Driver is continuously exercising longitudinal AND lateral control

Driver is continuously exercising longitudinal OR lateral control

Driver has to monitor the system at all times

Driver does not have to monitor the system at all times; must always be in a position to resume control

Driver is not required during defined use case

System has longitudinal AND lateral control in a specific use case

System has longitudinal and lateral control in a specific use case

System recognizes the performance limits and requests driver to resume control within a sufficient time margin

System can cope with all situations automatically in a defined use case

System can cope with all situations automatically during the entire journey. No driver required

aTaxi/Private

AV Bus

AV Shuttles today

Very low speed
USDOT demos, Uber, Google, Patchwork laws/policies, Smart Cities
INTERNATIONAL BENCHMARK

NETHERLANDS

Truck and car Platooning, low speed shuttles
Saturday
May 28th, 2016
HMI issues, CV-AV links, cross-border issues, laws & policies, mega-projects
Large scale deployment pilot on automated and connected vehicles
Declaration of Amsterdam

Cooperation in the field of connected and automated driving

14-15 April 2016
Dubai gears up to launch driverless, smart transport in new roadmap

Digital Strategy at RTA

(Picture by Angel Tesorero)
Two Phases to the Roadmap

PHASE ONE
2017 to the 2020 Expo

PHASE TWO
2020-2030: the path to 25% driverless trips
SELF-DRIVING PUBLIC TRANSPORT BY 2030

- Roadmap & Strategy
- Self-driving marine
- Cable car
- Tram
- BRT (Level 3)
- Bluewaters GRT
- Self-driving Shuttle (Level 4)
- BRT (Level 4)
- A Taxi/Rideshare (Level 4) (limited locations)
- A Taxi/Rideshare (Go Anywhere)

Technology Readiness

- AV Bus Level 3
- AV Shuttles 40 km/h
- aTaxi/Rideshare
- AV Bus Level 4
SELF-DRIVING PUBLIC TRANSPORT TRIPS IN 2030

Self-driving Private Vehicles will drive the overall SDT above 27%

2016: 8.8%
2017: 11.2%
2018: 13.2%
2019: 15.2%
2020: 18.9%
2021: 21.6%
2022: 24.6%
2023: 27.0%
2024: 0.2%
2025: 3.0%
2026: 7.4%
2027: 11.2%
2028: 13.2%
2029: 15.2%
2030: 18.2%
SELF DRIVING TRANSPORT BUILDING BLOCKS

Legislation
- Testing
- Operations

Driver Behavior & acceptance
- Driver behavior and safety in Level 2-3 vehicles
- Driver acceptance of SDT

Driver & Vehicle Licensing/Registration
- SDT driver licensing
- Self-driving vehicle testing, registration and renewal

Insurance/Liability
- Crash liability of self-driving vehicles
- Insurance requirements

Infrastructure requirements
- Infrastructure improvements for SDT compatibility
- Crowd-sourcing and analytics

Cyber security/Data privacy
- Self-driving vehicle security
- On-board data recording and retrieval

Connected vehicle enablers
- Communication (V2I, V2V, V2X)
- Connected cloud

HD Mapping
- Accurate HD mapping
- Over the air update

AV City
05 Code of Practice for Trials

Connected Cloud
07

Center of Excellence
04 Infrastructure analytics

HD Mapping with OTA updates
03

AV Policies/legislation for Operations
02

SD BRT
01
Full coverage to go anywhere using AV shuttles, buses, tram, taxi and metro
Manual traffic control
The ability to “take over” control or redirect
DRIVE THRU ROBOT DRIVER PRANK