Wednesday, March 31, 2021

Future of transport and connectivity demand

Dr Khalid Nur
Principal Technologist – New Mobility Technologies

CATAPULT
Connected Places

Who we are

Connected Places Catapult is the UK's innovation accelerator for cities, transport, and places.

Increasing the SUPPLY of innovative products and services that meet market demand
by helping companies to commercialise innovation through demonstration, testing, development of standards and market exposure

Boosting DEMAND for innovation from intelligent customers
By improving methods of modelling demand, and supporting tools, resources and platforms that cultivate confidence and capability among buyers

Identifying new areas for MARKET MAKING and DISRUPTION
by stimulating richer engagement between academics and businesses, access to data and partnerships with government and regulators

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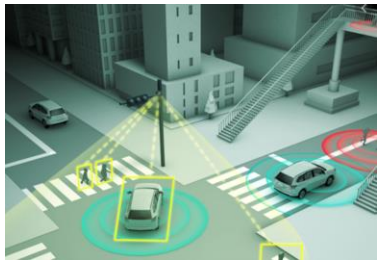
Where we work

- Critical Infrastructure
- Built Environment
- Public Transport
- Intelligent Transport Systems
- Health and Wellbeing
- Active Travel
- Future Fuels
- Urban Air Mobility
- Drones
- Future Flight
- Logistics and Freight
- Micro-Mobility
- Rail
- Connected Autonomous Vehicles









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How we can help

Setting the course

Technology can deliver operational savings, but may have organisational implications. Opportunities can include service level management, better utilisation of assets and revenue generation

Make the right decision

Support throughout the innovation selection, from identifying the appropriate selection method to tender evaluation

Breaking down barriers

Working with Regulatory authority and industries to understand the safety, security and regulatory requirements that can reduce the barrier-to-entry

Learn and Apply

We can provide support throughout the implementation process, from technical assurance to testing, trial & demonstration

Business Planning → **Innovation Selection** → **Evaluation**

Technology Programme

Feasibility → **Design** → **Development, Integration & Implementation**

Confidence to deliver

From conception of an opportunity for application of technology, we can support identifying possible technology solutions, and framing a roadmap to delivery

Confidence in design

Our Concept design methodology is based on a proven systems engineering approach

Make it happen

We can provide support throughout the implementation process, from technical assurance to testing, trial & demonstration

- **Systems engineering** (concept of operation, requirements, innovative design)
- **Business case developments**
- **Trial development/evaluation**
- **Economic impact/feasibility assessment**
- **Regulation, safety cases and validation methodologies**
- **Human factors**

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Transport is changing at an unprecedented rate

Connectivity & Data

Decarbonisation

Autonomy

New Modes

New Business Models

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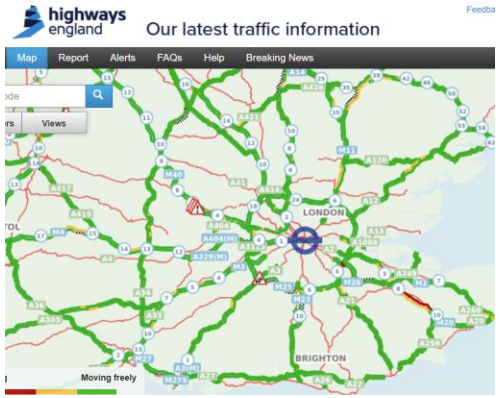
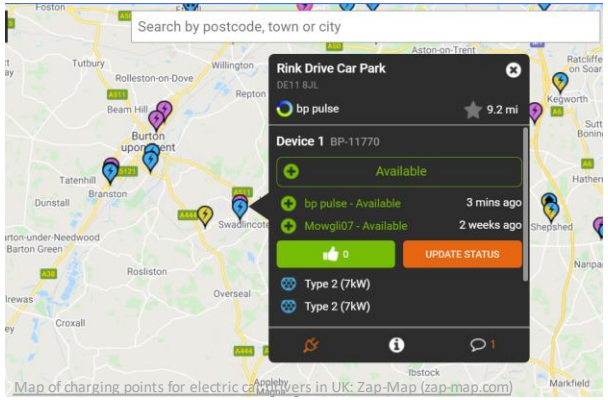
Road transport

Open data users - Transport for London (tfl.gov.uk)

