Who are the winners and who are the losers in the smart mobility policy in The Netherlands?

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Smart mobility is an emerging mobility paradigm characterized by the use of ICT and new mobility services enhancing behavioral change which is expected to contribute to more sustainable and efficient mobility choices. In recent years, this paradigm has gained attention in the Dutch mobility policy domain. The Dutch Ministry of Infrastructure and Environment (I&M) aims to position the Netherlands as a frontrunner in the area of smart mobility (Tweede Kamer der Staten-Generaal, 2012-2013).

One of the ongoing smart mobility programs is Beter Benutten (“Better Utilization” in English, BB). Initiated in 2011, BB intends to reduce traffic congestion by 20% and door-to-door travel time by 10%, by optimizing existing infrastructure usage and by improving the national mobility network interconnections (Tweede Kamer der Staten-Generaal, 2011). Despite having a national coverage, the BB consists of twelve customized regional packages, in which market parties, local authorities, and representatives of the national government work together to stimulate behavioral change of commuters (but primarily car users) towards alternative modes, e.g. electric and connected bikes.

By cause of the regional approach in BB, we can observe that in each region different potential beneficiary groups have been identified by policy makers. These groups are referred in policy sciences as ‘target groups’: groups towards which a policy is directed. Examples of target groups in mobility policy include car drivers, cyclists, and daily commuters. In theory, if groups share similar characteristics (e.g. demographic, economic, etc.), they should be treated by policy in like manner. However, recent research has indicated that this is not always the case. These groups may be treated differently in two jurisdictions, receiving different benefits and burdens, or wins and losses (Ingram, Schneider, & Deleon, 2007). In the case of the BB program, we observe that despite that all regions have the same policy goals of congestion reduction and travel time, each region has developed a different approach towards their beneficiary groups.

The differential treatment in the BB program could be explained by an emerging framework in policy sciences, namely the Social Construction and Policy Design (SCPD) framework (Ingram, Schneider, & Deleon, 2007). This framework suggests that differential treatment in policy is explained by how beneficiary groups are socially constructed. By social construction, we refer to “a world-shaping exercise [...] in which the ‘realities’ of the world are defined” (Ingram, Schneider, & Deleon, 2007). According to the SCPD, socially constructed elements such as contradictions, images, rationales, and other design components operating in practice determine how beneficiary groups are being treated should also be considered for analyzing policies (Schneider and Sidney, 2009, p.105). According to SCPD scholars, constructions are based on four ‘ideal types’ of groups, depending on their level of political power and its positive or negative construction: advantaged, contenders, dependents, and deviants.

Despite the increasing relevance of the SCPD framework in policy sciences, limited attention has been given to the role of science and technology therein (see Ingram, Schneider, & Deleon, 2007), as well as its application in the mobility policy domain. We combine insights from SCPD with Science, Technology, and Society Studies (STS). While the SCPD provides a framework for analyzing differential treatment to target groups, the STS approach allows us to understand the role of technology and the differential treatment of target groups in innovation policy, as well as new approaches to understand social construction, namely by “following the actors” of the decision making mechanisms in smart mobility.

In order to analyze how the SCPD framework can explain a differential treatment of target groups in a smart mobility policy program, we performed a comparative case study of two regional BB packages. The main research question is how target groups are socially constructed by decision-makers in the BB regions of Maastricht and Brabant. The data for our case study was primarily conducted through interviews with BB major stakeholders, as well as from policy documents and
websites. We analyzed the data through applying the SCPD framework, especially its four target group categories mentioned above. We found that in both Maastricht and Brabant BB regions, the connected bike is the dominant solution for reaching the BB goals. The unique combination of (e-)bikes with tracking technology with the BB behavioral change aims is a persuasive technology which allows a distribution of new types of wins: digitalized wins. We have identified that Ingram and Schneider’s categories are not fully applicable for describing the types of wins, when looking at smart mobility solutions such as the (connected) bike. We propose that a category of digital wins would better capture the nature of the personalized wins distributed through the use of a connected bike. These wins are non-material, such as the reduction of pollution, and becoming increasingly quantified by beneficiary groups, e.g. by measuring the amount of CO2 saved by cycling instead of using the car. It is only possible through the use of smart sensors that are part of the connected bike. By material we mean that the number of the CO2 savings or gains are seen on a screen of a given mobile device. These mechanisms represent a novel tool to enable policy-makers to distribute highly personalized wins tailored to the user needs and to communicate the wins directly to them.

