# Institute for Transport Studies FACULTY OF ENVIRONMENT



# An Overview of European Activities on Human Factors of Vehicle Automation

Tyron Louw & Natasha Merat
University of Leeds
United Kingdom

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### Outline



# European Activities on Human Factors and Vehicle Automation









HUMAN FACTORS OF AUTOMATED DRIVING







Support action for

Mobility Automation WG

Funded by



**DG** Connect

Coordinated by



Cooperation interface between:

EC-funded projects

International relations

National activities

























Imtech



















Technische Universiteit Eindhoven University of Technology





**Deutsches Zentrum** für Luft- und Raumfahrt German Aerospace Center











innovation for life











Applus<sup>⊕</sup>



Belgian Road Safety Institute

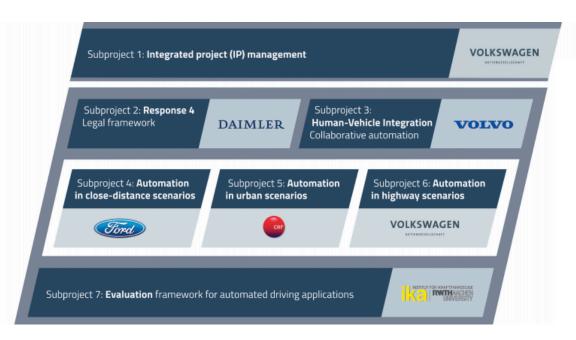


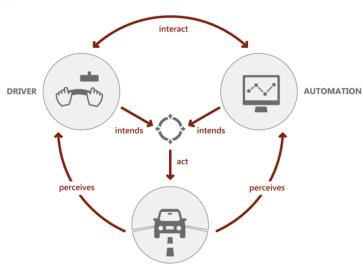




















**Traffic Scenarios** 

Analysis of the road and traffic environments where the functions will operate

Automated Driving Functions

Definition of the main driving tasks to be addressed

Definition process

**Use Cases** 

Description of how a function is intended to interact with the driver to guarantee safe and effective operation

HF Functional Requirements

Definition of the needs to be satisfied by the system to fulfill the intended function

Architecture and Specifications

Description of system parts, with their relations and interfaces, as well as component performance and measures



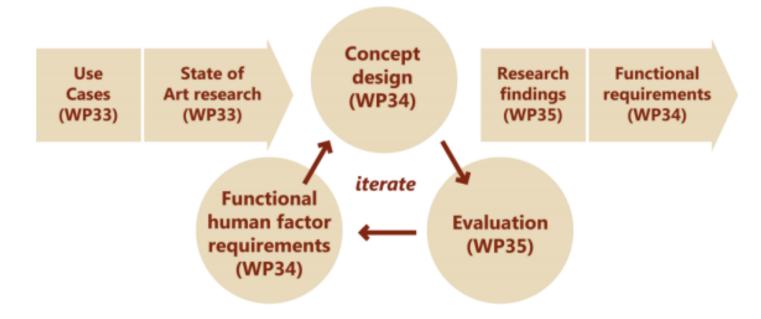




# Getting from USE CASE to FUNCTIONAL REQUIREMENT



#### **Iterative Process**









### Pilot platform for Automated Road Transport Systems

Implemented in several urban environments across Europe

Oristano in Italy, La Rochelle in France, Lausanne in Switzerland, Trikala in Greece and Vantaa in Finland













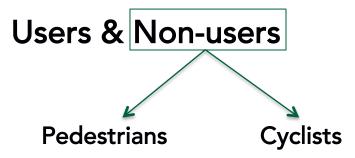






#### **Human Factors Focus:**

### User and non-user acceptance of Automated Road Transport Systems



#### Research Questions

How do pedestrians and cyclists perceive ARTS in terms of safety and priority?

What information do non-users want from ARTS?

How do they want that information communicated to them?

What factors influence acceptance of ARTS?







Southampton

**IFSTTAR** 

#### **EU Funded Project**

### Coordinated by Reinder Happee at TUDelft



































### HFAuto research questions:

How should human-machine-interfaces (HMI) be designed to support transitions between automated and manual control?

How can the automation understand the driver's state and intentions?

What are the effects of HAD on accident risk and transport efficiency?



Work Package 1

Human behaviour during highly automated driving



Work Package 2

Human-machine interface of the future highly automated vehicle



Work Package 3

Driver-state monitor for highly automated driving



Work Package 4

Predicting real-world effects of highly automated driving



Work Package 5

Legal and market perspectives of highly automated driving



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## Thank you for your attention

Tyron Louw
t.l.louw@leeds.ac.uk
Institute for Transport Studies
University of Leeds
United Kingdom

