



BARSC

The evolving UK EO landscape: a commercial perspective

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Contents

10 minutes to provide a commercial perspective:

- Brief introduction to BARSC
 - Activities, members, capabilities
- The EO services industry
 - Characteristics, strengths, challenges
- Characterising the market
 - Trends, drivers, disruptors
- Where are the opportunities?
 - Growth, innovation
- What help does the industry need?



Brief introduction to BARSC

- BARSC is the British Association of Remote Sensing Companies, established in 1985.
- We represent and promote the interests of UK organisations involved in commercial remote sensing activities.
- Today 28 members, of which 2/3rds are SMEs:
 - 1/3rd are large companies
 - 1/3rd are medium sized (typically 20-40 staff)
 - 1/3rd are very small or independent consultants (typically 1-3 staff)
- Activities include hosting of industry workshops, meetings and events with prominent guest speakers, dissemination of relevant news and information, industry representation and lobbying, and more.
- Pleased to announce: we have just signed a memorandum of understanding with NCEO, to work more closely together on a range of topics



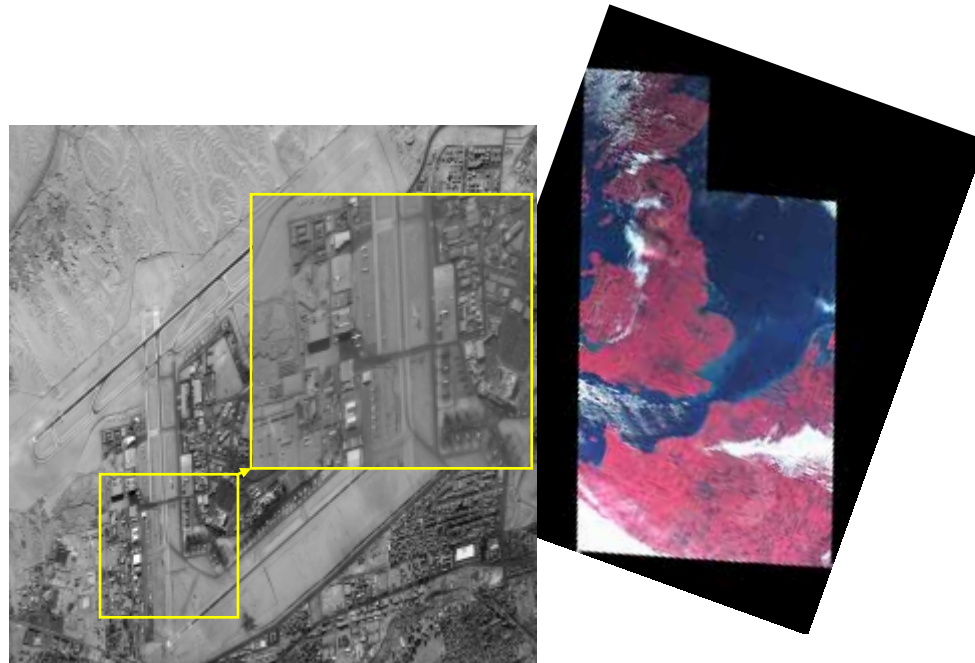
BARSC Members

- AKW Associates
- ARGANS
- Astrium Geo (Infoterra)
- Astrium Satellites
- Atkins Global
- BAE Systems
- DMC International Imaging
- Environment Systems
- EnviroScience
- eOsphere
- Fugro NPA
- GeoSeren
- Intergraph UK
- ITT Visual Information Solutions
- Logica
- PCI Geomatics
- Phoenix Systems
- Polar Imaging
- QinetiQ
- Quarry One Eleven
- Remote Sensing Apps Consultants
- Satellite Oceanographic Consultants
- Space Connexions
- Spacemetric
- Specto-Natura
- Surrey Satellite Technologies (SSTL)
- Systems Engineering & Assessment
- Vega Space

Committee 2011-2013: Chairman: C Pradhan (Logica); Vice-chairman: G Crisford (ITT VIS); Treasurer: D Morten (FugroNPA); Executive Secretary: G Davies (Vega Space); Past chairman: D Hodgson (DMCii); Committee members: A Kemp (Atkins), W Cudlip (GeoSeren), I Downey (ARGANS).

