MAVEN presentation at the Info Day of the Czech Academy of Sciences

On November 13, 2017 MAVEN was presented as one of two successful H2020 projects at the Czech Technical University in Prague focused on transportation during the National Info Day "Current H2020 Calls - Smart, Green and Integrated Transportation" organised by the Technological Agency of the Czech Academy of Sciences. The event was attended by fifty industry professionals, representatives of municipalities and academia including the Czech Ministry of Transportation. The opening presentation was given by Mr. Frank Smit from the DG Research and Innovation of the European Commission. MAVEN project was presented by the Czech Technical University in Prague in the form of a 15 Minute presentation and in more details with participants during the discussion session.

Source: Archive of Technology Centre CAS

MAVEN (Managing Automated Vehicles Enhances Network)

Project Introduction

Robbin Blokpoel, Dynniq, project coordinator
Ondrej Pribyl, CTU in Prague
Tomas Horak, CTU in Prague

MAVEN is funded by the EC Horizon 2020 Research and Innovation Framework Programme, under Grant Agreement No. 690727

General information of MAVEN

- **Full title**
  - ✓ Managing Automated Vehicles Enhances Network
- **Project period:**
  - ✓ 01-09-2016 ~ 31-08-2019
- **Funded by EC Horizon2020 Research & Innovation Programme**
  - ✓ Budget: EUR 3,149,661.25
  - ✓ Nine partners from five countries: DE, NL, CZ, BE, UK
- **Main goal**
  - ✓ Enhancing intelligent urban road transport network and cooperative systems for highly automated vehicles

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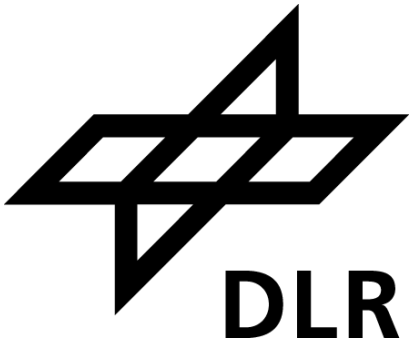
Consortium Partners



