Transport Systems Catapult
An Overview

Yolande Herbath
Business Development Manager
What are the Catapults?

Part of a **world-leading network** of technology and innovation centres

**Bridge the gap** between businesses, academia, research and government

Long-term investment to **transform** the UK’s ability to create new products and services

Open up global opportunities for the UK and **generate sustained economic growth** for the future

Established and overseen by the TSB

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**A new force for innovation & growth**
Where are the Catapults located?

- **Offshore Renewable Energy**
  - Glasgow

- **High Value Manufacturing**
  - AFRC – Strathclyde
  - CPI – Wilton / Sedgefield
  - AMRC & NAMRC – Rotherham
  - MTC – Ansty
  - WMG – Coventry
  - NCC – Bristol

- **Future Cities**
  - London

- **Connected Digital Economy**
  - London

- **Cell Therapy**
  - London

- **Satellite Applications**
  - Harwell

- **Transport Systems**
  - Milton Keynes
Our Innovation Centre

A ‘neutral’ meeting space where different players from transport can come together, be dynamic, stimulated and encourage innovation.

- Hub for our innovation projects & platforms
- 36,000 square feet
- 30 minutes from Birmingham International & London Euston
What will the Catapults deliver?

We will deliver UK global leadership in intelligent mobility promoting sustained economic growth and wellbeing through integrated, efficient and sustainable transport systems.
Transport Systems Innovation & Excellence

Global Business Opportunities “anchoring UK jobs”

Adjacent Stakeholders
- Government
- Energy Providers
- End Users
- Finance

Industry Funding
- European e.g. FP7, Horizons 2020
- UK e.g. DfT, TSB, SBRI

Transport Systems Catapult
- Modal Integration
- Systems Performance
- Business Models
- Real-time Information
  Jointly Funded by Industry & Government

Adjacent Industries
- Telecoms
- Sensors
- ICT
- Integrators

Other Catapults
- Future Cities
- Connected Digital Economies
- Satellite Applications
- High Value Manufacturing

Road
Rail
Marine
Aviation
## Our themes

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Innovation Challenges

10 key Intelligent Mobility Innovation Challenges have been identified:

- Improving the traveller experience at transport modal interchanges
- Minimising the impact of disruption through use of adjacent transport networks
- Incentivising the provision of a seamless journey through modal interchanges
- Providing personalised, contextualised, trusted, information that improves the traveller experience
- Developing insight from transport system information to improve the performance of the network
- Offering end to end mobility as a service
- Integrating quality of life and city economy benefits into transport decisions
- Enabling whole journey accessibility of transport systems
- Taking a systems approach to investment and policy in transport infrastructure
- Delivering seamless freight
Innovation Platforms

- National Transport Systems Modelling Facility & Integrated Test Environment
- Open structure available to commercial modellers – providing access to world-class capabilities
- Enabling Intelligent Mobility testing, experimenting, modelling and data visualisation
- Currently developing reference architecture - creating a modelling framework
- Scenario planning to demonstrate cross-modal capabilities
- To be hosted at the Catapult’s Innovation Centre – a place for industry, academia and government to collaborate
Customer Experience Programme

Door to Door Journey
- Modal Integration
- In Journey Information/Disruption Management
- Journey Planning & Execution
- Future Trends & Needs
- Ticketing/Fare Collection

Programme Themes

Key Enablers
- Real Time Data Capture & Analysis
- Positioning & Monitoring – Customers & Assets
- Demand Management
- Revenue Models
- Value of Data

Programme Duration – 36 months

Quick Silver (On Train Communications)
Departure Planning Information (DPI)
Sentiment Mapping

Intelligent Mobility Platform (IMP)
Instant Transport Weather Innovation
The Ten Journeys

The ten journey scenarios will cover: business, leisure & freight, major demographics, urban, intercity and rural & socio-economic classes.

Journey No. 5 Consumer Goods (Freight) – A pack of Fine Kenyan Green Beans travelling from Farm to Store in 2 days to ensure a minimum of 4 days best before shelf life. Most of the journey must be done in refrigeration units keeping the beans at 3 degrees.

Journey No. 9 Component Shipping (Freight) – Precision Engineering & Co make components for the automotive industry and regularly send parts to be toughened or anodised before being sent on to customers all over the West Midlands including Wolverhampton and Coventry.

- Detail typical end-2-end journeys identifying cross-modal interactions and opportunities
- Provide a benchmark for current transport users
- Identify stakeholders & key interactions necessary to realise IM opportunities
- Identify waste at each node of a journey and the opportunities to improve efficiency
- Enable & test collaborations between stakeholders & new entrants
- Enable improvements to be measured over time
Departure Planning Information

What is this programme?

Airfield and Network Management decisions are not informed by accurate information about when aircraft plan to depart, when they actually take-off or when they are expected to arrive in a particular sector of airspace. DPI messages shared electronically with the network improve departure information.

Potential benefits

Reduce start-up delays, increase throughput, reduce en-route ATFM (Air Traffic Flow Man) delays and improve arrival management.

The UK will be the leader in European airspace management.

UK Wide Adoption

Up to 25 airports will distribute real-time info directly into the European EuroControl management system.

Once completed over 90% of all UK flights will be covered by DPI.
Low Carbon Urban Transport Zone LUTZ

Collaborating with SMEs, universities, local authorities and large commercial automotive companies.

- Opportunity to engage with SMEs
- Lead discussion on Autonomous Vehicle Systems & Transport on Demand services
- Play a major role in the development and implementation of standards and protocols for autonomous vehicles
- Milton Keynes as a test bed
- Use Innovation Centre to connect organisations
- Provide a focus for research and development
- Use TSC platforms to test and model
Sentiment Mapping

This new project will assess how sentiment mapping and analysis of publically available social media channels and crowd-based sentiment mapping applications can improve passenger experience in a variety of transport modes. It is a collaborative project between the Transport Systems Catapult, Commonplace, a social enterprise start-up, and the Royal College of Art, who are a world leader in the research and application of design led thinking.

Sentiment mapping provides a map-based visualisation of how members of the public respond to a location or situation. The data behind the map may be gathered from posts made on social media channels, or opinions expressed via a bespoke mobile phone app. Harvesting and analysis of this kind of data will help us understand how people react to a disrupted journey. If we can understand why people are affected by transport disruption then we can find better ways of planning, operating and using transport.

The outputs of the project will be a feasibility study and a business case of mapping the sentiment of users of transport, which could be potentially taken forward as a full demonstrator.

Potential benefits include:
- Highlighting transport problems before operational systems provide data
- Understanding what is important to people when travelling
- Making travellers feel that their views matter
- Managing transport disruption based on sentiment
Instant Transport and Weather Innovation

- Pilot project in North East supported by Sunderland Software City, Connected Digital Economy Catapult, Met Office and Transport Systems Catapult
- Pilot project providing foundations for a wider scale National Project roll-out and support National Transport Modelling Facility
- Combining real time weather and environmental hazard information with transport and logistical information for decision making and new services and applications
- Generating innovation and enterprise in the field of open data across digital economy, transport, weather and logistics
- TSC will provide transport organisations with real user challenges and issues that can be addressed to improve better integrated transport
- Scoping, data collection and exposure, Innovation Challenge - Business incubation and showcase
- Direct benefits of TSC investment to help address integrated transport by supporting SMEs to develop new solutions (economic growth) and provide test bed facilities