Bus Information

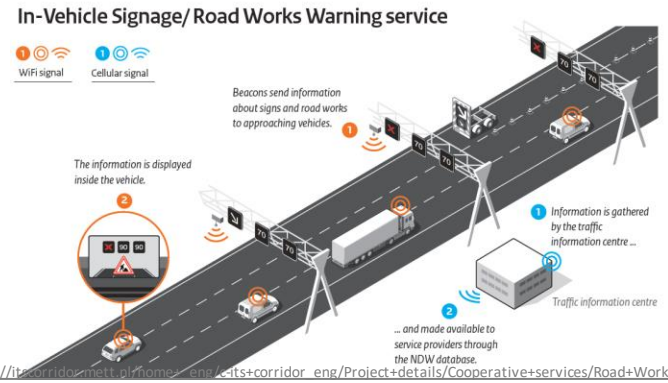


Traffic Information



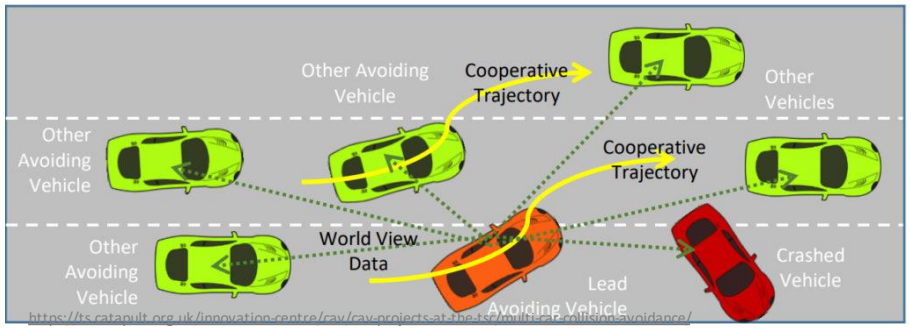
Map of charging points for electric car drivers in UK: Zap-Map (zap-map.com)

EV Charging Information



https://its-corridor.mett.pl/home/-/engine/its+corridor_eng/Project+details/Cooperative+services/Road+Works+Warning/default.aspx

https://ec.europa.eu/transport/themes/its/road/action_plan/ecall_en



https://ts.catapult.org.uk/innovation-centre/cav/cav-projects-at-the-its/multi-car-collision-avoidance/

Multi-Car Collision Avoidance (MuCCa)

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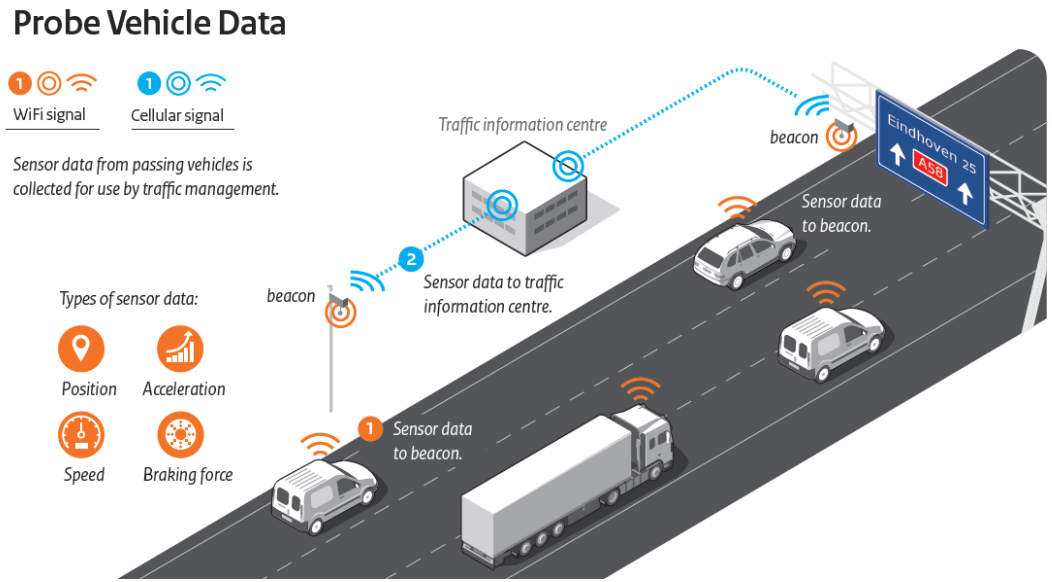
Naked Highway - Eliminating roadside infrastructure

