High-Level Dialogue on Connected and Automated Transport

Background Paper

"Shared Autonomous Mobility"

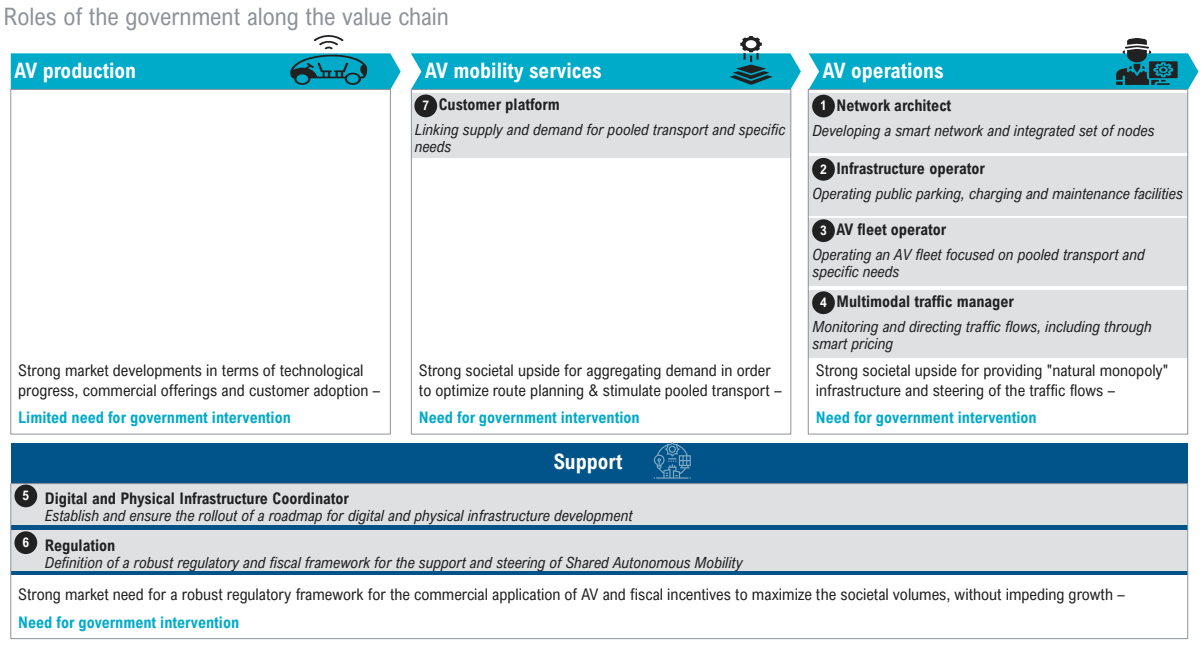
For the expert discussions

18 June 2024, Ghent, Belgium

Introduction

Governments at various levels will have to take on new or adapted roles within the mobility ecosystem to steer the introduction of shared automated transport services in the right direction and as such the governance of public transport becomes more complex. To maximize the societal value of Autonomous Mobility, governments will have to take into account the following seven factors: (1) reduce congestion, (2) ensure accessibility for all, (3) improve ecological impact, (4) create economic value, (5) ensure a qualitative service, (6) preserve cybersecurity and safety and (7) preserve European sovereignty. A crucial factor will be to stimulate the pooling (robo-shuttles) and sharing (robo-taxis) of autonomous transport, while meeting the seven conditions mentioned above.

Within a strategic study for the introduction of (shared) automated transport and mitigation of possible unwanted effects of autonomous driving in Flanders, possible roles (and measures aligned with those roles) for the government to steer this evolution in the right direction have been defined. The actual importance of these specific roles and how either our government and administration will fill these in - or whether new public or private initiatives should be installed - are still under debate within the Flemish Taskforce for Autonomous Mobility. The figure below illustrates why the seven roles have been selected, for discussion during the HLD expert breakout session on Shared Autonomous Mobility.



Format

We welcome input on possible strategies and good practices, but also experience on what does not work in your country. We will elaborate on the roles below, each time followed by some statements on the options for government bodies to fill in that role, which will serve as introductory assertions to fuel the discussion.

