Space Technology Solutions for Urban Transport
Partnerships and Funding

Sean McCarthy
24th March 2015
The Seven UK Catapults

The Seven Catapults, aligned and co-operating, provide access to the world’s most innovative industries

- Easy access to world-leading technology, expertise & science
- Stimulating collaborative, business led R&D
- Delivering contract research for business and government
- Platforms and services to accelerate business
- Provide a coalescing force for the sector

Pioneering Agile Collaborative Entrepreneurial
A Physical Presence with over 100 staff

- Operations Room
- Sat Comms Lab
- GNSS Lab
- EO Archive
- CEMS (Climate, Environment and Monitoring from Space) data portal
- Meeting rooms
- Conference Rooms
- Workshop Facilities
- SME serviced offices
Established to Stimulate UK Space Sector - Globally

- Demonstrate the benefits of space services and applications to business
- Transfer innovation from non space organisations
- Help space sector engage with markets

**Space Technology Solutions for Urban Transport**

- RELIABLE POSITIONING
  - Global Navigation Satellite Services (GNSS)
- SEAMLESS COMMUNICATIONS
  - EVERYWHERE Satellite Communications
- INTEGRATED REMOTE SENSING
  - Earth Observation
Catapult Strategy

Programmes to unlock potential

Business Advice
- Idea validation
- Legal and regulatory environment
- Support and signposting for SMEs
- Unbiased with specialist knowledge
- Creation of new businesses & services

Removing Market Blockers
- Workshops, ideas, collaborations
- Demonstrating satellite technology in markets
- Connecting applications developers and customers

Harnessing Disruptive Technology
- Technology advice
- Platforms to unlock Markets
- Creation & dissemination of IP
- Stimulation of new applications
- Links to universities and R&D

Space Technology Solutions for Urban Transport
Partners – Key Catapults

Active collaboration with the other Catapults leverages impact across sectors

LUTZ, an autonomous pod for two passengers trialled in Milton Keynes

Large scale Geospatial Data Visualisation for Bristol City Council
Accessing Research Funding

• Supporting industry and academia to access sources of R&D funding
• Actively exploring new national and global funding routes
• As an RTO, Catapult often 100% funded

Project topics include:
• Integrated Transport
• Vessel Efficiency
• Communications for buses
• e-Call
The Catapult is independent and uses specialist ‘Space’ knowledge to support industrial projects.
The success of the Catapult is measured by the support given to partners.

The Catapult wants to work with industry to create strong markets.
Relationships with Academia through Centres of Excellence

The Catapult forms a bridge between industry and academic research through Events, Secondments, Placements and joint R&D.

**Scotland**

- **Lead:** University of Strathclyde
- **Partner:** University of Edinburgh
- **Focus:** Offshore Energies & Maritime

**East Midlands Business & Research Centre of Excellence (EMBRACE)**

- **Focus:** Transport and Sustainable Living

**The North East Satellite Applications Centre of Excellence**

- **Focus:** Maritime and Transport

Space Technology Solutions for Urban Transport
Partnering with Government – National and Local

Demonstrating the benefits of space derived services to central government departments and Local Authorities

Space for Smarter Government Programme

- Focal areas: environment, transport, natural hazards risk management, smart cities, health/telemedicine, climate
- Initial activities:
  - Civil Service Live events
  - 8Great technologies with Cabinet Office
  - Plans for a dragon’s den style for govt departments
Case Study - Transport Infrastructure Management Service (TIMS)

- Demonstrating satellite technologies for transport infrastructure management
- An adaptive platform for seamless, cost-effective data communication based on integrated ground and satellite data sources.

Integration of:
- Satellite communication
- Earth Observation; I-SAR for ground deformation monitoring
- GNSS (GPS)
- Ground sensors – Tilt, crack, vibration, temperature
Case Study - KeyneEye

**KeyneEye Web Demo**

Change Detection from layered satellite imagery and existing planning system

*Developed by the Satellite Applications Catapult, Sterling Geo, and Milton Keynes Council*
Case Study - Interconnected Public Transport

Collaborating with industry and Local Authorities to develop a Public Transport test and trials environment

- GNSS Location & Time
- Passenger Services
- Cameras
- Driver Communications
- Emergency Comms
- Interconnect for Sensors
- Fabric for Innovative Services
- Sensors Suite: Environment, Traffic, EM, ...
- Passenger External Connectivity
- Multi-modal Comms
- Local Wifi
- Network
- Passenger Services
- Cameras
- Emergency Comms
- Service Management
- Intermodal Operations coordination
- Monitoring services: Traffic, Pollution
- Catapult Satellite Applications
Any questions?
TranMon helped Nigerian DoT to monitor condition of roads in remote locations

- Combined satellite and ground data
- Provided rapid decision support
- Analysis over very large areas
- Focused limited resources

- Fusing data from
  - EO
  - GIS
  - UAV’s
  - Ground Sensors
    - Maritime
Promoting

Space for Smarter Government Programme

- Focal areas: environment, transport, natural hazards risk management, smart cities, health/telemedicine, climate
- Initial activities:
  - Civil Service Live events
  - 8Great technologies with Cabinet Office
  - Plans for a dragon’s den style for govt departments
CEMS Overview

Data sources

- Space data providers (e.g. ESA, NASA, commercial)
- Terrestrial and ground segment data providers

CEMS resources

- Access to key existing data centres

CEMS

Providing access at any point in the value chain depending on customer requirements

Data access & storage

- Increasing data functionality and value

Data products & services

- Data processing, reprocessing, integrity, quality assurance & visualisation

Applications

- Policy
- Insurance
- Climate & Environmental Science
- Financial services
- Marine transportation
- Engineering
- Energy & utilities

Driving research

Driving Innovation

Driving Growth
Catapults – The Network

7 Catapults

2013 All Catapults up and running

£1bn Private & public sector investment

Company Overview