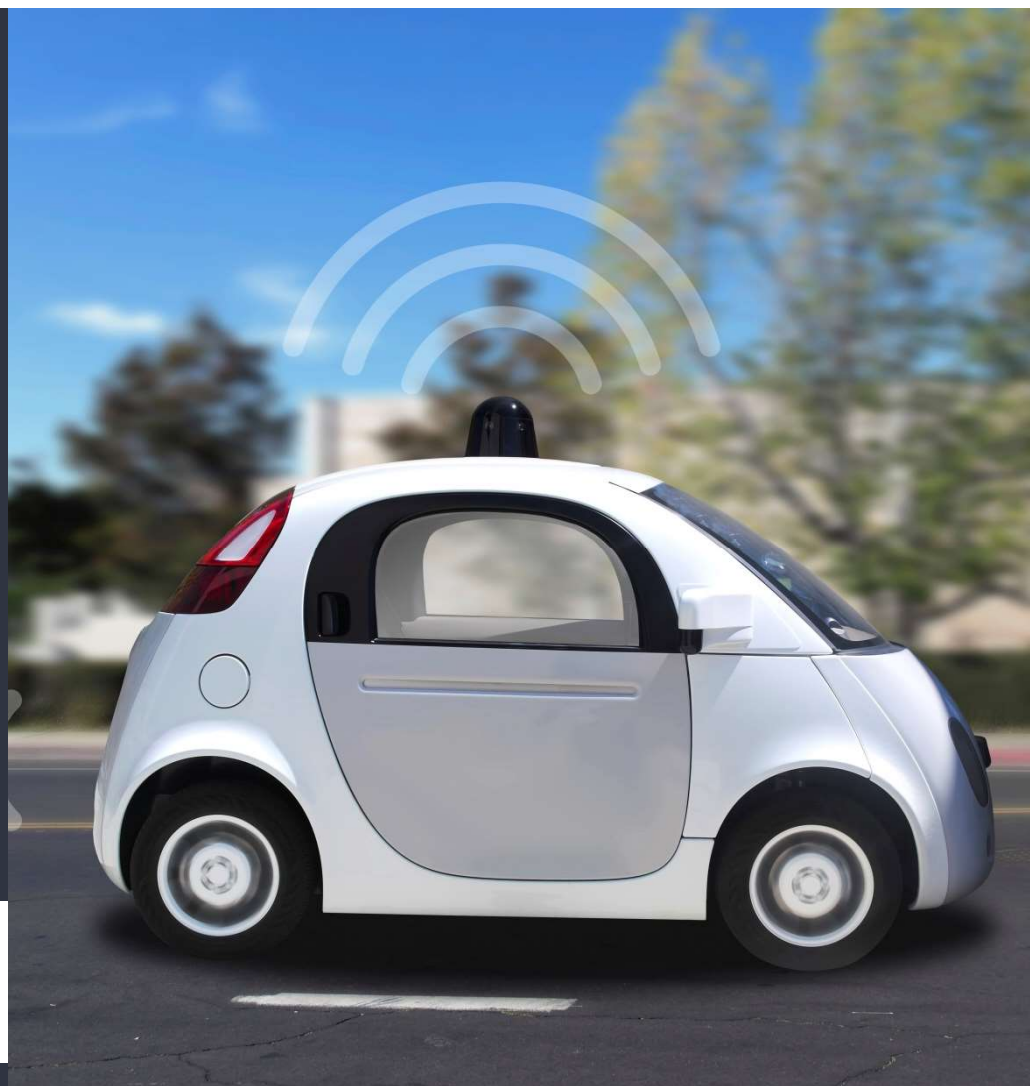


Travel in Britain in 2035

Future scenarios and
their implications for
technology innovation

Charlene Rohr
Intelligent Transport Systems:
A Tool or a Toy

22 November 2016





Our study scope



2035

Focus on 2035 on
technologies that are
already being developed



Technologies that
influence transport
efficiency



No new
infrastructure

Study objectives



Determine key future technologies that will influence transport efficiency



Identify plausible future transport scenarios for 2035



Identify policy and investment interventions

We first identified 6 technologies that could impact travel demand, network capacity or traveller productivity