Satellite Data

- Optical Imagery
 - Multispectral
 - Panchromatic
- RADAR Imagery



Credit: DMCii



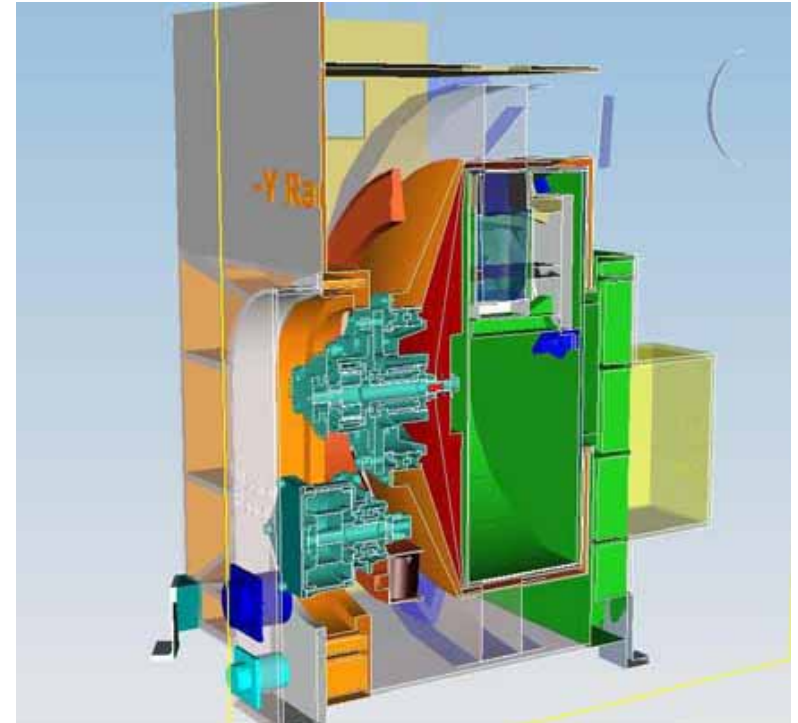
Credit: QinetiQ

- LiDAR
- Thermal
- Height

- Satellites & Instruments
- Ground stations
- Operations and services

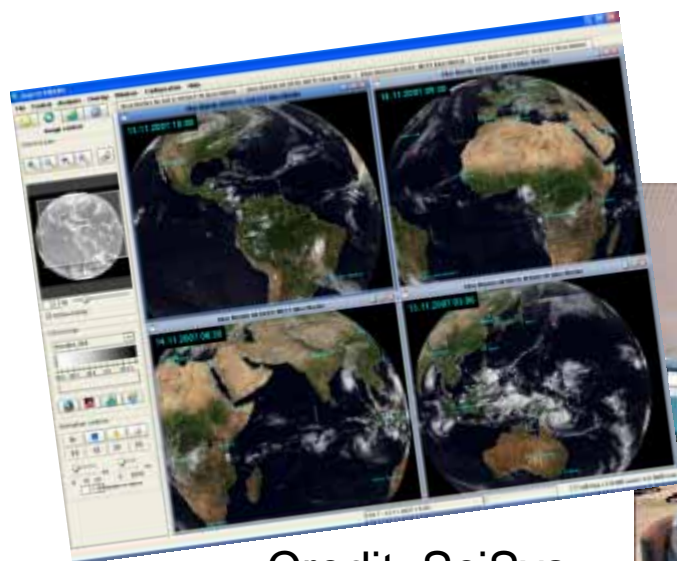