Through the STS approach of ‘following the actors”, we have identified a new decision-making mechanism significantly influencing differential treatment, namely inclusion of private parties in the identification of target groups (and their wins and losses). Overall, our analysis showed that car users are the winners in both contexts. By making all the wins available to car-users, policy-makers are still supporting a car-based system, which is as problematic as it is hindering implementation of smart mobility solutions aiming towards promoting emergence of alternative transportation modes to lower congestion and sustainability. We propose that attempts towards stimulating the behavioral change towards biking Dutch policy-makers should aim for more symmetrical approaches and implementing/supporting the distribution of the e-bikes in a more inclusive way.
The case of Mobility as a Service: a panacea or chimera of urban transport and governance?

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This paper examines some of the transitions in technology and service provision associated with urban mobility and assesses their future implications for urban policy-makers. The modes that provide mobility have experienced substantial and continuing changes over recent decades. This creates a dynamic field of policy-making and implementation as well as academic inquiry (Stead, 2016). The transitions have important implications for the way in which urban mobility is currently governed, how it will be governed in the future, and potentially have some significant social and environmental effects relevant to the objectives of wider urban governance.

We analyse the shifts taking place in urban mobility services along with some general shifts in urban governance, evident across providers, services and operations in both domains. In many cases, the trends involve shifts from public to private and increasingly global providers. There is greater responsibility for transport governance at local and regional levels, and a rise in demand/supply of ‘flexibility’. The associated shifts in social practices and expectations are facilitated by advanced mobile information and communications technologies (ICT) and intelligent transport systems (ITS). Significant policy drivers from: global social, economic and environmental challenges (e.g. urban migration, energy security/scarcity, international climate change agreements) appear counter to increasing emphasis on reducing investment in infrastructure and exploration of alternatives to infrastructure provision. Political headaches include ensuring long-term urban competitiveness and issues around legitimacy and accountability.

The technological transition in the mobility sector has many competing and cooperating components. We illustrate our account of the urban/mobility governance challenge by analysing one ‘spearhead effort’: Mobility as a Service (MaaS). ICT has facilitated the integration of information, booking, and payment, and supports operational flexibility for demand-responsiveness, thus creating the opportunity for MaaS. The MaaS concept was first developed in Finland, where the focus is on the business opportunity based on competencies in developing digital products and services (Heikkilä, 2014). MaaS is also regarded as a business opportunity by the UK government which set up the Transport Systems Catapult ‘to harness technology to improve the mobility of people and goods’ (though in reality to promote the UK as ‘world-leading’ in transport systems innovation), and TSC has assessed the opportunities and impacts of MaaS (TSC, 2016). The Ministry and Finnish Transport Agency advises public authorities to create the environment for attracting market-based, domestic and foreign funding, aiming at developing and experimenting with exportable mobility innovations (FTA, 2015). The UK’s TSC seeks to smooth innovation pathways, identifying barriers to widespread MaaS provision that need policy intervention to facilitate private sector innovation (and benefit). This solidifies the perspective that the role of the public sector is to enable the change and provide favourable operating conditions, whereas the responsibility for innovations and service development lies with the private sector. Large corporations (having already captured much transport-related work as UK public sector capacity has crashed through spending cuts) are embracing MaaS as a new

¹ Project website: ADAPT: www.adapt.leeds.ac.uk
business stream from the public sector who have more responsibility but less capacity than previously (certainly in the UK) (e.g. Atkins, undated; Okuda et al 2012).

The central assumption of MaaS is that transport services can be converted into service packages, as with the communications service sector. The expected result is provision of door-to-door mobility services being offered by “mobility operators”, with the promise of greater ‘efficiency’ or optimization of the transport network and supporting ‘sustainable urban transport’ by reducing car-dependence. This outcome could be undermined by autonomous vehicles without strong governance to address conflicting driving forces (Blyth et al, forthcoming). Recent visioning work on the implications of autonomous vehicles suggests that governance measures to control mobility will be necessary in three out of four scenarios (Milakis et al, 2017), and it is not the case that MaaS is a necessary development for most of the new transport technologies. However in theory, MaaS can incorporate ‘winning’ mobility modes, as it is an ICT umbrella for all kinds of modes, can position itself as an ‘optimizer’, and is amenable to absorption of future innovations such as autonomous vehicles. In several respects, it repackages existing ITS ideas of integration, and sounds intuitive, understandable and ‘good’, and in line with the Smart Cities agenda.