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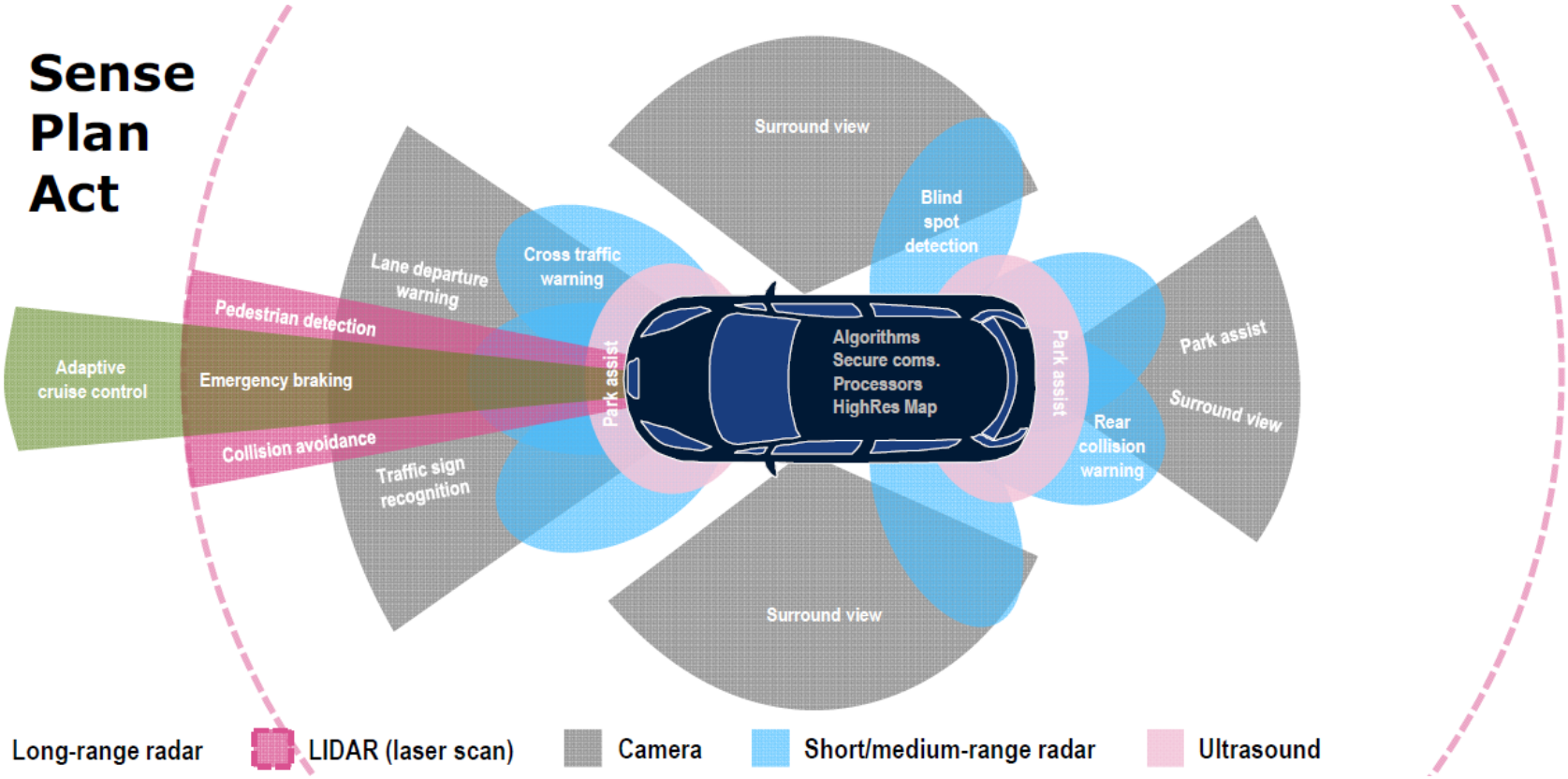
Automated vehicle technology
Cars can do a lot…



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… but are the cities ready for automated driving?

What hapens with an automated vehicle in the city?

Is the infrastructure ready?

Can we really use the potential of automated and connected vehicles?

Need for projects like MAVEN...

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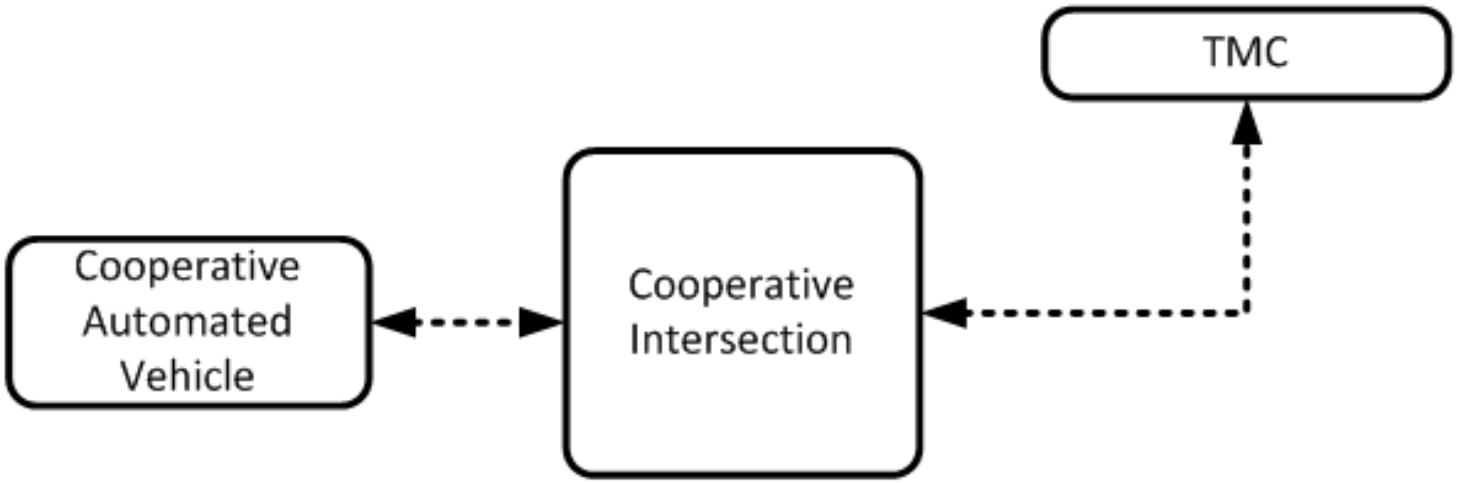
MAVEN scope