Credit: Astrium Satellites Ltd

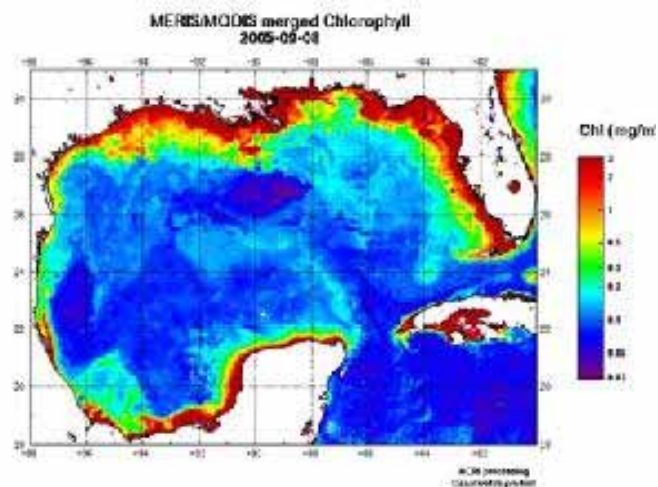


Credit: SEA Ltd

- Software & Managed Solutions
- Calibration & validation
- Consultancy



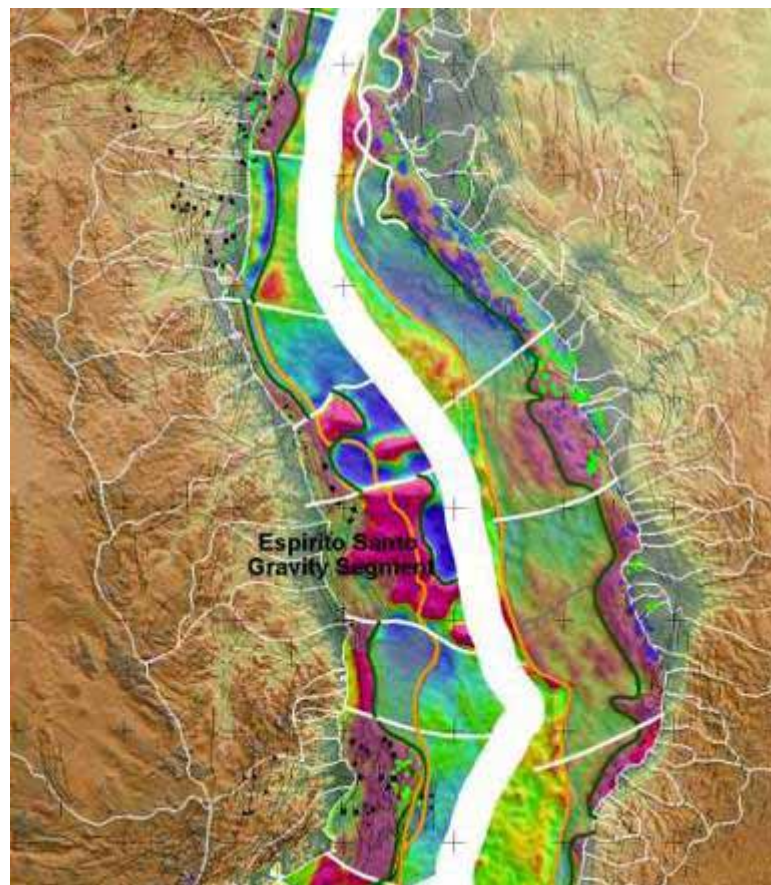
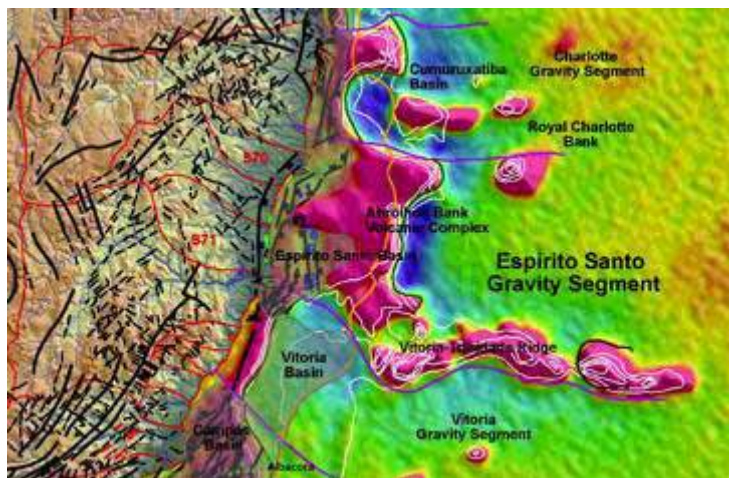
Credit: SciSys



Credit: ARGANS Ltd.

