The Satellite Applications Catapult centre – Supporting Application Development

Wyn Cudlip

Presentation to
CEOS WGISS 37
18th April 2014

Catapult is a Technology Strategy Board programme
Content of Presentation

- Overview of the Catapult
- Sentinel 1 initial data acquisition
- Relationship with UK Space Agency
Two valleys of death

The Catapult: Addresses issues at these points that traditionally lead to failure

Basic Research/ Ideas Universities, Individuals, SMEs

Orbital & Ground Infrastructure

Failure to Commercialise

Failure to Exploit

Sustained Services & Market Application

Major growth in satellite applications but significant barriers for new businesses
Closing the gap between concept and commercialisation

The vision: A network of world-leading centres

• Bringing research and business together

• Accelerating commercialisation

• More than £200M investment in the future of the UK economy

• Investing for the long term
What is a Catapult centre?

Business-focused technology and innovation centre that makes world-leading technical capability available to businesses to solve their technical challenges.

Providing:

• Access to world-leading technology & expertise
• Reach into the knowledge base for world-class science
• Capability for:
  • collaborative R&D projects with business
  • contract research for business
• Skills development at all levels
Catapults – the network

2011
• High Value Manufacturing

2012/13
• Cell Therapy
• Satellite Applications
• Offshore Renewable Energy
• Connected Digital Economy
• Transport Systems
• Future Cities

2013/14
• Energy Systems
• Stratified Medicine
Delivery Model

- Commercial Services
- Collaborative Programmes
  - Other Industries
  - ESA ARTES
  - EU FP7, H2020
  - UK National Programmes
  - Non-EU, US, India, South Korea
  - TSB
  - Other Industries
  - UK Space Agency
  - Other Government
  - UK Space Agency
  - Other Government
  - TSB
Catapult Facilities:
For collaborative application development
Initial Collaborative Projects

- Synthetic Aperture Radar (SAR) for River Catchment Monitoring
- Monitoring Road and Rail infrastructure using Satellites
- Satellite Mapping of Offshore Wind Resources
- Maritime operations: Situational Awareness, Illegal Fishing
Using high resolution imagery to identify jellyfish swarms

Image created by the fusion of 50cm data from WorldView 1 & 2 satellite (28th June 2011)

The sea has been enhanced to emphasise the presence of jellyfish.

Jellyfish aggregation ~133m in length

Inlet

Outlet

Commercially Sensitive
Support for Knowledge Exchange

Promotion of expertise in the research base
Networking, events, training, collaborative projects
People exchange schemes
Regional Centres of Excellence
Support for EO data access and exploitation
Synthetic Aperture Radar - SAR

**Commercial:**
- TerraSAR-X (2 satellites X-Band)
- Cosmo-Skymed (4 satellites X-band)
- Radarsat 2 (1 satellite C-Band)

**Free:**
- Sentinel 1A – launched 3rd April (1B to be added in 2016)
  (but limited global coverage) (Catapult is gateway for UK access)

**Future:**
- ALOS PALSAR (L-Band) (end 2014)
- SSTL NovaSAR (S-Band) (end 2015)
- Radarsat Continuity Mission (RCM) (C-Band) (2018)

Spatial resolution typically anything between 1m and 20m
SAR – RadarSat 2 multi-polarisation

Data © RadarSat
Image © SatApps Catapult 2013
SAR – Cosmo-Skymed multi-temporal
Sentinel 1 HLOP – 1\textsuperscript{st} 6 months

Europe

Africa
Sentinel 1 HLOP – 1st 6 months

Asia

Americas
Relationship to UK Space Agency

• **UK Space Agency focus on policy and strategy**
  Relatively small organisation (~50 people)

• **Does not have its own technical programme**
  but supports UK industry
  e.g. SSTL – Surrey Satellites Technology Ltd.

• **Works closely with Satellite Application Catapult**
  Catapult: commercial exploitation
  UK Space Agency: government support and science
Conclusions

More higher-resolution satellite data becoming available at no cost (e.g. Landsat 8; Sentinel missions)

But data processing and distribution will remain a challenge
Thank-you

Dr. Wyn Cudlip
Consultant

wcudlip@geoseren.com
wyn.cudlip@sa.catapult.org.uk

Satellite Applications Catapult, Harwell, Oxfordshire UK