However, the enthusiasm with which organisations are embracing the concept masks significant political and economic uncertainty. Some of the business models are aggressive (e.g. Uber), disrupting existing provision and posing challenges for urban governance as policy and regulatory mechanisms struggle to keep up. Significant societal impacts are inevitable (Mladenovic, 2016).

The possible challenges of urban transport governance in light of new mobility concepts are quite varied, impacting on: decision-making (appraisal and assessment of systems, investment and policies); responsibility for testing new mobility technologies (who and at what level); the role for public authorities in a new highly-complex liability context; the impact on urban governance planning structures and processes where the current method is structured around forecasting and traffic modelling when new concepts might require more ‘visioning’; the impact of growing global competition for mobility innovation on transport decision-making; regulating the new markets (including the use of in-vehicle data by service providers and third parties). The prospect of rationing of demand as a tool to manage congestion and emissions is also an issue for governance. ICT network capacity is more easily scaled-up as network demand is managed optimized through data package routing protocols, whereas humans are free to meander if they wish. Thus congestion in communications networks can be managed in ways that are not possible in transport provision, if MaaS is to preserve values of individual choice/freedom, with its promise of packaging different levels of pre-purchased or ‘Pay-as-you-Go’ access to different combinations of transport modes.

Finally, in terms of social justice, what happens to those excluded from the system due to cost or dissent? There are thus crucial missing aspects to the ‘panacea’ thinking around MaaS, not least the classical debate of rights versus responsibilities. MaaS Global advertises itself as “mobility on a whim”, promoting the idea of individual unfettered freedom. This false promise fails to acknowledge that current problems of traffic congestion, urban air pollution and greenhouse gas emissions are large-scale emergent phenomena arising from the aggregate impact of our small-scale individual activities. These issues necessitate strong urban governance, which is hampered by framing MaaS as a private-sector business opportunity, because the impacts reach well beyond mobility. The uncritical thinking also ignores the fact that the breadth of mobility innovation is not all subsumed into MaaS, and neither does it need to be.
There is little discussion of how MaaS can work at scale if there are people and technologies outside the system, and there remain other technologies that can impose critical challenges for urban transport governance. The concept of Smart Mobility is not wholly predicated on ICT, as the ‘smartest’ modes are active (and free or low cost at the point of use), i.e. walking and cycling. Can we use MaaS to radically but gradually reconfigure our mobility systems (the panacea), or will it be a chimera? The current focus on outsourcing innovation to the private sector combined with competitive rhetorics predicated on economic growth through ‘Smart’ (as synomous with ICT) innovations suggests the latter, which carries profound implications for decision-making in transport and urban governance.

References


Transport Systems Catapult (2016) Mobility as a Service: exploring the opportunity for mobility as a service in the UK.
Cities around the world are embracing the potentials of new transport technologies. Often summarized using the shorthand ‘Mobility 2.0”, these technologies include the spectrum of shared mobility (car sharing, ride sharing), mobility on demand, and, more recently, autonomous vehicles. These technologies, and the mobility they support, can be both impeded and fostered by regulatory settings, as the worldwide experience of regulating or prohibiting Uber demonstrates. In this paper I develop a different perspective on the governance challenges of smart mobility, posing the question: how does smart mobility confront and potentially reframe core categories of transport planning? Drawing on work in urban governance and transport on the importance of the ways policies are framed and categories defined (e.g. Aldred 2012; Curtis and Low 2012), I develop an answer using three instances. I begin with the example of car sharing, and argue that a strong correlation between its required infrastructures and categories and those of automobility underpins its emergence and strength. In the second instance of demand-responsive transport, I consider the blurring of definitions of public and private transport. My final example focuses on the governance supports of the trial and testing of autonomous vehicles, identifying the ways in which they redefine relationships between cars and drivers, and cars and road space. Governing smart mobility, I conclude, needs to keep pace with rapid technological change without locking governance into categories and trajectories with unintended consequences.
Constructing legitimacy for automated goods mobility in the UK