Monitoring Traffic



https://itscorridor.mett.nl/home+_eng/c-its+corridor_eng/Project+details/Cooperative+services/Probe+Vehicle+Data/default.aspx

Monitoring assets

Informing users

https://garagewire.co.uk/news/highways-england-test-vehicle-signage-london-dover-a2-m2/

Compliance

Highways England still sending letters for red X offences - The Transport Network (transport-network.co.uk)

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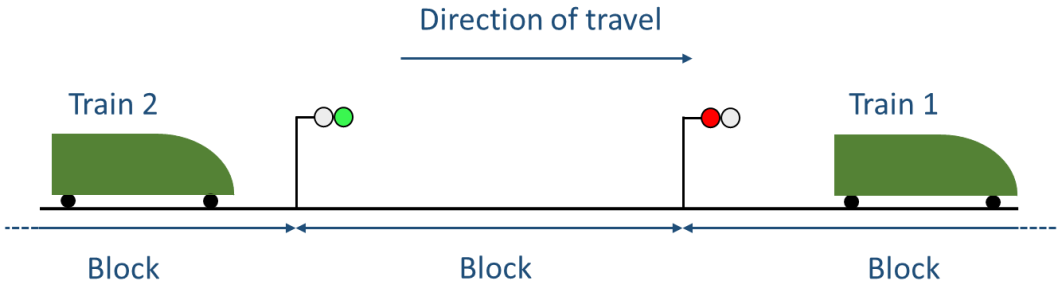
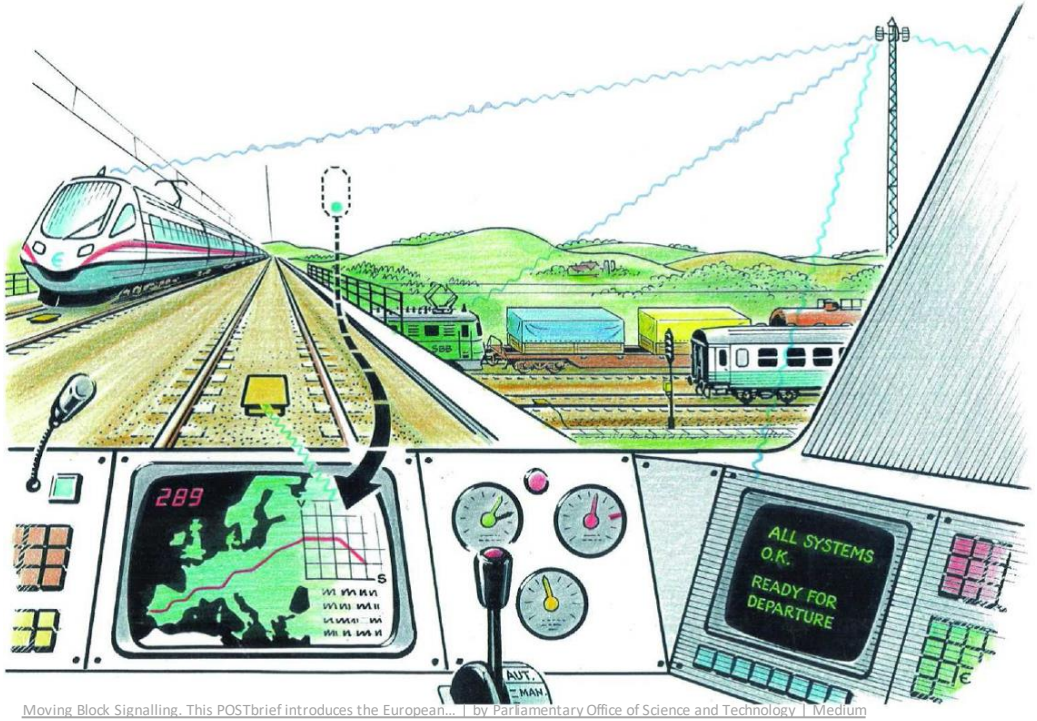
Rail – Traffic management



Moving Block Signalling. This POSTbrief introduces the European... | by Parliamentary Office of Science and Technology | Medium



