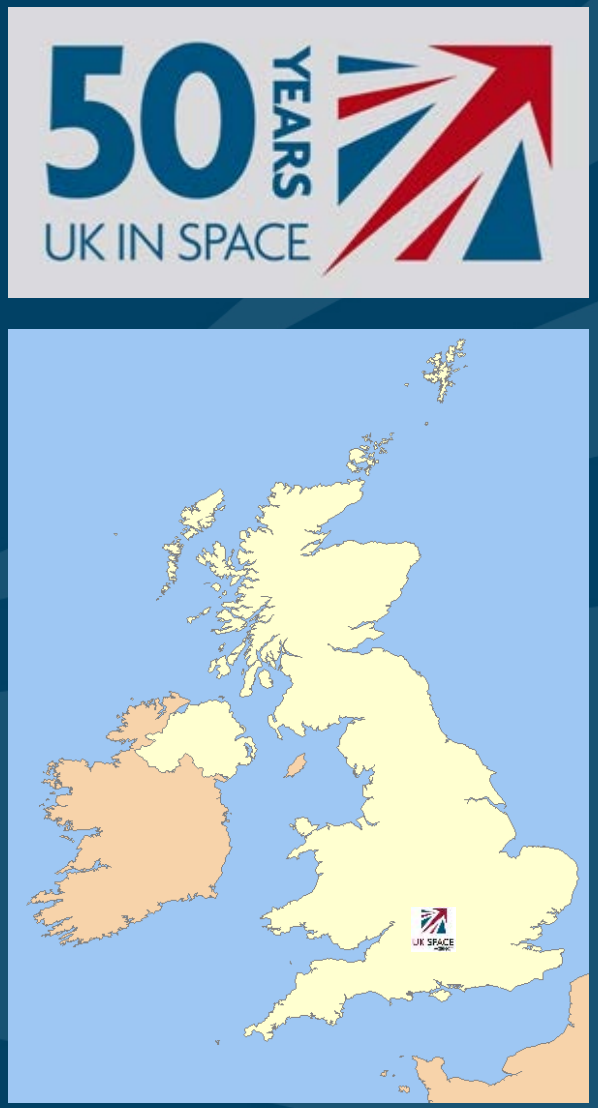
Reminder of Agency strategy, policy and organisation