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ABSTRACT: Connected and Autonomous Vehicles (CAVs) have become a defining feature of future transport scenarios, with implications for all types of urban mobility. The UK Government is actively involved in CAV niche development and the construction of legitimacy for CAV innovation (Department for Transport, 2015), with initiatives including demonstration cities (e.g. Bristol, Greenwich, Coventry and Milton Keynes) contributing to the development of social networks and partnerships between different groups of actors (e.g. private companies, consultancies, universities and local authorities) (Schwanen, 2016). The Strategic Niche Management (SNM) literature suggests that these partnerships enable key processes to occur, including learning processes, the articulation of expectations, and the construction of legitimacy (Geels et al., 2008). In this paper we examine how legitimacy is discursively constructed, and how expectations are articulated by industry magazines and the mass media, and the intersection between this innovation and efforts to reduce the energy demand of urban goods mobility.

To date, most attention has been directed towards the application of CAV technology in passenger transport, yet there is a history of vehicle automation in industry (Cox, 2002) and military (McMahon, 2016) contexts. Moreover, important steps have been made by both incumbent actors and new entrants to develop CAV technologies for both long distance truck freight, and urban goods mobilities: already there has been a high profile cross-Europe convoy of semi-automated trucks (France-Presse, 2016, EUTruckPlatooning, 2016), and a self-driving robot delivery system is being tested and demonstrated in Greenwich (London) by the new entrant start-up company Starship Technologies (Crutis, 2015). Indeed, it has been estimated that 30% of trucks in the UK could be CAVs by 2022 (Wardrop, 2009).

Environmental, social and organisational changes are impacting upon systems of delivery in the UK and elsewhere. There is also a growing awareness of, and concerns for, the negative externalities of road freight including traffic congestion, collisions and emissions. Energy demand implications are important in terms of volatile fuel prices often borne by individual owner-operator drivers, the importance of fuel costs as a percentage of total business costs, as well as associated carbon emissions, and their implications for global climate change. With few options for energy demand reductions, the freight industry is reliant on incremental, and often technological, efficiency gains to reduce energy demand, and there is growing demand-side pressure on the industry to account for unsustainable practices.

This research is interested in the roles legitimacy and expectations play in the innovation journey (Geels & Verhees, 2011). Legitimation is the process through which things become taken-for-granted, and concerns “not only the tacit presupposition of common knowledge 2
and the existence of shared assumptions, but also a great deal of – often purposeful – discursive activity manufacturing such implicit and shared agreement between individual members of the public” (Chovanec, 2010, p.62). It has been suggested that legitimacy is important for the societal embedding of new technologies (Geels & Verhees, 2011) and that dynamics of expectations influence innovation processes (Ruef & Markard, 2010) through cycles of hype and disappointment that can have important and differentiated implications for businesses, industry, investors, policymakers and consumers. In this study we explore the construction of legitimacy and dynamics of expectations for CAV technologies in urban goods mobility through a discourse analysis of industry and mass media publications.

This paper presents findings from a discourse analysis of print documents collected from four databases: Google News, Nexis, Factiva and Business Source Corporate Plus. Three discrete yet interrelated searches were conducted relating to: (1) the need for energy demand reduction in the freight industry, (2) innovations for energy demand reduction, and (3) the ability of automated vehicles to contribute to energy demand reduction for goods mobility. The three searches across all four databases identified 1,618 articles. All articles were downloaded, added to an excel spreadsheet, and checked for relevance to the three search topics above. The documents were analysed for evidence of: (a) the production and reproduction of shared patterns of meaning, and the “the power effects they exert on social practices” (Gotsbachner, 2001: p.730), specifically as they relate to the need to reduce energy demand, and the role innovations such as automated vehicles may play to this end, and (b) dynamics of expectation from industry and mass media relating to the role automated vehicles will play in future goods mobility.

This paper will highlight key discourses used by different media to legitimate/ illegitimate the emergence of CAVs for goods delivery and the expectations of CAV technologies to contribute to energy demand reduction. The paper will point to the range of CAV technologies in the development phase (e.g., drones, automated vans/lorries, delivery pods), the actors involved (e.g. incumbents, new entrants, local council, national government, research institutions), the intersection of CAVs with other innovations (e.g. urban consolidation centres, cargo cycles) and the governance implications for a smart mobility transition.

