SIS55: Benefit of IoT and Big Data for Automated driving and User Trust Challenge What does Society Think?

User Acceptance Evaluation of IoT-Driven Autonomous Driving

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1 – The AUTOPILOT Project

Automated Driving Progressed by the Internet of Things



1.1 – Introducing AUTOPILOT

- Idea Large-scale pilots at intersection between IoT and automated driving
- Pilot Cities Tampere, Versailles, Livorno, North Brabant, Daejeon, Vigo
- Length January 2017 to December 2019
- Partners 44, coordinated by ERTICO ITS Europe
- Budget €24.16 Million
- EU Grant €19.92 Million



1.1 – Introducing AUTOPILOT



Objectives

- Enhance the driving environment perception with IoT sensors enabling safer highly automated driving
- Foster innovation in automotive, IoT and mobility services
- Use and evaluate advanced V2X connectivity technologies
- Involve users, public services, business players to assess the IoT socio-economic benefits
- Contribute to the IoT standardisation and eco-system





1.1 – Introducing AUTOPILOT

- Provide common methodology pilot test activities
- Prepare all pilot sites for test activities (adaptation and authorisation)
- Complete pilot tests and collect data for evaluation

Pilot sites		
VTT	Tampere, Finland	r
VEDECOM	Versailles, France	ŀ
CNIT	Livorno-Florence, Italy	
ETRI	Daejeon, Korea	r
TNO	Brainport, the Netherlands	r
CTAG	Vigo, Spain	





1.2 – The AUTOPILOT Approach







1.3 – Practical Application: Level 4 Urban Driving





Gardens of Versailles Castle

Renault Twizy 1-seater for international tourists

Users





1.3 – Practical Application: Level 3 Highway Driving





1.4 – The Evaluation Trilemma





2 – Evaluating User Acceptance

Exposure, Imagination and Creative Approaches



2.1 – Evaluation Objectives

• General Direction Does IoT bring Automated Driving to a new dimension?

- Specific Direction Does IoT accelerate User Acceptance of Automated Driving?
- Specific Objectives Formulate IoT-related improvements for AD functions

Determine IoT's added user value to AD without IoT



2.2 – Creative Iteration





2.3 – Multiple Perspectives



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2.3 – Multiple Perspectives





2.4 – Hypothesis-Driven Testing

- Formulation of testable hypotheses
 - If the IoT reduces frequency of velocity changes, user acceptance of AD improved
 - Data upload into the IoT cloud inhibits acceptance of automated driving
 - The infrastructure development needs of IoT surpass the economic added-value
 - Visualisation of IoT Infrastructure increases user acceptance of AUTOPILOT applications
 - Advance warnings of puddles on the highway negatively impact driver attentiveness
- Qualitative and quantitative evaluation



2.5 – Indicative Timeline







2.6 – Conclusion: What does Society Think?

Better Questions	First Answers
 What does society know? 	 Piloting as experience and exposure
 What does society want? 	 Stakeholders as co-designers

- What does society need?
- Which part of society?

- Limited understanding of IoT
- Contradictory view on AD





Thank you for your attention

Olivier Lenz, FIA | 31 October 2017







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