Oil and mineral exploration

- Geological mapping & interpretation
- Seismic planning
- Subsidence mapping
- Reservoir modelling



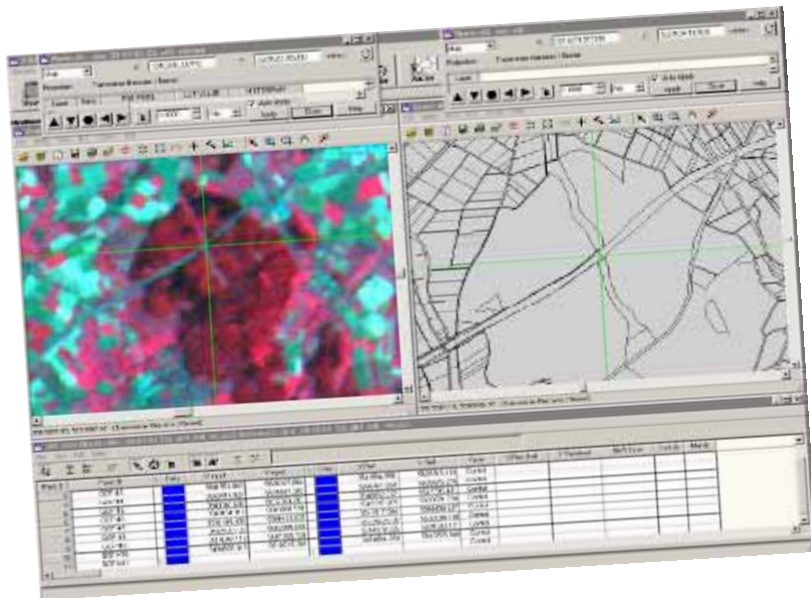
Credits: Fugro NPA

Forestry and agriculture

- CAP Control
- Forest Mapping
- Precision Farming



Credits: DMCii



Oceans, waves and storms

- Operational wave data portal
- Storm surge portal