References:
Governmental Capacity and the Smart Mobility Transition

Abstract prepared for International Transport Forum
‘Governing the Smart Mobility Transition’

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Rapid changes in the IT sector have begun to transform transportation supply and demand in cities around the world. In addition to providing more precise and efficient tools for accommodating individual mobility preferences and integrating multi-modal transport services, the so-called “smart mobility” transition also holds the potential to alter the nature and relationship between public and private actors involved in provision of transportation services. The question is whether these changes are strengthening or weakening governmental capacities to insure longer-term urban transportation objectives, including those related to sustainability and equity, in what ways and why. To establish the analytical groundwork for answering this question about the smart mobility transition, my presentation takes as its point of departure a discussion of the extent to which recent transport policy innovations in three different cities have shaped governmental capacity, whether through strengthened coordination mechanisms across multiple sectors, levels of government, and territorial scales, altered planning institutions, public-private sector relations, civil society commitments, or governance mandates. Drawing on case study research conducted for Transforming Urban Transport - The Role of Political Leadership (TUT-POL), sponsored by the Volvo Education and Research Foundations (VREF) and hosted at the Harvard Graduate School of Design, the discussion centers around three different smart mobility innovations: (1) Stockholm’s adoption of a surveillance technology-monitored congestion charging system, whose revenues financed local and regional transport infrastructure investments; (2) Seoul’s adoption of the world’s first geographically-referenced, distance-based multimodal smart fare management system, built around a restructuring of the bus industry, and (3) San Francisco’s early adoption of an accommodative regulatory framework to support the proliferation of ridesourcing services. In my presentation I will focus on what exactly has been being transformed through these new policies, and whether the roll out of smart mobility components within the larger set of transportation changes has positively impacted cross-agency coordination, multi-scalar agreements, public-private relations, and other factors fundamental to enhanced governmental capacities, how and why.
Planning for disruptive transport technologies: how prepared are Australasian transport agencies?

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This paper reports on research to understand the preparedness of transport planning agencies for the arrival of the ‘disruptive’ technologies of automated private and public transport vehicles in Australasian cities in a context of well-established neo-liberal and emerging corporatist modes of governance.

Neo-liberal governance of transport systems is well-established in Australian cities with private companies becoming dominant in public transport planning and management (Stone et al., in press), and a long-term decline in capacity for effective metropolitan planning (Stone et al., 2016).

In a further weakening of state power, corporations are playing an increasing role in the shaping of Australian cities through their ability to mobilise capital to support large infrastructure projects and to usurp institutional planning roles which have traditionally been the responsibility of public-sector agencies.

Through a case study of rapid arrival on the political agenda, without prior consideration in metropolitan planning processes, of Transurban’s $A5.5 billion Western Distributor tollway project in inner Melbourne, the paper outlines emerging empirical evidence of changes in the roles of corporations in generating ideas, mobilising political support and ensuring the implementation of favoured city-shaping projects. This is set in the context of literature on the evolution of the neo-liberal state from a ‘steering and rowing’ model of public-private relations to a corporatist model in which the private sector is embedded in the processes of government, such as planning, in a much more complex way.

The mechanism for such corporate interventions in metropolitan planning, now becoming established in Australian cities, is the ‘market-led’ or ‘unsolicited’ proposal evaluation framework. This framework allows corporations to bring proposals to government in ways which go outside traditional planning processes and to bypass conventional processes of engagement with civil society.

This weakening of state and civil power in infrastructure planning and delivery has obvious implications for the roll-out of the complex communication and road infrastructure, and the platforms for data-sharing required for the deployment of autonomous vehicles, especially for ‘public’ transport purposes.

In this context, we present data from recent research interviews with senior staff from state and national transport planning, management and service-delivery agencies in Australia and New Zealand with interests in the development of emerging autonomous vehicle technologies.

The interviews, comparable to those undertaken by Guerra (2016) in the US, were designed to gather information about:

- the expectations on these organisations in relation to the nature and timing of the deployment of new technologies;
anticipated positive and negative implications for achieving economic, environmental and social planning objectives;

■ the collective infrastructure investments that planning agencies expect that new technologies may require, and the mechanisms available to provide required resources;

■ perceptions of the preparedness of public-sector agencies for the deployment of autonomous vehicle technologies in terms of institutional processes and staff expertise. Analysis of this material uses recent understandings of best practice (for example, VDV, 2015, Lindsay, 2016) as the basis for comparison.

