

Four vignettes: Diverging and overlapping institutional rationales in four autonomous public transport projects in Denmark

Authors: Hannah Villadsen, Thomas Budde Christensen

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Abstract

Introduction of autonomous shuttles busses has had a slow start in Denmark. Based on interviews with core stakeholders in the field – all involved in ongoing or coming road tests – four vignettes or case stories are developed to describe the very diverse landscape of strategic, planning related and operational goals that coexist in the organizational ecosystem surrounding the collective effort to introduce this form of transport in a Danish context. The four cases are: Urban development and social inclusion:

1. A safer and more inviting Astrupstien - a local planning authority's perspective (Aalborg municipality)
2. Disruption and opportunity: new business models with autonomous shared mobility in Nordhavn - an entrepreneur's perspective (Holo)
3. Integrated, attractive and efficient public transport: AMoD at Slagelse Hospital – a public transport provider's perspective (Movia)
4. Layers of operational complexity: Reliability and innovation at DTU-campus – an established bus operator's perspective (Nobina)

It is discussed how these different perspectives contribute to the building of national and international capacity and how they may challenge or aid the transport planning task.

Introduction

Transport planning is a complex and multifaceted endeavor involving contested spaces in crowded cities, potential mobility poverty in rural areas, a heavy share of CO₂ emissions, contingent traffic safety and large sums in public and private investment. While autonomous road transport can provide solutions to some transport planning challenges, its implementation will – at least in the short term - add to the overall complexity of the planning task.

The transport planning field evolves through an ongoing negotiation of political priorities, existing regulative regimes, the available technologies, business models and the properties of the specific geographical context. It can be argued that this evolution has been largely incremental over the past eight decades since the disruptions caused by the introduction of the modern car. This relative stability can be seen as a result of 1) the relative unchanged package of performance attributes offered by the available technologies (Bower and Christensen 1995) and 2) a set division

of responsibility and liability between road users, vehicle manufacturers and providers of legislative and physical infrastructure.

The modern car triggered a wide-ranging transformation in the structure and functions of transport systems (Geels and Kemp 2012) as well as related social systems (Urry 2013), changing not only the dominant mode of transport but causing disruptive changes to related systems such as road infrastructure, cities, energy systems and social systems. It seems likely that if successfully introduced in mixed traffic autonomous vehicles will challenge the status quo of the transport system in similarly profound ways. This will happen by fundamentally changing the cost profile of chauffeuring public busses, taxis and private cars and by challenging the existing logic of traffic safety regulation which is predominantly based on driver liability. If autonomous vehicles are instead - or at first - introduced in allocated lanes fenced off from the more complicated decision structure of mixed traffic this will in itself pose additional challenges to physical planning.

Testing of autonomous vehicles in Denmark has had a slow start. The resulting discussions, meticulous description of routes, risks, solutions and workarounds has taken up a lot of time, imagination and effort in a wide range of organisations and institutions. While not everybody will find that it has been time used productively, it can be argued that the painstaking process has helped build technical and institutional capacity across the involved actors, stakeholders and institutions in a nation with proud traditions in public planning, but with little experience in handling disruptive innovations in safety sensitive transport technology. As stakeholders have been navigating the frustrating process of finding a way through the application process a pattern of deviating and overlapping interests between different public and private parties has emerged: lawmakers, regulators, local authorities, entrepreneurs, public transport providers, bus operators and vehicle manufacturers/importers have distinct exposure and opportunities as a result of the intense focus on autonomous transport and the prospect of disruptive change in the field. The following four vignettes drawn from the four planned Danish road tests seek to outline some of this diversity of diverging and overlapping interests and rationales.

Four case stories or vignettes

<p>Astrupstien (Aalborg municipality)</p> <p>[Short project presentation]</p>	<p>Nordhavn (Holo)</p> <p>[Short project presentation]</p>
<p>Slagelse Hospital – (Movia)</p> <p>[Short project presentation]</p>	<p>DTU-campus Lyngby - (Nobina)</p> <p>[Short project presentation]</p>

5. Urban development and social inclusion: A safer and more inviting Astrupstien - a local planning authority's perspective (Aalborg municipality)

6. Disruption and opportunity: new business models with autonomous shared mobility in Nordhavn - an entrepreneur's perspective (Holo)
7. Integrated, attractive and efficient public transport: AMoD at Slagelse Hospital – a public transport provider's perspective (Movia)
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Discussion

References