What's going on at the moment and what's on its way

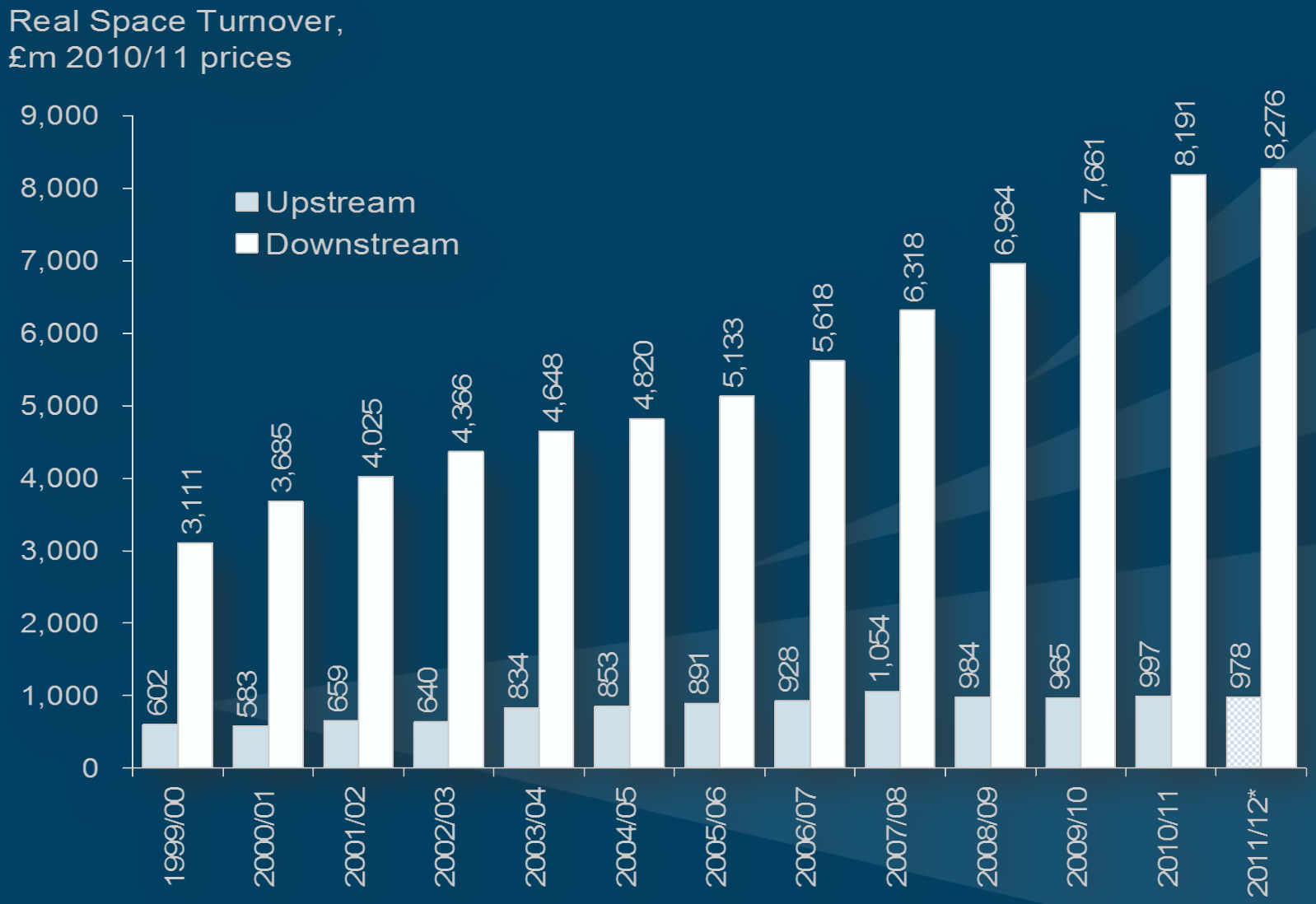
EO status, priorities and opportunities

The UK and Space

- Over ***50 years*** involvement in space
  - As a **provider** of systems to the world
  - As a **user** of data services at home
- The ***UK Space Agency*** leads our civil space programme
  - Policy advice to Ministers
  - Regulation
  - Investment (>£300 p.a.)
  - 60 staff
- Our goals are achieved via national, European and international partnerships