This work is part of a research agenda to explore the planning and regulatory frameworks that are needed to ensure that the new technologies can be deployed in ways that maximise the public good. This agenda includes work to:

■ Locate major emerging technologies in their political and corporate contexts.

■ Describe positive and negative land-use/transport scenarios that might result from deployment of new technologies.

■ Use a range of emerging literature on technological transitions and disruption, and the social construction of technology in the neo-liberal world (Graham and Marvin, 2001), together with established work on corporate power and planning to identify key points/modes of planning intervention necessary to achieve positive outcomes

■ Understand and build the capacity of Australian planning agencies to successfully manage transitions.

References


Abstract

The aim of this paper is to demonstrate how local partnerships can be developed to facilitate a wider ‘smart city’ solution delivering social good through connected value propositions. Two UK Local Authorities (Hertfordshire and Northamptonshire), the two Universities of Hertfordshire and Northampton and public transport providers have worked together to develop a smart scan-on m-ticketing solution (initially run in partnership between Hertfordshire County Council, the University of Hertfordshire and the University bus company (UNO) as part of a quality partnership project), that can be used across multiple operators allowing for a fully integrated smart mobility network to emerge.

An initial Hertfordshire demonstrator pilot project explored how a ‘smart’ m-ticketing platform could provide a sustainable financial business model for implementing m-ticketing solutions for small and medium bus operators within rural counties in the UK. This project was the first scan-on bus mobile ticket product used in the UK outside of London, and offers a partnership model and governance structure for local authorities, commercial operators and other stakeholders with an interest in integrated ticketing. The project has now developed alongside the Northamptonshire Total Transport project, which itself aims to leads the way to a new socially innovative model for procuring and delivering transport solutions, which aims to include smart ticketing solutions.

Initial user reactions have been positive, generating large digital data sets that indicates rapid user uptake in comparison to other schemes. These data enable detailed analysis such as precise user geo-spatial distribution, supporting targeted marketing and route-specific promotions to encourage further service uptake. A critical success factor of the Hertfordshire project was to target a reduction of on-bus cash handling by five per cent within the first 12 months. This would also clearly reduce bus loading times, and so improve reliability and operator efficiencies. After an initial 16 month operational use, uptake growth in excess of seven per cent of total revenue has been achieved, on specific routes the transfer to m-ticket has exceeded 12 per cent, with targets of ten per cent of total cash to mobile conversion predicted by the middle of 2017 likely to be realised. The effectiveness of marketing campaigns, technical development aspects and implementation issues can also be reported.
Based on the success of Hertfordshire project, the pilot is now being expanded upon through the UK Department for Transport funded ‘Network Northamptonshire Total Transport’ initiative. This transformative project aims to improve connectivity, integration and accessibility for rural transport networks and forms part of the ‘Heart of England’ strategic alliance agreement that aims to work across ten local authorities neighbouring Northamptonshire, consolidating £3bn of spending. The partnership will build on existing and new innovative transport solutions, including making use of the two Universities own bus operator (UNO) as a further future platform for rolling out smart integrated solutions across wider geographical areas.

These two projects have a wider context. Public transport services in rural areas in England are deregulated, and have at present no effective statutory backing or ring-fenced funding. As a result, with reductions in funding to local authorities, funding for non-commercial bus services is being sharply reduced and many authorities are proposing to cut most funding for local bus services. It is argued here, that these projects may offer alternative cost-effective ways of providing local transport services in non-metropolitan areas, as well as a greater understanding of the uptake of smart multi-modal solutions in rural areas that will improve accessibility and connectivity through enhanced services for new users and for those with restricted or reduced mobility networks, whilst also offering efficiencies for operators.

This research has added importance: the UK Government is proposing legislation on bus services in England that would confer significant extra powers on local authorities to intervene in the bus market in various ways. These projects may act as pathfinders for the use of these powers in non-metropolitan areas. Structures supporting a partnership approach involving all those with an interest in public transport are a critical part of improving rural connectivity and accessibility.