Roles

- **Network architect**: Elaborates a smart, integrated set of nodes and networks

  The primary goal of authorities will be to implement a mobility policy that can stimulate the shared use of automated transport and convince the users to choose the alternatives to private (automated) transport or robo-taxis as these modes come with a more negative impact on congestion and environment.

  Furthermore, the government defines the transport network, service levels and minimum quality requirements in consultation with all regional and local bodies involved. On the basis of this network architecture, the licensing criteria for autonomous transport operators can be shaped and the corresponding scale and spatial distribution of supply in a mature market can be predetermined. For example, this will avoid less lucrative zones receiving substandard service levels and also ensure that the offer is sufficiently inclusive for the entire population, thus including residents with specific requirements.

  To prevent transport poverty, an appropriate financial framework should also be worked out for the use of robo-taxis and robo-shuttles. This also requires the collection and provision of aggregated, anonymised transport data for evaluation of policies and new autonomous business models.

  A fragmentation of decision-making powers with regards to this role could hinder the elaboration and follow-up of a harmonised and timely strategy and policy.

Statements:

- Options for the role of the Government:
  - The Government has a clear role as Network Architect and one specific, central body should take up this role to avoid fragmentation and ensure harmonization of autonomous transport.
  - The Government could influence the Networks of the future through regulatory and fiscal stimuli, without specifically impeding or imposing any commercial offer.
  - The Government should limit its role to creating awareness, without further intervening in the market.

- To be a network architect, the Government will need to:
  - Upskill and reskill employees for the collection and evaluation of transport data.
  - …

- **Infrastructure operator**: Provision of public parking, charging and maintenance facilities

  In function of the different types of transport to be operated in-house by the government or via licences and permits, a spatial planning plan for the mobility infrastructure of the future (where do we plan infrastructure for e.g. parking, charging, maintenance, …) needs to be designed and approved.

  Government agencies often govern strategically-located infrastructure and government in some case could be best placed to develop shared infrastructure or direct this development. However, new infrastructure is capital-intensive and revenue is generated with a delay so a strategy on both using and adapting existing infrastructure where possible and creating new infrastructure needs to be put into place.

Existing infrastructure such as parking buildings in cities could be used for other purposes in the long run as demand for private parking will decrease and the total number of vehicles will fall if robo-taxis and -shuttles reach a larger market share. The PTO can also play a role in this with existing and new depot infrastructure.

Statements:

- Options for the role of the Government:
  - Define the infrastructure requirements and put at disposal/operate public "AV ports" infrastructure and regulate its usage.
  - Define regulation and guidelines for AV infrastructure, without intervening in operations.
  - Limit the role to create awareness.

- To be an infrastructure operator, the Government will need to:
  - Transform its current infrastructure (bus depots, stations,...).
  - ...

- **AV fleet operator:** Operating an AV fleet for pooled transport and specific needs

  To remain a government instrument with prevalence, an active role must be played in the transformation of public transport services by automating autonomous buses and operating a fleet of robo-shuttles. The government can thus pioneer the AV market offer and steer the market towards efficient pooling of demand.

  This allows strategic control over mobility to be maintained with the added benefits of ensuring inclusion, sizing capacity correctly (e.g. no sizing below demand in peak periods which would increase the price) and softening the shock effect in public employment.

  This role would ideally be initiated through the set-up of pilot projects. These pilot projects can serve as a catalyst for the elaboration and preparation of all

other roles to be included in the value chain.

Statements:

- Options for the role of the Government:
  - We see an active role for authorities (national/regional) as a sizeable fleet operator for robo-shuttles, to push industry and new players to continue developments in this area while maintaining direct and strategic control of the mobility solutions.
  - The Government can support (large) pilot projects, but should leave deployment to private players.

- To be an AV fleet operator, the Government will need to:
  - Deploy much faster beyond pilot testing.
  - ...

- **Digital and Physical Infrastructure Coordinator**: Establishing and ensuring the rollout of a roadmap for digital and physical infrastructure development

  V2X communication will further increase the safety and efficiency of autonomous and regular traffic. However, it is not clear today whether V2X technology will also be a prerequisite for implementation of fully autonomous transport. A government commitment to V2X infrastructure might improve the investment climate for companies in AV sectors and technologies.

