## **MAVEN (Managing Automated Vehicles Enhances Network)**

## **MAVEN** transition roadmap

**MAVEN** final event

6 June 2019





## **MAVEN** premise

- Infrastructure applications will continue to play a vital role in the management of the traffic network.
- □ Traffic control systems will have a coordinating, orchestrating and sometimes dictating influence on traffic flows and dynamics, in support of societal and collective objectives.

Eg, infrastructure applications may organise the formation of dynamic platoons, set targets for such platoons, but leave the details of its progress to the platoon as a self-organizing unit.





## Scope & purpose of transition roadmap

- Raise awareness of the concept of infrastructure-supported road transport automation
- Support road authorities in understanding potential future changes in their role and in the tasks of traffic management
- Describe the building blocks of infrastructure-assisted road transport automation
- ☐ Give indication of potential phases in the transition towards infrastructure-supported road transport automation





## What the transition roadmap does not cover

- Prediction of societal & mobility impacts of automated driving
- Transport planning and policy making in relation to CAVs
- Piloting and testing of CAVs









## **Building blocks for the MAVEN approach**

#### Infrastructure systems

- Traffic control: which types of traffic controllers (from fixed time to adaptive) are better suited to which MAVEN use cases?
- Sensors: for queue modelling, queue lengths & detection of VRU
- Communications: Traffic controller <-> vehicle through road-side unit using ETSI ITS G5 technology (and possibly traffic controller <-> control centre?)

#### Physical infrastructure





#### Digital infrastructure



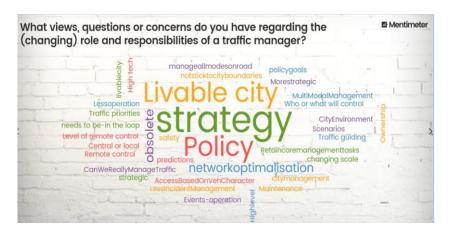






## **Building blocks for the MAVEN approach**

Traffic management aspects











## **Transition phases**



Mobility Aspect	Automation Awareness	Planning for Automation Readiness	Implementation of Automation Ready Measures
Policy	Policy screening: Liveability as top priority - how can CAVs contribute to it?	Reassessment of strategic mobility plans; incorporating new mobility forms	Mobility pricing for "SPAM" roaming cars
Infrastructure	Is there a conflict between <b>people friendly</b> vs. automation friendly?	Preparation of physical anddigital infrastructure	Modifications to infrastructure and accompanying traffic code
Planning	Engement with citizens & support testing activities and research	Update travel demand models and evaluate road capacity needs	Assessment of required land use changes based on integrated <b>land use</b> and transport modelling tools
Capacity Building	Try out level 1 & 2 functionalltiles	Identify <b>new skill</b> requirements - 'less concrete more bytes'	Organisational restructuring for traffic management and public transport operations
Traffic Management	Road <b>authorities</b> need to engage with OEMs	Back office for data exchange in traffic management	Defining data management responsibility with new management schemes





## **MAVEN** transition phases

- 1. Increasing awareness of CAV from a traffic management perspective
- 2. Planning for CAVs from a traffic management perspective
- 3. Implementation of traffic management measures for CAVs





## **Transition phase - planning**

- Traffic management strategy assessment:
  - How will cooperative perception and cooperative driving help me to do my job better as traffic manager?
  - Which MAVEN use cases hold most value for my city/region? Will the benefit be greater if implemented together or can it be done incrementally?
  - Which intersections/corridors should be prioritised?
  - How will my role as traffic manager evolve?
  - What influence will I have on vehicle movements as connected and automated motoring advances?





## **Transition phase - planning**

- **Organisational change** assessment:
  - Do TM staff have right knowledge and skills?
  - How will the use cases affect existing TM procedures?
  - New guidelines for vehicle guidance and control



- **Traffic management** infrastructure assessment:
  - Traffic signals readiness
  - Additional infrastructure needed
  - Integration with legacy systems, systems upgrading?







## **Transition phase - planning**

- Physical & digital infrastructure assessment:
  - Which roads to prioritise for making physically AV-ready?
  - Digitise infrastructure what, who and how?
  - Provide access to traffic & infrastructure related data
- Procurement
  - Market readiness: is infra/systems on market already?

- When will equipped vehicles be there in sufficient numbers to justify action/investment?
- Procurement guidance
- Business plan development:
  - What benefit will it bring?
  - How much will it cost and who will pay?
  - What if I do nothing?





# Thank you