Objectives:
- Trajectory and maneuver planning
- Platoon organization

Objectives:
- Adaptive traffic light optimization
- Vehicle advisory

Objectives:
- Network load optimization
- Strategic policy targets

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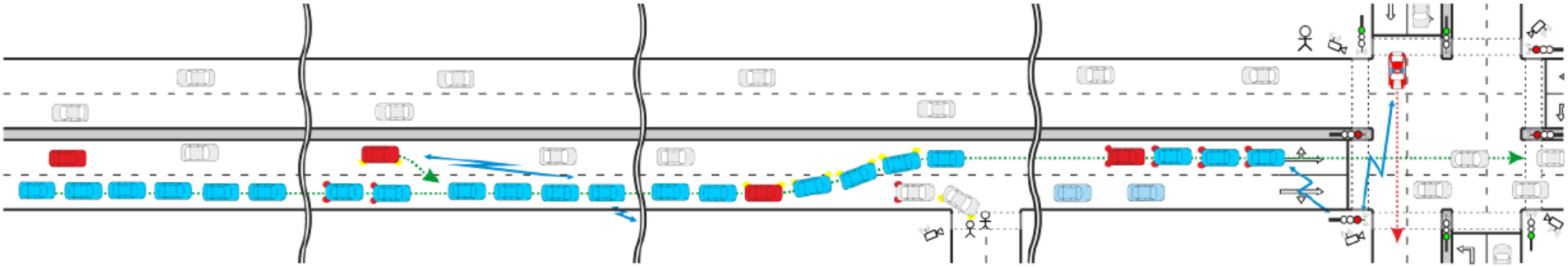
Project summary

- MAVEN will develop management regimes for highly automated driving in urban areas.
- Road infrastructure will be able to monitor, support and orchestrate vehicle and VRU movements to guide vehicles at signalized intersections and corridors in urban areas.
- With the new possibilities of automated vehicles the project will go beyond the state-of-the-art of Advanced Driver Assistance Systems (ADAS) and C-ITS applications such as Green Light Optimal Speed Advisory (GLOSA), by adding cooperative platoon organization and signal plan negotiation to adaptive traffic light control algorithms.