Statements:

- Options for the role of the Government:
  - Proactively define and commit to a roadmap for the roll-out of both digital and physical infrastructure, to stimulate the full-scale deployment of robo-shuttles and other automated transport solutions.
  - "Wait-and-see" and commit to V2X developments in function of the demand of market actors and individual business cases for

investments.
    - Refrain from V2X investments, leaving this to private initiative.

- To be a Digital and Physical Infrastructure Coordinator, the Government will need to:
    - Gain the required competences and industry contacts to correctly estimate the market needs.
    - ...

- **Multimodal traffic manager**: Monitoring and directing traffic flows, including through smart pricing

  The government can control traffic flows in real-time through the collection of new data sources (including from autonomous transport operators and from road infrastructure) among others. On this basis, flexible pricing could be worked out in the form of new innovative forms of road pricing (depending on vehicle occupancy) and flexible pricing for the shared and pooled AV offer.

  A more multimodal approach, with greater availability of AV-generated data, requires new competences.

Statements:

- Options for the role of the Government:
    - The Government should optimize and steer real-time traffic flows based on real-time data, to drastically reduce congestion and steer customers towards modes of transport with high societal value.
    - The Government should give straightforward, one-off steering for traffic flows, without intervening in real-time.
    - The Government should monitor traffic flows, as input for its investment policy, but not intervene in real-time traffic steering.

- To be a multimodal traffic manager, the Government will need to:
  - Define a strategy for the introduction of innovative and/or flexible pricing
    - Is your country a best practice?
  - ...

- **Regulation**:
  New initiatives aimed at the concrete deployment of autonomous transport need a legal framework for pilot projects in which, in line with safety requirements, autonomous transport innovation is allowed.

  This needs to be accompanied by conditions regarding on-board vehicle safety and safety requirements for other road users, specifically to avoid risks and unwanted use (on-board cameras, connection to dispatch/operator, alarm button, mandatory intervention teams, etc.). In order to launch pilot projects smoothly, cooperation between the different competent policy levels needs to be optimal.

  In consultation with relevant international institutions, work should also be done on the legal framework needed for large-scale commercialisation so that it becomes clear what requirements need to be met in the longer term.

Statements:

Options for the role of the Government:
  - A European framework, with only limited room for manoeuvring at a national/regional level, is required for the successful roll-out of automated mobility services.
  - Regulation should be as decentralized as possible, down to regional level, as difficulties in cooperation would impede progress.

- To drive forward regulation, the Government will need to:
  - Set a legal framework, balancing safety and innovation
    - Is your country a best practice?

- **Customer platform**: Linking supply and demand for pooled transport and specific needs

  Two scenarios have been proposed.

  - The establishment of one central customer platform for a region/country where PTOs can offer its own fleet of robo-shuttles as well as integrate the fleets of private operators without them having a separate customer platform. In this way the platform can assign the most suitable vehicle for each travel request that meets the traveller's specific requirements as well as enhance sustainability. This will avoid a situation where the customer makes a reservation with operator A but an equivalent vehicle from operator B could actually have taken this resident on an already scheduled ride with no empty kilometres. Private operators would then be paid per kilometre driven, for example.

    → Benefits: more efficient pooling of total demand, less empty kilometres, reduced congestion and use of space for parking as well as environmental benefits
    → Disadvantages: more limited market forces

  - A more limited form of intervention could be to allow private operators to operate their own platform but to require via licensing that open interfaces (API) are offered so that reservation, payment and follow-up of their vehicles can be integrated into third-party MaaS platforms. Customers can then choose to use a MaaS platform, but will only do so effectively if a strong incentive is created to do so via, for example, the introduction of a high tax on empty kilometres (innovative road pricing).

    → Benefits: greater market power for platforms
    → Disadvantages: lower pooling of demand, more empty kilometres, more congestion and use of space for parking, thus environmental loss. Firm motivation needed for customers to systematically choose MaaS platforms and to opt for the most socially beneficial alternative in them.

Statements:

- Options for the role of the Government:
  - The government should establish a central, compulsory customer platform for each region, managed by the PTA.
  - The government should require the sharing of data, so that commercial operators can leverage their own platforms, but government oversight and steering is still possible.
  - The government should not interfere with the commercial platforms of private parties.

- To run a customer platform, the Government will need to:
  - Set up/adapt customer platforms so that third party offerings can be integrated
    - Is your country a best practice?
  - …