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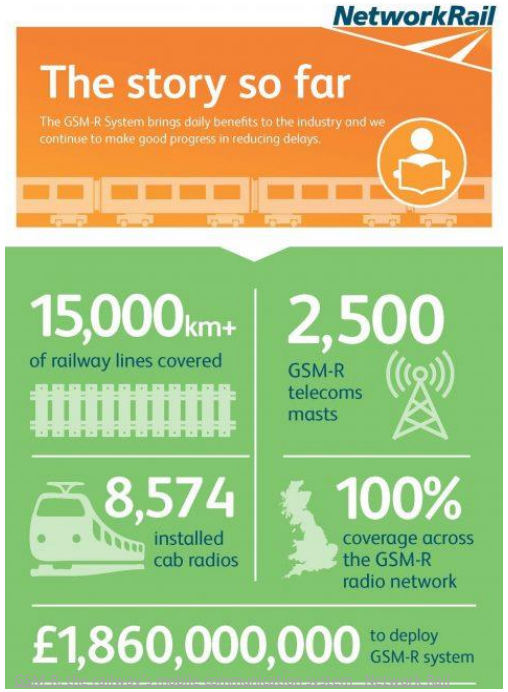

GSM-R

Future Railway Mobile Communication System (FRMCS)

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Shared and Public Transport

Millions of commuters now using Government's free Wi-Fi on public transport - GOV.UK (www.gov.uk)


Who, what, why: What's happening to wi-fi on trains? - BBC News

User connectivity

Contactless payments in transport to surge by 2024 - Mobile World Live

Payment / Ticketing

WM5G Tram Safety project

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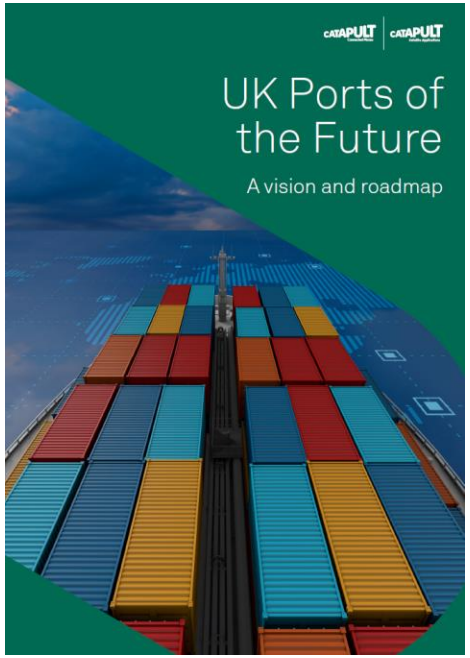
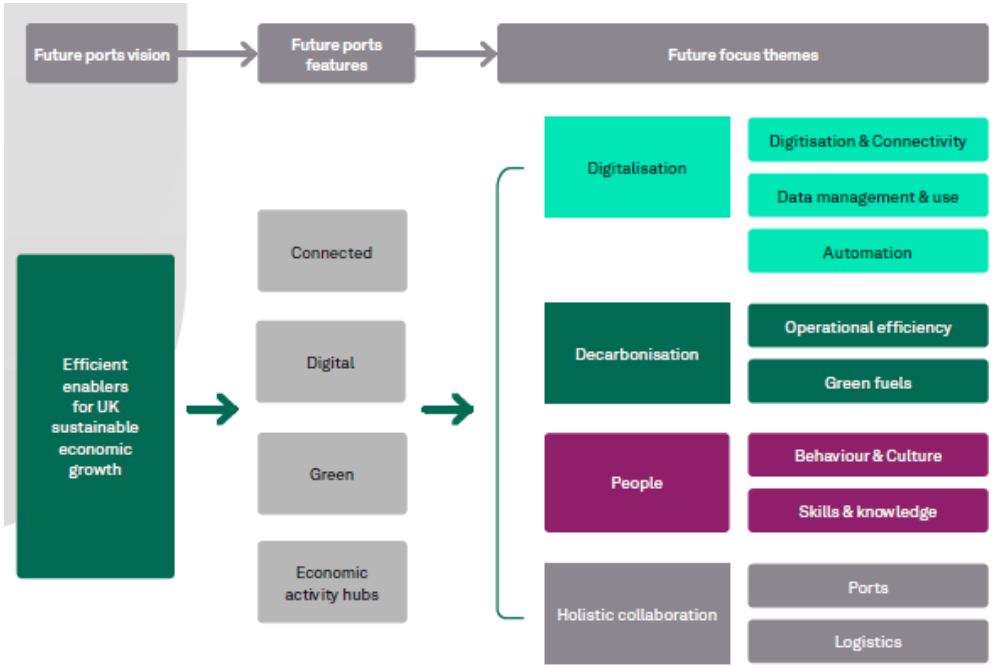
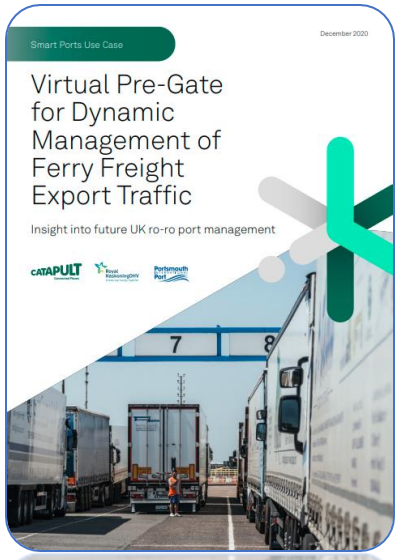
Drones/Urban mobility