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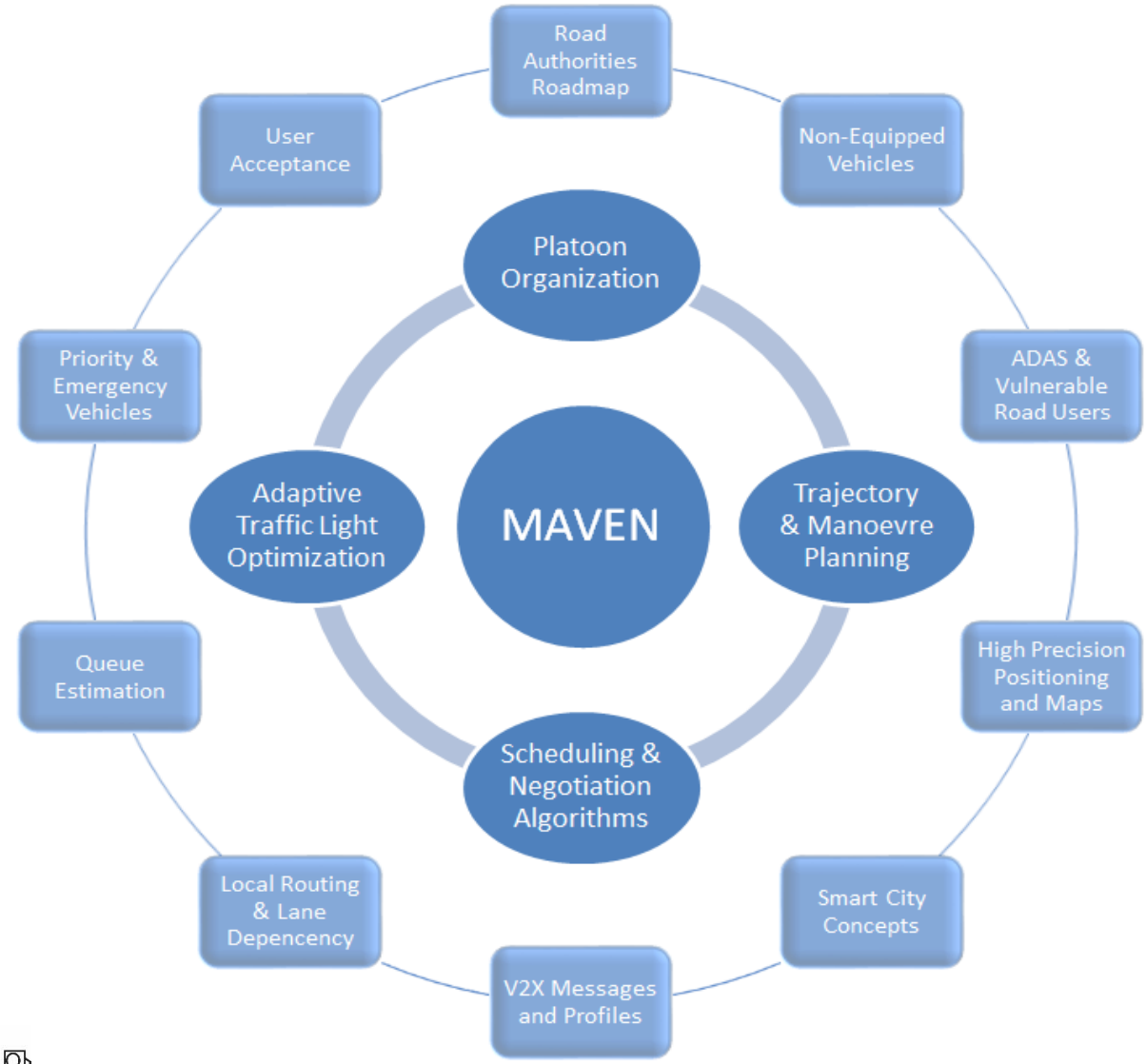
Summary scope and concept



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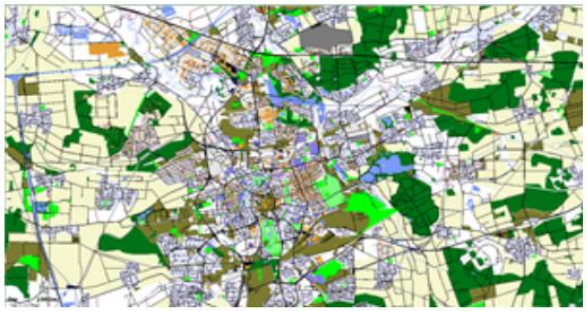
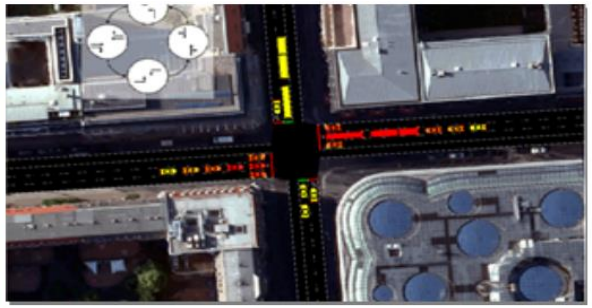
Facilities