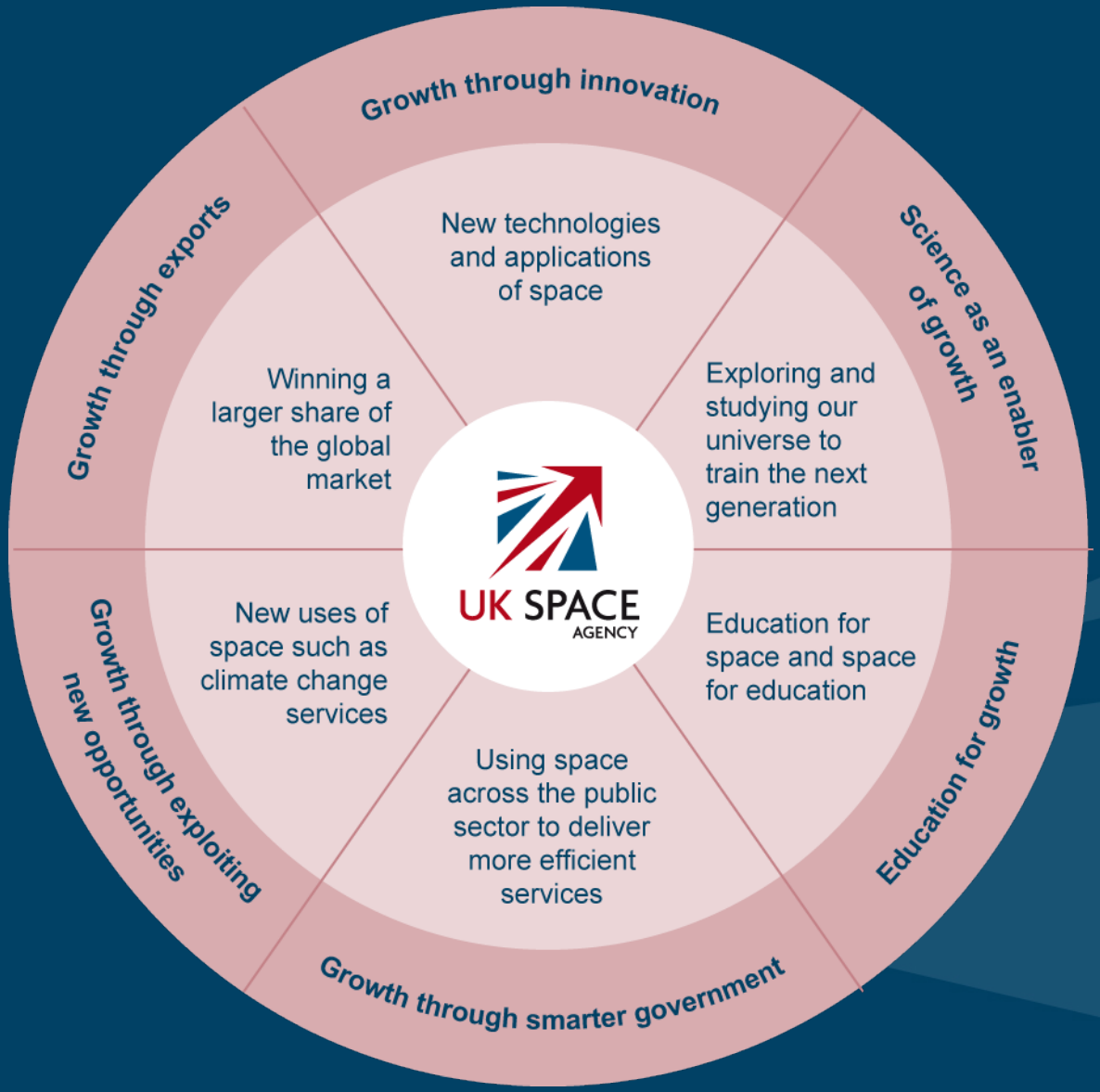


The UK Space Market



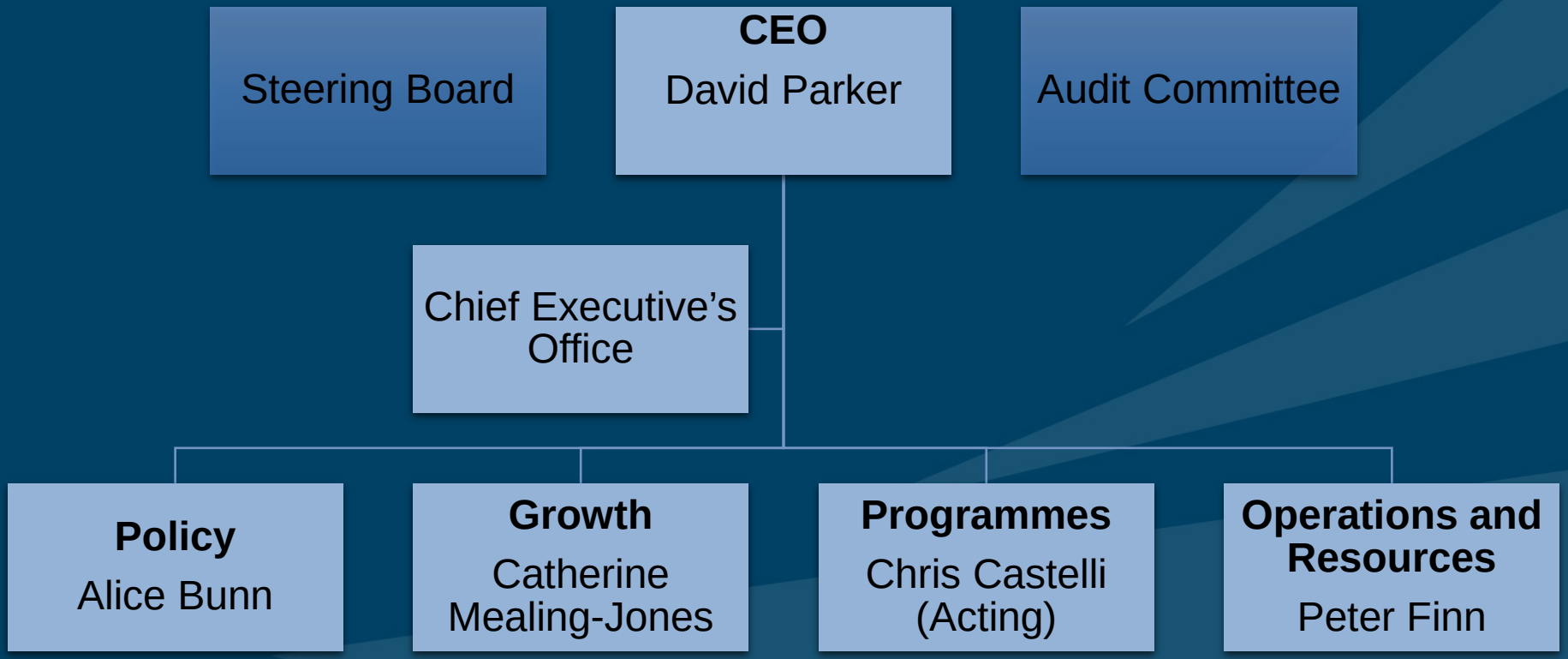
Source: Oxford Economics

Civil Space Strategy – six themes



Goal:
£40B sector
by 2030

Our organisation has evolved to match our goals



2013 – A landmark year

Partnership with - ESA

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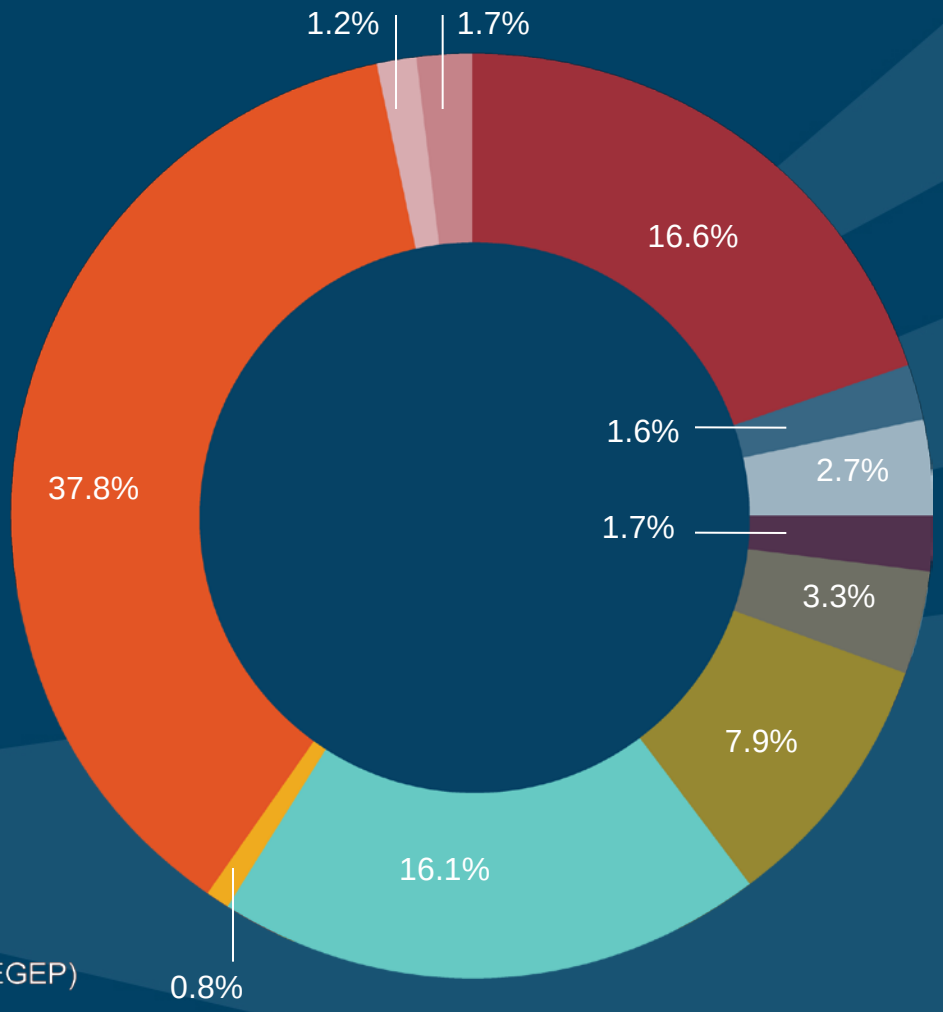
16.6%	Telecoms technology (ARTES)
1.6%	Human spaceflight technology
2.7%	Mid-TRL technology (GSTP)
1.7%	Robotic expoloration technology (MREP-2)
3.3%	GMES Space Component 3 + Climate Change Initiative
7.9%	MetOP 2G
16.1%	Core Earth observation science and technology (EOEP)
0.8%	Space Weather (SSA)
37.8%	Space Science
1.2%	Life & Physical Sciences (ELIPS)
1.7%	General Budget (studies, low TRL technology, tech transfer, data preservation, education) + CSG 16.6% navigation satellite technology (EGEP)



New UK Commitments at ESA Ministerial 2012

Ongoing National Programmes

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Feasibility Studies for Innovation in Space

(TSB)

Exploration national programme (UKSA)

Cosmic Vision National

(UKSA)