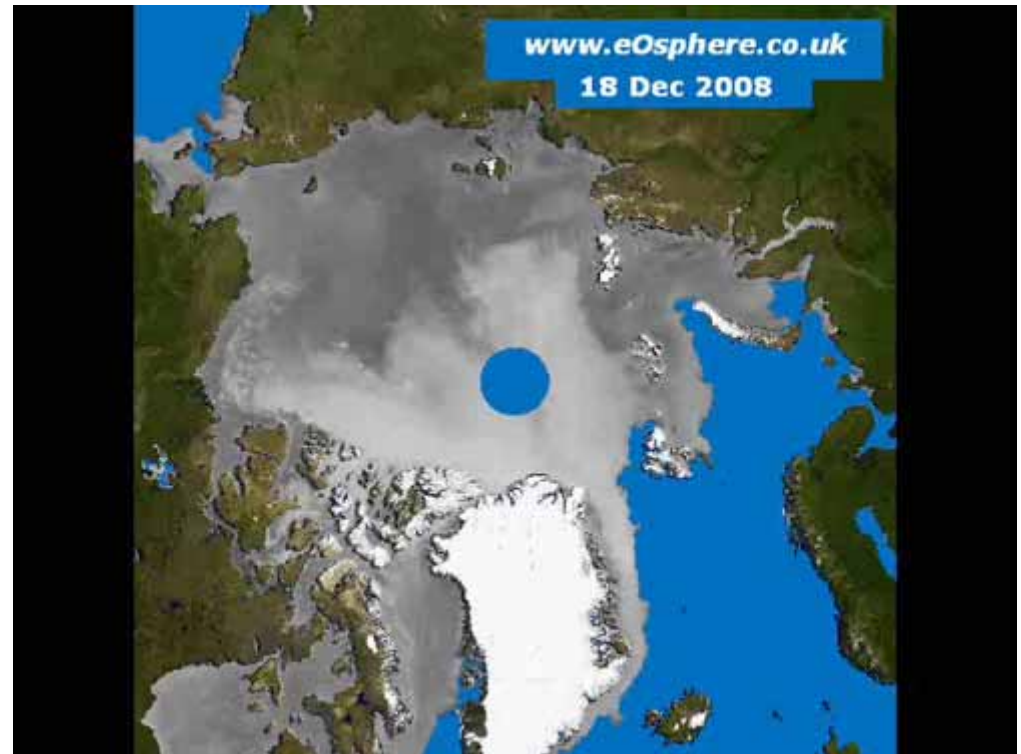


Credits: Logica



Polar and ice monitoring

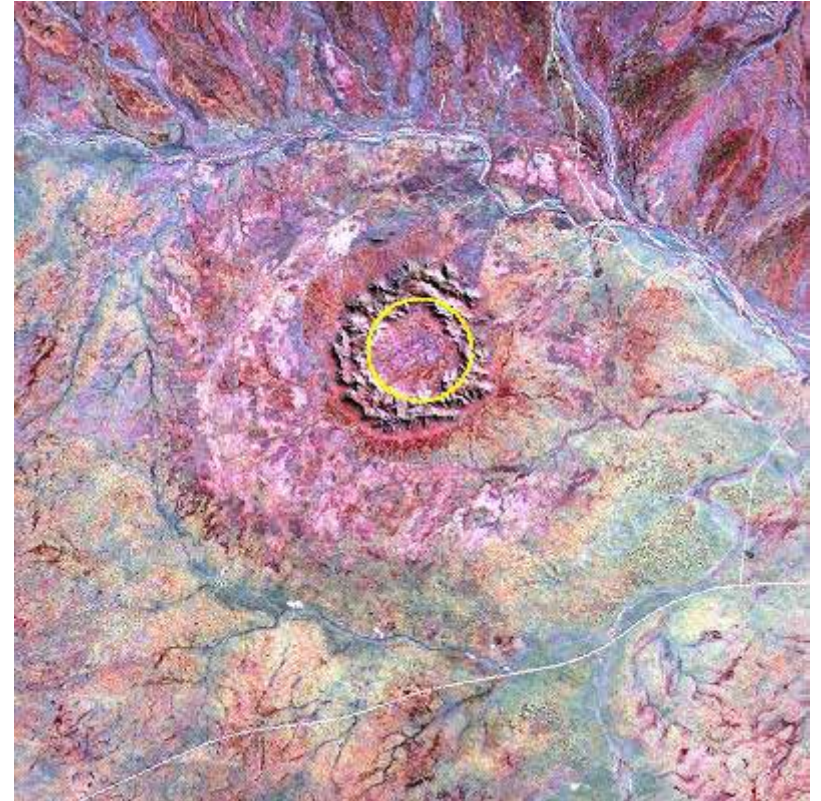
- Ice monitoring for offshore
- Sea-ice analysis
- Ice forecasting and historical



Credit: eOsphere

Feature recognition

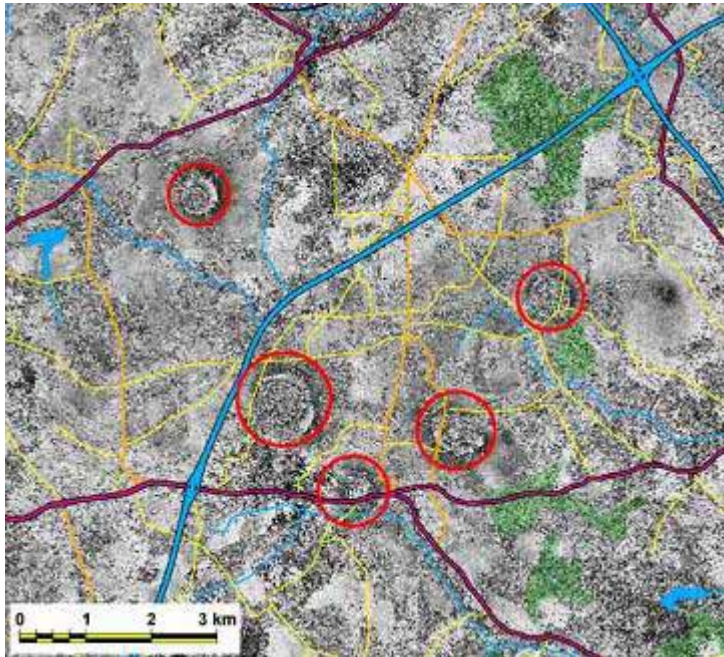
- Automatic/algorithmic recognition of features e.g. impact craters
- Data mining