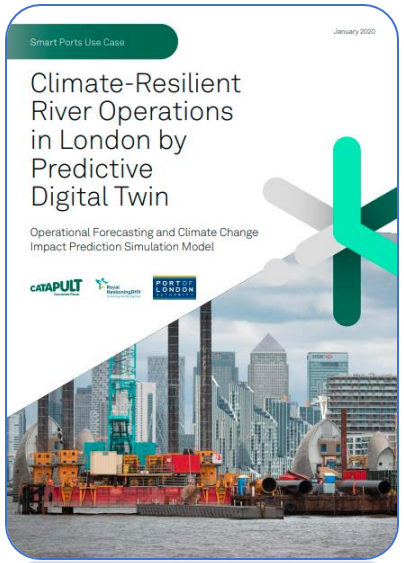
- Remotely controlled under Visual Line of Sight
- Remotely controlled Beyond Visual Line of Sight
- Autonomous flying
  - Continuous status monitoring and remote intervention

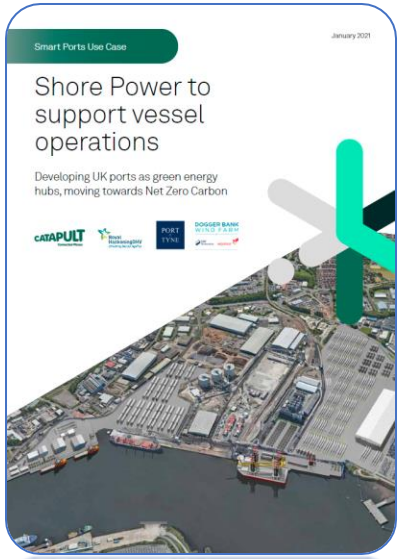
DfT – Transitioning to Smart ports



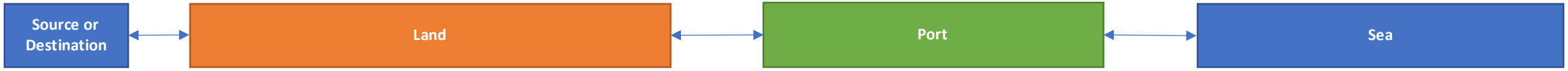








Connected/Automated Logistics



Last mile delivery robots

Remotely operated HGV

Remote crane operation

Remote pilotage

Government outlines new plans for Freeports to turbo-charge post-Brexit trade - GOV.UK (www.gov.uk)

Indicative connectivity demand

Application	Low Latency	High Bandwidth	Wide Coverage
Transport user information	✓	✓	✓✓✓
User connectivity	✓	✓✓✓	✓✓
Traffic monitoring	✓✓	✓✓	✓✓✓
Traffic management	✓✓	✓✓	✓✓✓
Asset management	✓	✓✓	✓✓✓
Safety applications	✓✓✓	✓✓✓	✓✓✓
Remote operation	✓✓✓	✓✓✓	✓✓✓

Low demand	✓
Medium demand	✓✓
High demand	✓✓✓

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Thank you

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