Centre for Earth Observation Instrumentation

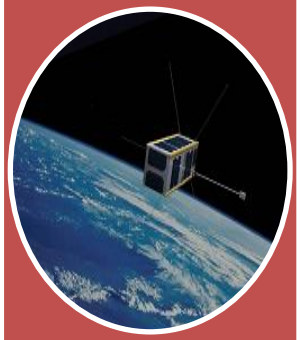
Space for Smarter Government

(UKSA)

TechDemoSat-1

microsat

(TSB + UKSA)



UKube-1

cubesat

(TSB + UKSA + STFC)

Basic R&D through to flight demonstrations and applications

Launch of UKube-1: July 2014

- First UK national cubesat
- Fully functional 3-axis stabilised spacecraft weighing 3kg
- Built by SME Clydespace plus various universities and industries
- Success will underpin export opportunities

Partnership with business: NovaSAR

- **S-band (3.1-3.3GHz) Synthetic Aperture Radar**
- **Low cost, lightweight small satellite design**
- **Co-funded investment by UK Space Agency and industry to demonstrate NovaSAR in-orbit**

Example applications

- **maritime security**
- **flood mapping**
- **forestry monitoring**

First launch in FY 2015/16

European Centre for Space Applications and Telecommunications

- Will lead ESA work on satcom technology and applications
- ESA climate office: space data to understand climate change
- A business incubator creating new space businesses
- Will grow to 100 staff by end of 2015

- Mission to drive growth through the exploitation of satellite data;
- link existing space organisations with new market sectors
- Government supported, private sector ethos
- A collaborative environment for industry, academics and government organisations

A joined-up strategy attracts inward investment

- In July 2013, established Spanish space company Elecnor Deimos (300 staff, operates 2 spacecraft and supplies data and services worldwide) elected to establish a division in the UK at Harwell, targeting 50 staff within 3 years

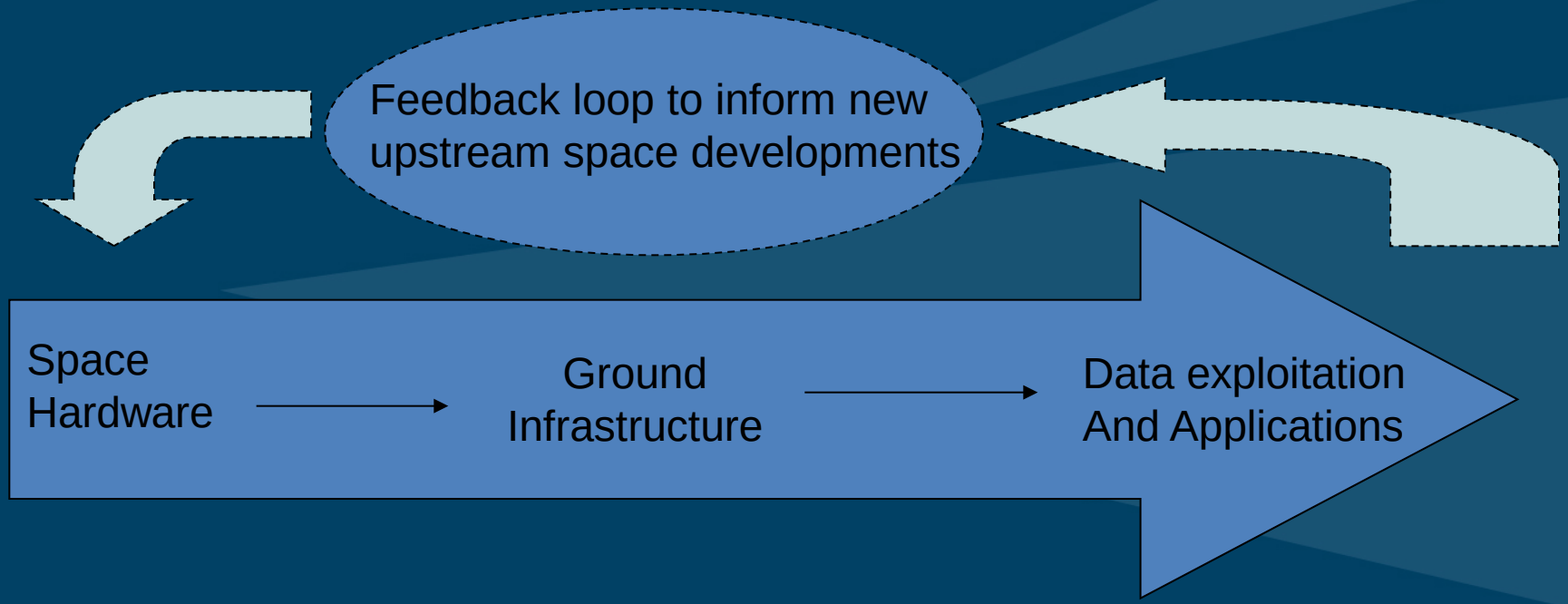
- Why ? They said:
  - "Ambitious long term strategic plan for UK space sector"
  - "Creation of UK Space Agency"
  - "Important contribution by UK to ESA"
  - "Interest of UK in the space applications and downstream services"
  - "Potential of UK highly qualified engineers, universities and research institutions"
  - "New ESA centre at Harwell"

EO – a promise fulfilled ?