- 2 DLR autonomous vehicles
- 2 Hyundai autonomous vehicles
- Braunschweig infrastructure pilot site
- Helmond infrastructure pilot site
- DLR Mobile RSU for controlled tests
- Prague simulation scenario
- Greenwich smart city perspectives
- SUMO simulation software
- Wireless simulation
- Policital support





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Expected impacts

- **Improved efficiency, safety and reduction of emissions**
  - ✓ Reduce fuel consumption and emission
  - ✓ More effective traffic lights and more efficient intersections
  - ✓ Vulnerable road user safety
- **Robustness and performance of sensor and data analysis systems**
  - ✓ Less occlusion, more robust, more reliable
  - ✓ From warnings to directives
- **Development costs, competitiveness**
  - ✓ Standards development (adoption, replication and scalability)
  - ✓ Effective local authority investment decisions
  - ✓ Affordable on-board sensors & cooperative sensing
  - ✓ Effects at low penetration rates

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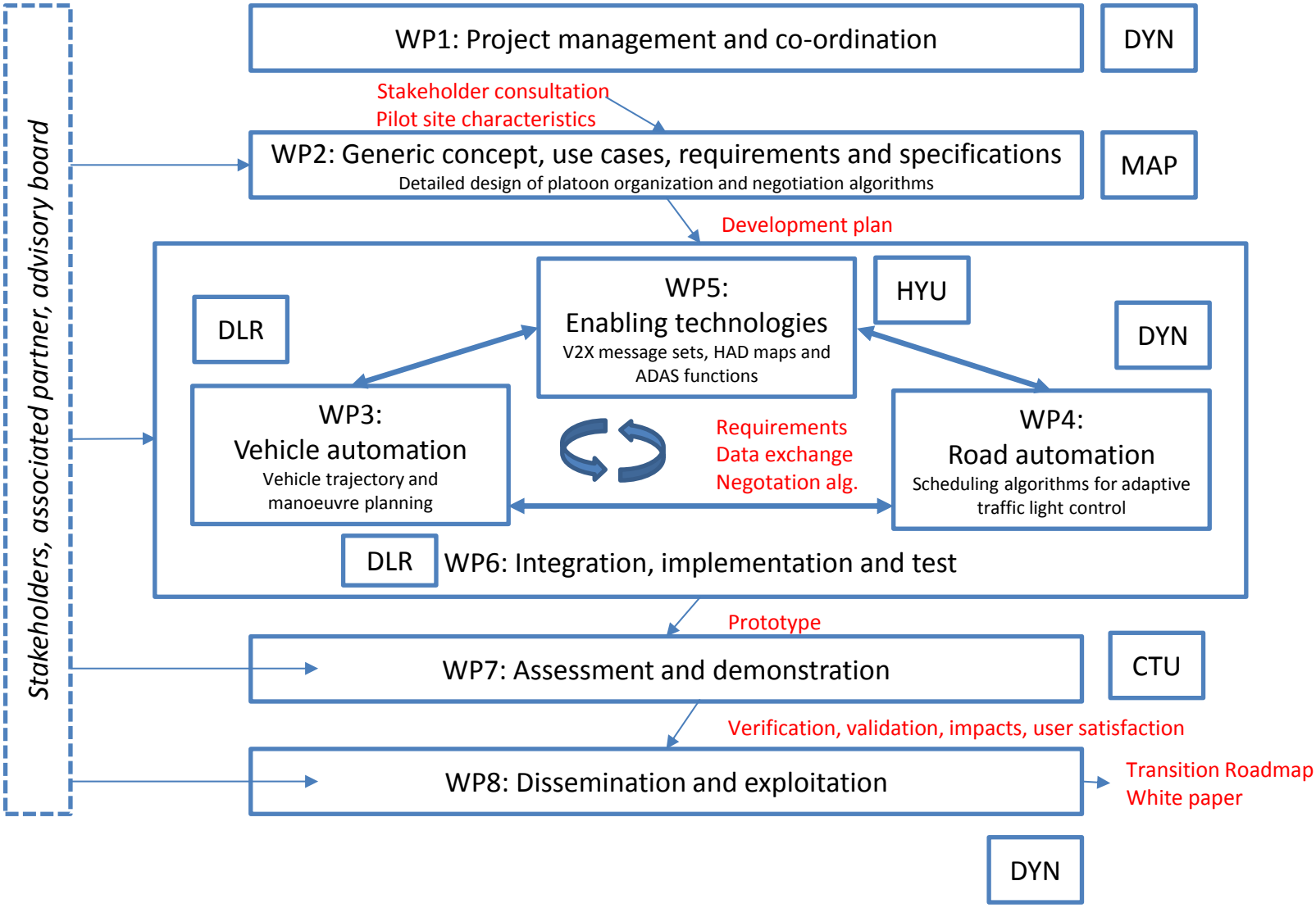
Work Packages



