



COST ACTION CA16222

WISE-ACT

Wider Impacts and Scenario Evaluation of
Autonomous and Connected Transport



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Business Challenges

Thematic Report of Working Group 3

Presenter: Prof. Graham Parkhurst

University of the West of England, Bristol, UK

graham.parkhurst@uwe.ac.uk

Report Authors:

Graham Parkhurst, Pablo Cabanelas, Daniela Paddeu, Laurencas Raslavičius, Nikolas Thomopoulos

Enhancement to freight logistics sector worth
USD 4.6 trillion (PwC, 2016)

ACT worth GBP 900bn by 2025
(Transport Systems Catapult, 2015)

) Future Mobility: What's it Worth?

USD 829 billion per annum by 2050 (Lerner, 2011:
passenger business models only)

USD 330bn invested 2010-20
(McKinsey, 2021: half on A+C)

A Business Model describes how value is created, delivered, and captured for a firm and its customers (Osterwalder and Pigneur, 2010).

» What are the real benefits and for whom?

- ACT does not 'create' road space, only efficiency gains at the margin!
- For social and environmental benefits, new mobility BMs must result in higher ridership + lower roadspace demand

- **T7: Examine business implications for the logistics sector (literature review)**

)) Is there a 'win-win' zone where commercial and sustainable mobility benefits align?

- **T8: Classify viable business models (literature review and expert interviews - STSM)**

) T7: main potential benefits for the logistics sector



- HGV automation
 - Technical potential for important fuel cost savings
 - Productive use of HGV driver time (rest time or admin work on the move)
 - Avoidance of human-error related collision costs

) T7: main potential benefits for the logistics sector



- Drones (last mile)
 - Speed, reliability by over-flying roads (and water)
- Digitisation + remote delivery to 3D printer
 - Avoid delivery costs (except printer consumables unless sourced locally)

) T7: Barriers to deployment

- Underpinning technologies and infrastructure (V2V, V2X)
- HGV automation
 - Limited knowledge about values of costs and benefits
- Drones
 - 7% EU citizens commercially accessible by current technology (30% with next generation)
 - Considerable barriers (dock infrastructure, unstaffed deliveries, noise, energy efficiency, spatial distribution of consumers)
- 3D Printing
 - Limited range of products
 - Quality limitations

) T7: commercial relevance

Uncertainty about extent of commercial value

ACT not occurring in isolation: uncertainties about wider effects of technological change across society and economy (Lawrence et al., 2017)

Paddeu, D., & Parkhurst, G. (2020). The Potential for Automation to Transform Urban Deliveries: Drivers, Barriers and Policy Priorities. Chapter 12 in B. van Wee, N. Thomopoulos, & M. Dimitris (Eds.), Policy implications of Autonomous Vehicles. Elsevier, 291-314. <https://doi.org/10.1016/bs.atpp.2020.01.003>

) T8: BM motivations

- Key aspects of value chain (Berg et al., 2020)
 - Labour
 - Vehicles
 - Customer payment system
 - Financial sustainability
 - Potential for economies of scale
- BMs generally do seek to reference environmental value (Calvert et al., 2019)
- Key influences: customers, legislation and business partners (Van den Heulen et al., 2020)
- Partnerships increasingly important for financial stability (Riggs & Beiker, 2020)

) T8: Commercial viability

- Digitalised service BMs may be attractive, but ultimately someone has to undertake the ‘awkward’ part of operating a vehicle
- There are far more new data than there are valuable new data
 - Holding it all carries risks and costs
 - Sorting one type from the other also expensive
- Value may derive from being part of an ecosystem over which there is limited control (e.g. providing a software service as part of MaaS)

) T8: business model classification

- Freight vs passenger (mostly one or other)
- Service provider owns and operates assets vs secures service from 3rd parties
- Commercially-owned vs peer-to-peer assets
- ACT BMs often integrated with digital service and electrification innovations

Cabanelas, P., Parkhurst, G., Thomopolous, N., Lampón J.F. (submitted). A dynamic capability evaluation of emerging business models for new mobility.

)) Conclusion

- Business context of exploitation is uncertain
 - Reliable operationalisability of technology
 - Commercial viability of technology
 - New B2B and B2C relationships to forge within an ecosystem
- Social and environmental context of business exploitation
 - Evidence that business actors want to serve the wider social and environmental good
 - Unlikely to be realised without a strong public sector and an effective regulatory context
 - Attracting ACT investment to a particular city or state should not be at the expense of wider policy goals



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