Autonomous vehicles



Internet of Things



Next Generation ICT
connectivity /
telecommuting /
telehealth



Advanced manufacturing
/ 3D printing



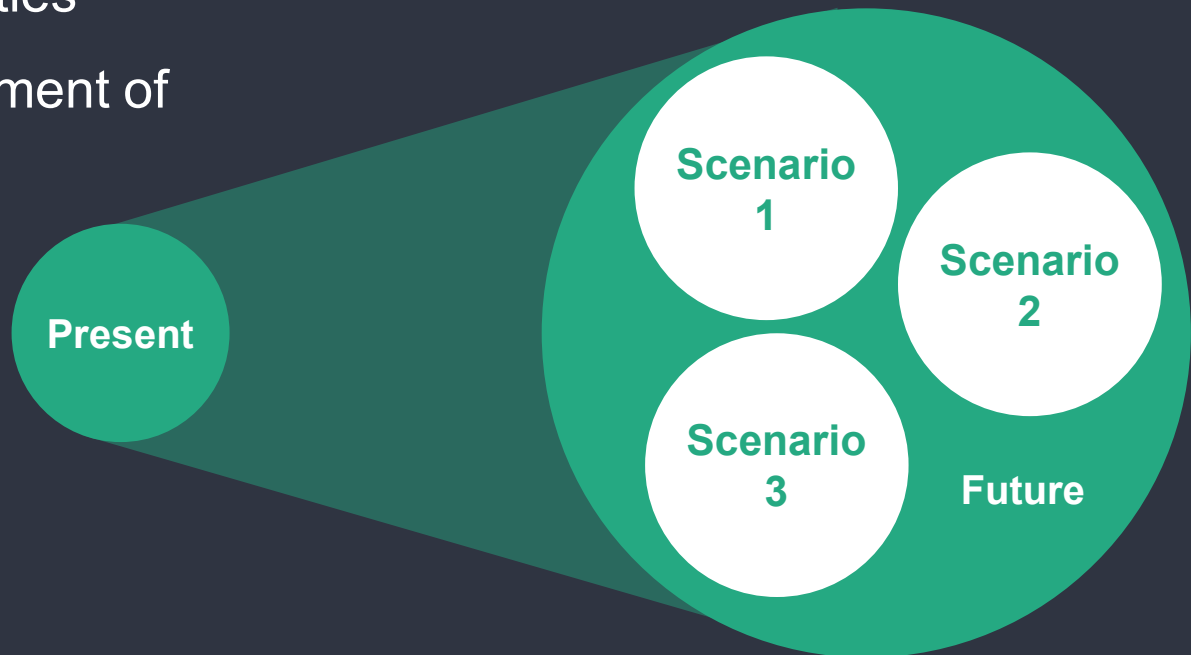
User apps / Big Data /
intelligent processing



Novel materials and
embedded sensors in
infrastructure

We developed a number of future transport scenarios, around the possible impacts of these technologies

- Produce **plausible** transport scenarios for 2035, representing the spectrum of possibilities
- Integrate full complement of social and economic influencing factors
- Represent implications of key technologies



Our scenario approach



First we defined key influencing areas

Focus on Key Activities that Generate Travel



Work/
business



Retail



Healthcare



Long
distance



Freight

We identified critical factors for each activity

Literature review, Cross-Impact analysis



Work/ business

Telework
Commute distance
London-centric
development
In-person meetings
Real-estate prices



Retail

Total consumption
On-line sales
Person-to-person
sales
High street retail



Healthcare

Health of nation
Elderly living at home
Medical visits
Healthcare centralisation
Non-traditional settings