CTU's involvement in MAVEN

- CTU is a leader of WP7 (Assessment and Demonstration) and significantly participates in other WPs (WP2, WP4, WP6, …)
- system engineering and system theory
- ITS
- traffic control theory
- simulation and modeling
- user assessment
- intersection control algorithms
- road traffic telematics
- monitoring and evaluating traffic systems using real-life data
- pre-processing and analysis of data

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People

Ondřej Přibyl

- transportation planning
- mathematical modeling and data processing
- WP 7 (Assessment and Demonstration)

Pavel Hrubeš

- transportation telematics
- WP5 (Enabling Technologies)

Ivan Nagy

- algorithms, statistics
- WP 4 (Road Automation)

Petr Bouchner

- human-machine interface
- WP6 (Integration and Testing)

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What does MAVEN mean for …?

❑ MAVEN for OEMs

- ✓ MAVEN cooperative automation is expected to ensure **safety** by releasing the driver role in safety-critical road network zones like intersections.
- ✓ The collaborative detection capabilities of infrastructure and vehicles would allow the **implementation of advanced safety functions for vulnerable road users** and drivers protection while avoiding the necessity of expensive sensor technologies.
- ✓ Cooperative platoon organization combined with traffic light signal timing negotiations is expected to **increase the efficiency in road usage**. This leads to reduction of driving time as well as fuel consumption and emissions.

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What is MAVEN for …?

- **MAVEN for infrastructure service providers**
  - ✓ MAVEN addresses the challenge of **road infrastructure-based cooperative systems** for future transport and traffic management in the urban area
  - ✓ **Infrastructure service providers** will play an important role for future deployment of automated driving managing aspects such as:
    - ✓ Traffic control efficiency and enhanced GLOSA
    - ✓ Safety by sharing VRU and non-equipped vehicle detections
  - ✓ MAVEN will not only provide **technical solutions**, but also solutions that are efficient, cost-effective and based on the needs of **local authorities** and **end users**

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What is MAVEN for …?

- **MAVEN for cities**
  - ✓ No automation without **connectivity**!
  - ✓ Cities see a **huge potential of automated vehicles** to support safe, sustainable and affordable mobility systems for all citizens and efficient use of public space.
  - ✓ Will only work **when vehicles are connected** with other road users and are integrated in the traffic management systems of cities.
  - ✓ MAVEN is an important step for cities, as it will give good insight in the impacts and requirements in this **transition** towards integrated, safe and sustainable automated vehicles.

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What is MAVEN for …?

- **MAVEN for academia**
  - ✓ MAVEN focusses on most recent and **innovative traffic research**.
  - ✓ Bringing together infrastructure and vehicles in simulation enables **accurate cooperative simulation**.
  - ✓ For real-world prototypes, new emulation techniques will enable building more **knowledge about platoons without a large fleet**.
  - ✓ Most MAVEN results will be **published** in a freely accessible way.
  - ✓ This offers great opportunities for next generation researchers of various fields, particularly engineering, computer science and communication.

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Thank you!

maven-its.eu

Contact:

Tomas Horak, Ph.D.
CTU in Prague
Faculty of Transportation Sciences

Email: *horaktom@fd.cvut.cz*

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