- UK has real strengths in in EO from space
  - participation in voluntary international partnerships (GEO/GEOSS/ CEOS/Disaster Charter)
  - proactive involvement in Europe in space EO policy through ESA, Commission, EUMETSAT
  - political, scientific and industrial involvement in key European EO space programmes
  - And some bilaterals !
- Emergence of an international integrated operational EO ‘system of systems’
- Long-term accurate & continuous data series to deliver against the requirement for a sustainable approach to managing our environment
- Innovative start-ups in the US

UK EO Strategy – 4 pillars

- Maximise return on European programmes for academia, government and industry
- Build on leadership in processing, QA, modelling and visualisation of space data for environmental research & climate applications
- Leadership in radar technology and applications
- Increase leadership in small low cost missions



Copernicus 2014-2020

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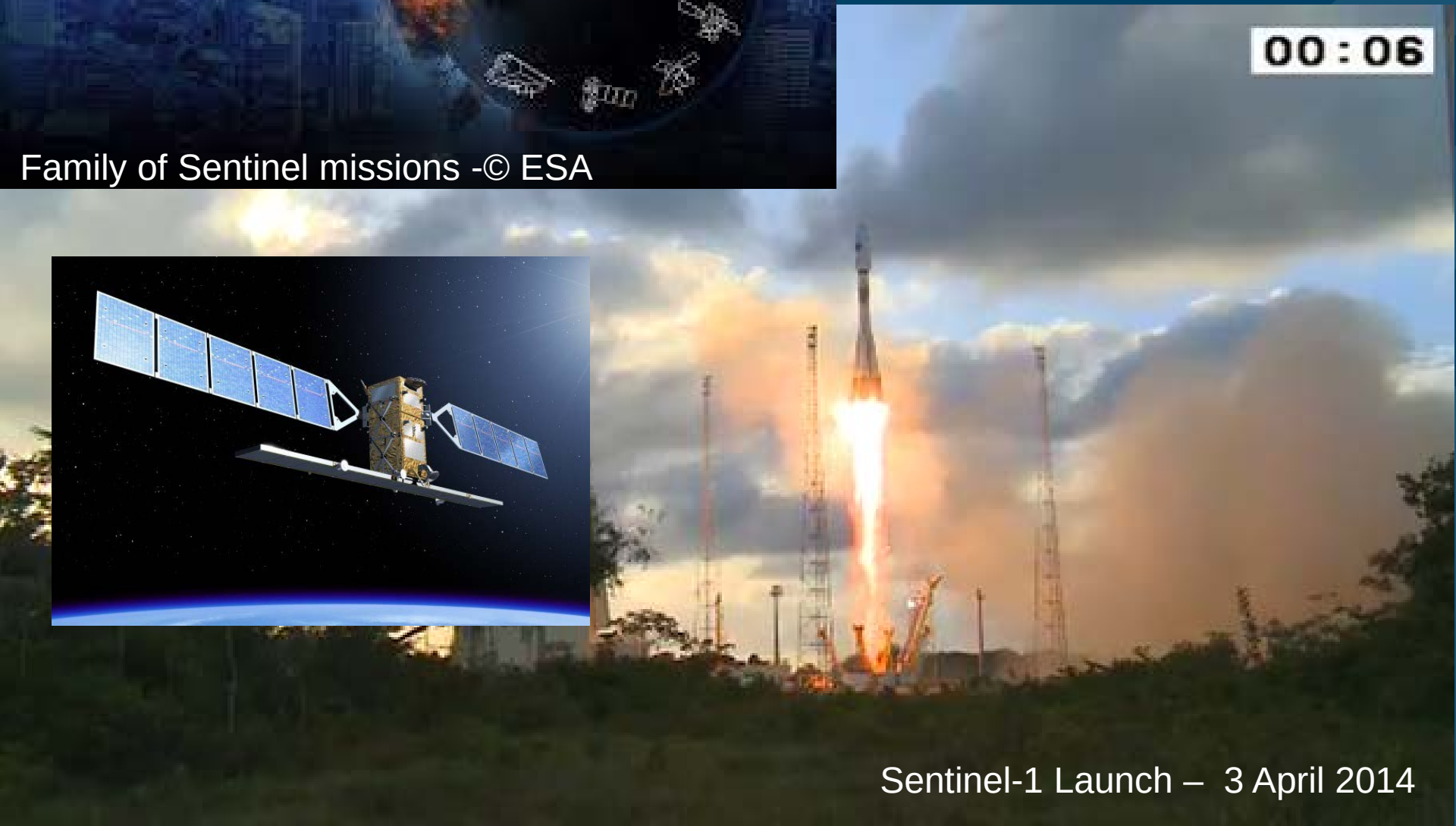
Family of Sentinel missions -© ESA