Credit: Logica

Humanitarian, disasters and risk

- Rapid mapping
- Risk mapping
- Hazard mapping

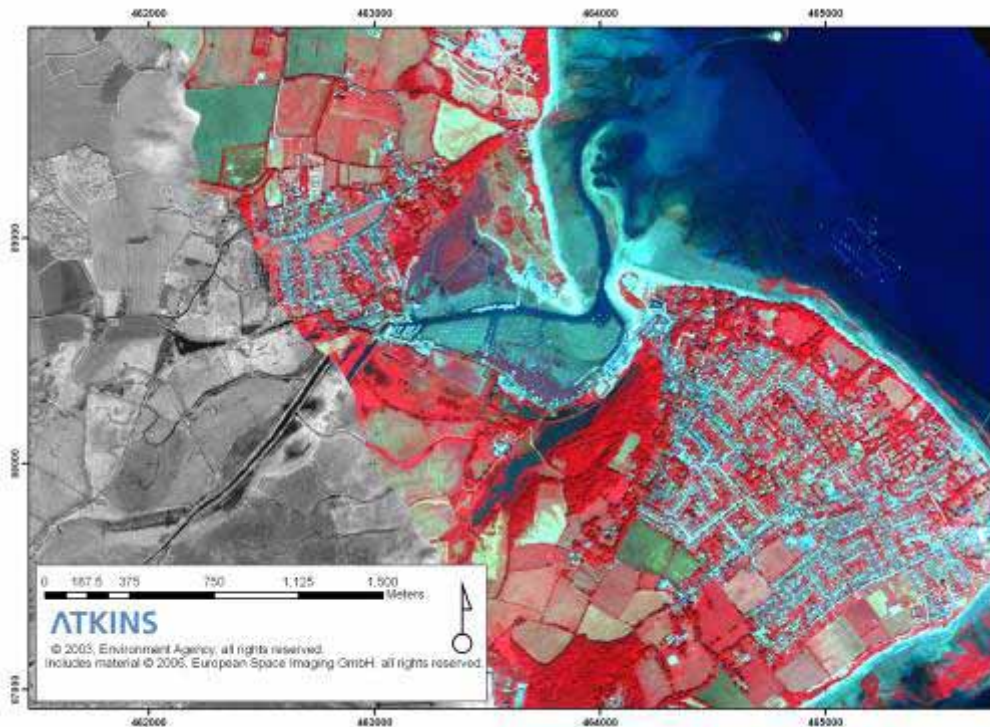


Credit: Fugro NPA



Credit: Astrium Geo-Information Services

- Geographic and Spatial information systems
- 3D Modelling



Credit: Atkins



Credit: BAE Systems

The EO value-adding industry

- *Value-adding industry* = the sector that processes data from EO satellites into products and information for end-users, either as a service or one-off
- **Highly fragmented** (large number of small companies, small number of large companies;
- Yet **highly innovative** – new products and services are constantly being developed – and enjoys some success in exporting these around the world
- However, it is **largely dependant** upon decisions taken in the ‘upstream’ EO sector that commissions and launches the EO satellites and distributes the data
 - Products and information can only be derived from data that exists!
 - And is made available to the industry on cost-effective commercial terms

Strengths and challenges

- Industry strengths, to build upon:
 - **Agility:** Small companies are more easily able to adapt and exploit advances in EO technology, delivery mechanisms
 - **Capability:** World-class technical ability exists within the UK, which can be exported
 - **Success:** The UK has traditionally done well from European programmes to develop EO applications and services e.g. from ESA or the European Commission
- Challenges to industry, that work against us:
 - **Fragmented industry:** individual companies rarely able to capitalise on major global opportunities on their own
 - **Access to customers:** many potential customers in public and commercial sector remain difficult to access
 - **Access to R&D:** although the UK is a leader in scientific exploitation of EO data, the latest research and development is not always easily accessible to industry
 - **Access to facilities:** With exponential increases in data volumes, the most sophisticated products and services need ever-increasing processing/storage power
 - **Competition:** Industry also has to contend with the situation where it is sometimes competing with public sector organisations for some types of work

