



National Technical University of Athens
Road Safety Observatory

www.nrso.ntua.gr



Workshop:
**Digitalisation
and Road Safety
Research**

Friday
17
May
2019
at 14:00

**FIFTH UNITED NATIONS GLOBAL ROAD
SAFETY WEEK**

6-12 May 2019



Save Lives

#SpeakUp

Driver needs and behaviour in automated traffic

DRIVE2
THE FUTURE

Eleni I. Vlahogianni

Associate Professor, NTUA

Together with:
Foteini Orfanou, George Yannidis

The Drive2theFuture project

➤ Full project name:

- Needs, wants and behaviour of “Drivers” and automated vehicle users today and into the future

➤ 31 Project partners from 13 countries:

- Universities, Research Institutes
- Industries, SMEs

➤ Duration of the project:

- 36 months (May 2019 – April 2022)

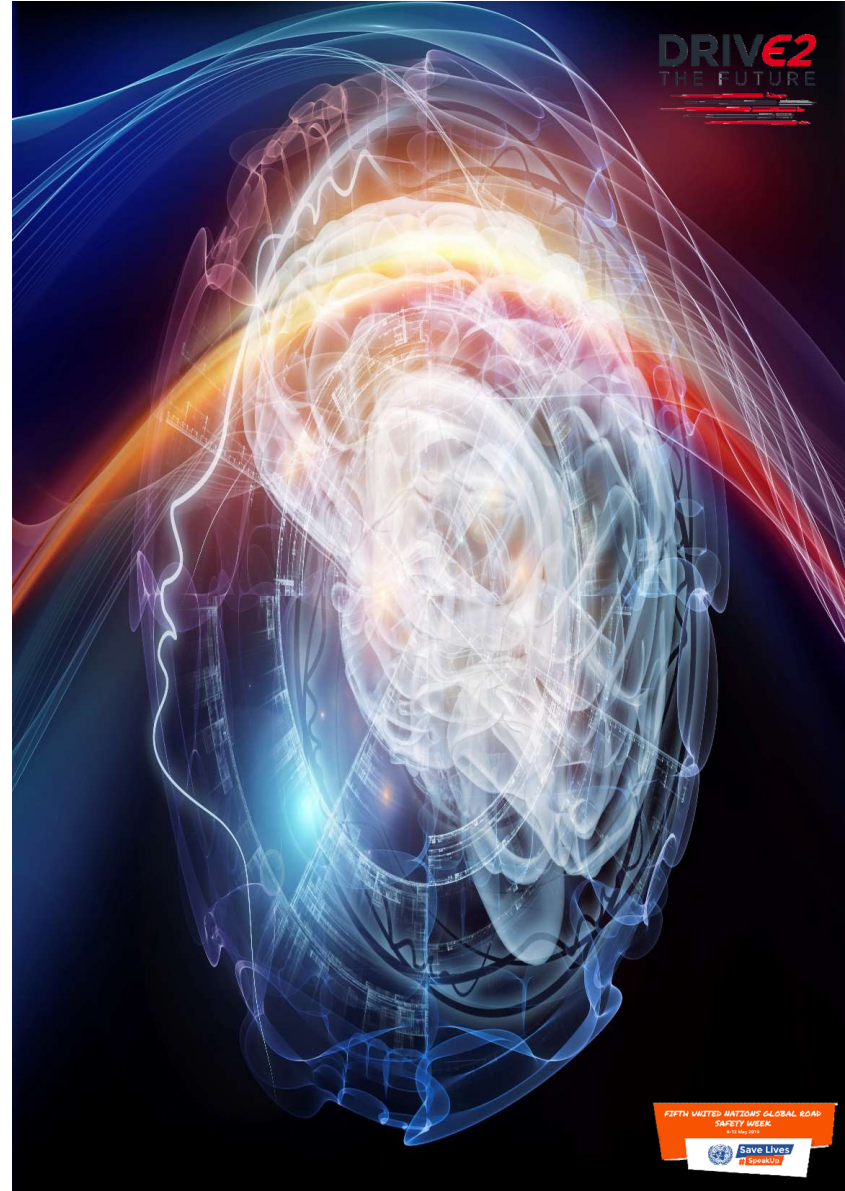
➤ Framework Program:

- Horizon 2020 - The EU Union Framework Programme for Research and Innovation – Mobility for Growth



Background

- Automation brings **revolution** to the transportation systems
- **All transport modes** are moving towards the era of automation
- **Penetration rate** of autonomous vehicles depends on:
 - **User acceptance**
 - **User willingness**
 - **Safety**
 - **Compliance**
 - **Sustainability**



Research Questions

- Investigation of the **needs** and **wants** of the “Driver” and the potential user of AV
- **Transition** from driver behavioral models to behavioral models for autonomous driving
- Identification of the **factors** influencing **user acceptance**
 - Appropriate HMI
 - Training schemes
- Observation and **prediction** of user **acceptance**



- [illegible]



Simulation modelling

- Identification of the **interface** between drivers' behavior models and AV behavior models
- Identification of different type(s) of **simulated environments/tools** to study
 - the **acceptance of AVs**
 - their **critical components** for each transport modes
- Identification of the most **relevant KPIs** for **automation impacts** evaluation
- Integration of **different tools** (simulation, data driven techniques etc) in a **common operational platform**



Pilots

- Development of **3 pilot phases**:
 - Phase I: Setting the scene
 - Phase II: Iterative development, verification and optimization, initial demonstrations
 - Phase III: Final, wide-scale demonstrations and training pilots across Europe
- **All transportation modes**
 - Road (passenger cars, shuttles, motorcycles)
 - Maritime
 - Aviation (drones)
- Interaction with **non equipped vehicles**
- Interaction with **vulnerable road users**
- **Different levels of automation**
- **Assessment** of AV's behavior and experience of the users and the participants



Scientific and Social Impact

- **Improvement of safety levels** in all transport modes
- **Raise user acceptance** towards automated driving
- **Increase user awareness** through participation in the pilots
 - Various modes
 - Different traffic environments
- Development of the **first AV behavioral** model
- Creation of a **simulation suite** for designing and assessing AV functions and the estimated user acceptance



Future Challenges

- Extension of the AV behavioral models from passenger cars to other transport modes
- Development of HMIs capable of handling any emergency situation
- More pilot tests for autonomous transportation modes besides passenger cars
 - Ships
 - Trains, etc
- Further increase user acceptance and trust in automation





National Technical University of Athens
Road Safety Observatory

www.nrso.ntua.gr



**FIFTH UNITED NATIONS GLOBAL ROAD
SAFETY WEEK**

6-12 May 2019



Save Lives

#SpeakUp

Driver needs and behaviour in automated traffic

DRIVE2
THE FUTURE

Eleni I. Vlahogianni

Associate Professor, NTUA

Together with:
Foteini Orfanou, George Yannidis