Sentinel-1 Launch – 3 April 2014

Sentinel – 1 in action

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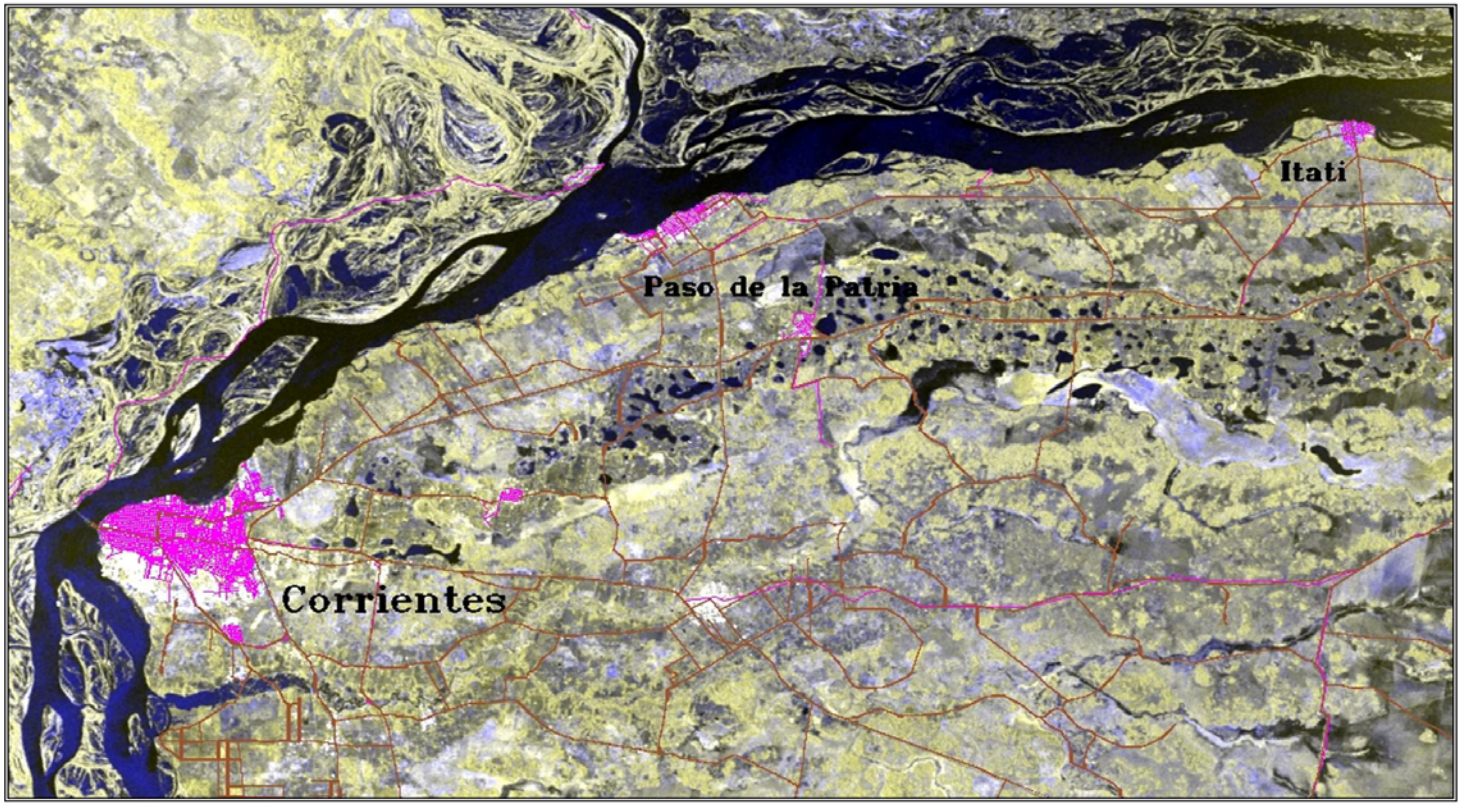
Paraná River's Flood Valley - June, 15 2014



Area Location

Argentinean northeast

DESCRIPTION

Sentinel-1 image acquired on June 15, 2014. Paraná River's Flood Valley in the north of the Province of Corrientes on its border with Paraguay is observed. Cities of Corrientes, Paso de la Patria and Itatí are identified . Paraná River and water bodies of the surrounding wetlands can be seen in a blue levels.