Long distance

Leisure time
Attitudes
environment
Attitudes security



Freight

Package delivery
Disintermediation
Warehousing
strategy
Reshoring
Port capacity

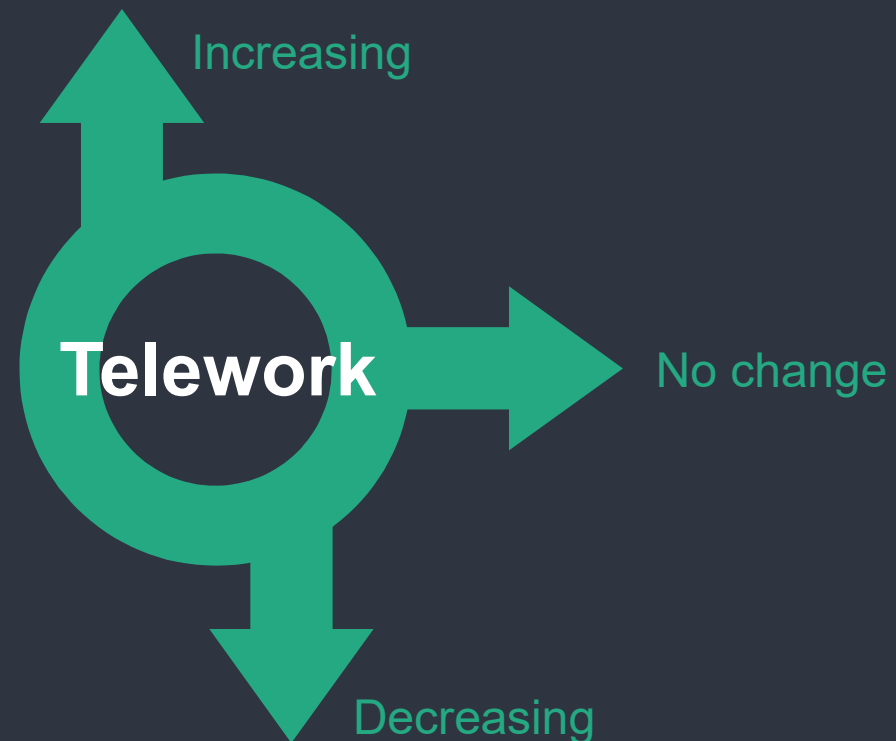


Common

GDP growth
Population growth
Proportion of the elderly
Strength of sterling
Cost of travel
Travel time / convenience

The scenarios are built from projections by experts

- Projections on specific factors
- Projections on common factors
- Impacts of technologies
- Impact on travel



We undertook 5 workshops, with around 75 experts



Work/
business

10



Retail

14



Healthcare

15



Long
distance

17



Freight

24

From these we developed 3 scenarios



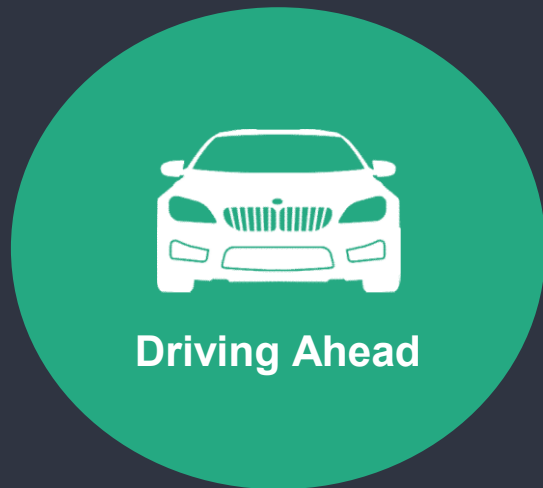
Implications of Driving Ahead scenario



Economic growth

- Societal benefits of increased mobility
- Economic benefits for technology and app firms and 'personal mobility' industry
- Reduced societal costs of accidents

Implications of Driving Ahead scenario



Travel demand

- Reduced cost of travel, from AVs mainly operating mobility on demand services; perhaps combined with electric vehicles
- Increased congestion as people and goods travelling more (more empty vehicles)
- Less demand for public transport

Implications of Driving Ahead scenario



Local / regional development

- People may live further from work
- Better air quality (with electric vehicles)

Implications of Driving Ahead scenario



Patterns of consumption

- Consumption increasing, especially for online sales
- Decline in high street retail

Implications of Driving Ahead scenario



Movement of goods

- AVs important for freight – reduced labour costs and driver availability issues
- More use of night-time road capacity

Implications of Driving Ahead scenario



Quality of life and health

- Traffic safety benefits of AVs
- May be negative consequences due to reduced level of walking and cycling
- Accessibility benefits for all types of people

Policy implications across the scenarios

- **Demand management:** AVs could lead to increases in road use, because of potential reductions in travel costs and increases in productivity, ie people will be able to do other things while travelling
- **Uneven distribution of benefits:** Benefits of new technologies are unlikely to be evenly distributed across society, there will be winners and losers
- **Training and up-skilling of workers:** New technologies may replace (low-skilled) jobs, e.g. lorry drivers, taxi drivers, etc.
- **Maximising technology benefits:** Policymakers need to evaluate the possible benefits of new technology to society, taking account of potential multiplicative effects of multiple technologies, e.g. ICT & AVs (MaaS)

Governments cannot 'pick the winner', but should invest in technologies that are robust



Next generation ICT connectivity

- Be aware of the quality of ICT services that are necessary to support new technologies
- Ensure these services are available, across all geographies

Governments cannot 'pick the winner', but should invest in technologies that are robust



User Apps / Big Data

- Support development of frameworks to address data governance, value, privacy and security
- Contribute to brokering discussions on issues related to data ownership and sharing
- Support Open Data initiatives, where focussed on societal benefits
- Regulatory balance between beneficial uses of data and consumer protection

Governments cannot 'pick the winner', but should invest in technologies that are robust



Real- world testing / pilot testing of innovative solutions

- Particularly those that bring societal benefits



Travel in Britain in 2035: Future scenarios and their implications for technology innovation, available at:
http://www.rand.org/content/dam/rand/pubs/research_reports/RR1300/RR1377/RAND_RR1377.pdf