Characterising the market

- **The market is changing rapidly**
 - Increasing awareness of EO and RS capabilities and technology in the media
 - Increasing reliance upon EO as a source of information for a range of applications – environment, climate, insurance, legal / law enforcement
- **EO technology & availability is changing rapidly**
 - Availability of higher resolution optical & radar imagery continues to increase
 - More timely imagery, due to more regular coverage of the planet as well as faster download and processing/dissemination times
 - Changing data pricing structures/policies (we like the idea of free data – not just for science and public sector, but for commercial apps too!)
- **There are plenty of ‘disruptors’**
 - Google Earth-type technology – making EO accessible to all
 - Outsourcing of US military work (\$7.5 billion to GeoEye & Digital Globe in 2010)
 - Ubiquity of satellite navigation, communications technologies, connectivity
 - Proliferation of mobile devices and “apps”



The EO services market: some current trends & drivers

- Environmental
 - Climate change - temperatures and sea levels continue to rise; increases in severe weather events; depletion of natural resources; droughts, food and water scarcity in parts of the world; etc.
- Technological
 - Availability of EO data; growth of location based services; reduced cost of information technology; rapid growth of cloud computing and services; proliferation of mobile computing devices; etc.
- Geo-political
 - Rapid increase in countries with EO capability; defence and intelligence use of EO continues to grow; International security issues with difficulties of policing; also technology e.g. social networking (internet, twitter, facebook)
- Socio-economic
 - Increased public awareness of geospatial data; increased reliance upon EO for policy or law enforcement e.g. farmers subsidies; sustainable use of natural resources; oil spills etc.

Where are the opportunities?

- Where are the growth markets? Some ideas
 - **New customers** (public and private sector) within the UK: making new customers aware of the benefits to their business from EO products and services
 - **New methods of delivery** (e.g. mobile devices and apps)
 - **Export**, capitalising on UK's world-class scientific and technical capability to deliver services and technology around the world
 - **Security** including defence, which is set to remain by far the largest consumer of EO data and services
 - **Climate & Environment**, where use of EO continues to grow rapidly, and has a lot to offer to help combat the challenges of caring for our planet
- How can the UK foster innovation in EO applications and services?
 - Ensure **strong linkage between R&D community and industry**; factor in the downstream industry perspective when deciding space-segment R&D priorities (see next slide)
- How can UK increase its share of the market?
 - Provide **adequate support to industry** to achieve growth targets (see final slide)



Fostering innovation through R&D

- The downstream Industry works directly with the end-users of EO data – hence can offer insight into their needs
- This insight could be better used in order to inform the direction of space-sector R&D – leading ultimately to the development of new and innovative services
- For example:
 - Many customers want semi-real-time data, thus why not conduct R&D into affordable ways to provide high resolution from geostationary orbit (glad to see ESA conducting research into this area)
 - Many customers want higher resolution thermal information (has security, environmental applications) than currently available, thus why not conduct R&D into affordable ways to provide high resolution thermal IR imagery
 - Models are needed to assign uncertainties to data from each type of instrument (the data needs a peer reviewed error bar in order to assign levels of confidence to the output products) – hence why not devote more R&D resources towards this aspect

What help does the industry need?

- **Closer ties between science and industry:** to ensure that UK scientific achievements flow easily and swiftly into commercial exploitation – BARSC hopes that its new memorandum of understanding with NCEO will be a giant leap
- **Access to new end-users:** Support exploitation of EO-based services for UK public sector users; a coordinated drive to adopt EO data services across UK govt; support in accessing **security users**, e.g. to change MoD's tendency to buy US image exploitation technology
- **Access to facilities:** to help develop new EO applications and services – perhaps a UK 'Centre for EO applications' with facilities (data, processing facilities, tools etc) for shared use, under ISIC auspices, which can also be used as a demonstration facility for new customers
- **National coordination / focus:** help consolidate UK leadership areas, e.g. in the areas of climate science, EO data integrity and quality assurance, etc. ISIC presents a great opportunity to provide such focus
- **Support to export initiatives:** trade missions, coordinated approaches – especially where the UK can offer *services*, rather than just instruments or data
- **Access to development funding:** availability of development/seed funding to support new and innovative services – e.g. case studies for particular user/sector
- **Level playing field:** to address the issue of public/private sector competition, where industry often finds itself competing with UK public sector institutions for commercial work
- **Awareness/education:** many users simply don't understand what EO has to offer



Thank You

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