Road are drawn in brown.

Satellite Data: SENTINEL-1

Imagery Date: June, 15 2014

Color Composition RGB=[HV,HV,HH]

Production: CAEARTE/CONAE ML

Acknowledgement to Francesca Cecinati who exploited the data.

CAEARTE CONAE

International Charter Space & Major Disasters

Charte Internationale Espace et Catastrophes majeures

Charter CALL # 491

esa

EO for climate: from research to service

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- Solid UK foundations based on:
  - UK role in ESA CCI programme
  - UK role in FP7 GMES Climate Services building blocks
  - ECMWF = operator for the Copernicus Climate Change Service → a key international organisation on UK soil
  - Growth in Harwell activities:
    - Setting up of the Copernicus ground segment collaborative approach/dissemination of space data to UK communities – UK capital investments
    - ESA Climate office at ECSAT
- Shared delivery with partners is key – government expects its investment to be used wisely !

Looking to the future (1/2)

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Policy Issues: 2014/15

- National Space Policy
  - Capping document to civil space strategy and National Space Security Policy
- Implementation of Growth Action Plan
  - Joint Agency/industry/TSB/Catapult team in place
- New Science and Innovation Strategy
  - To prepare the case for the next government and the Spending Review for 16/17 onwards

Looking to the future (2/2)

Programmatic decisions: 2014/15

- ESA Council of Ministers 2014
  - Limited focus for UK: commercial space + exploration
- Possible items on the Agency's capital list that might be funded by science capital budget
  - **Jason C/S**;
  - propulsion test facility;
  - **ground segment facilities**
  - robotics facility;
  - planetary sample return facility;
  - **bilateral programme line**

Why undertake bilaterals ?

- Bilateral missions can contribute to:
  - building links with emerging space powers
  - niche science not achievable through ESA
  - technology demonstration
  - seizing export markets
- Fundamentally, must contribute to growth objectives set out in civil space strategy

Bilaterals: a live debate

- Agency proposed a ‘Global Collaborative Space Programme’ in Autumn Statement 2013
- 3 bilateral ‘science’ missions requested in IGS GAP
- Government response highlighted the science capital funding line and observed that:

"*Government will continue to identify new opportunities for future funding by the UK Space Agency in conjunction with the Department for Business, Innovation and Skills (BIS). The sector are encouraged to ensure this aspect is covered in responses to the long-term science and research capital investment consultation, particularly emphasising how industry and academia will work together to build coherent business cases*."

Case study: CNES Bilateral

- Political will + deliverable opportunity = success
- £15M bilateral focussed on Earth Observation
- UK involvement in SWOT and IASI-NG delivers:
  - Technology capability in industry
  - Repeat orders (multiplying HMG investment)
  - Science opportunities for UK community
  - Partnership with a leading European space power

Approach to Bilaterals: EO

- UKSA and CEOI team working together to identify and assess opportunities
  - EBOAT – country by country study to identify bilateral opportunities which enhance UK industrial and scientific capability
  - EOMAG – viability assessment and prioritisation of potential EO missions in accordance with flight opportunities
  - Agency Space Programmes Review Panel assesses technical/programmatic viability (has supported NovaSAR)
  - Science advice from NERC (dual key)
- In case a bilateral programme is launched, will allow EO community to play in strongly

Conclusion: focus is vital

- EO must contribute to overall civil space strategy
- Agency corporate plan 2014/15 reflects current priorities:
  - Extract value out of Copernicus:
    - must be an operational and commercial success
    - Ensure UK strengths play into climate services opportunity in a coherent way
  - Create more services and applications using EO data; use them in government; and export them
  - Make NovaSAR a technical and commercial success

Coda

- 10 June 2014: Google buys Skybox for $500M when the satellite company has one satellite in orbit offering metre level video and stills
- By 2020, will Google be the major EO service company ?
- Is the UK ready ?

Thank you

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We are using space to inform, educate and inspire

We provide coherence and leadership

We are promoting growth

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