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PANACEA: FITNESS TO DRIVE

FROM DETECTION TO INTERVENTION - A HOLISTIC SOLUTION FOR COMMERCIAL TRANSPORT STAKEHOLDERS

AUSTRIAN INSTITUTE OF TECHNOLOGY
TOMORROW TODAY

PANACEA PROJECT: AN OVERVIEW

Facts

- Horizon 2020 funded project – Research and Innovation Action (RIA)
- Duration: 42 months (start May 2021)
- Budget: €3.49 million
- 10 Work Packages
- Aim: deliver marketable products

Background and Motivation

Impairment of drivers, (due to, e.g., fatigue, effects of external substances, and distraction) endangers road safety. Well-chosen management strategies on multiple levels, can minimize their frequency and consequences.

Project Partners

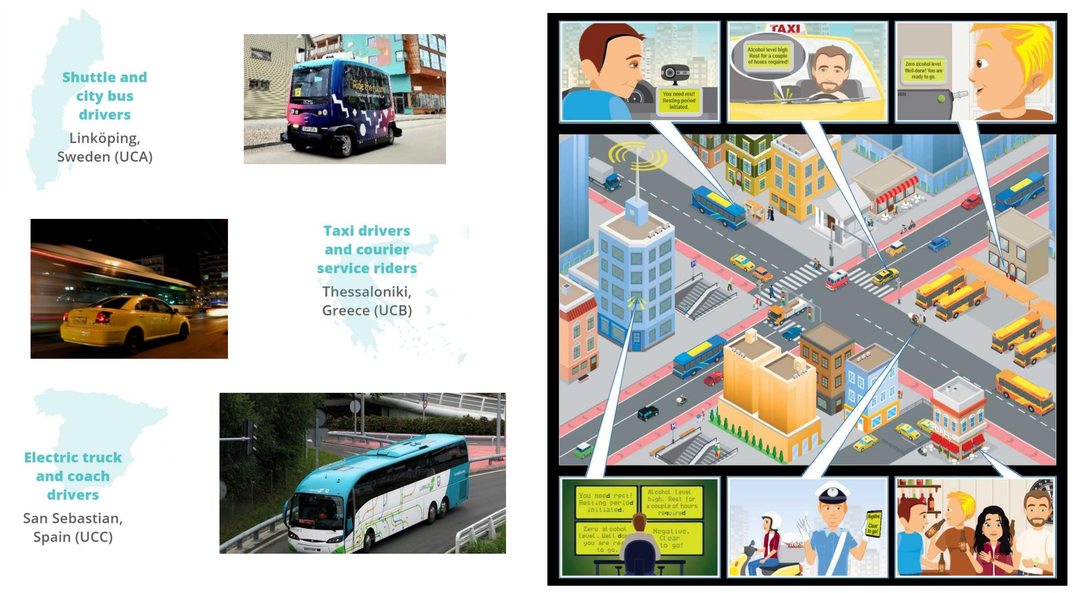
ETSC European Transport Safety Council · vti · virtual vehicle · LEITAT managing technologies · Loughborough University · datik Irizar Group · AIT Austrian Institute of Technology · CHALMERS · WEGEMT Marine University Association · transdev · ROADPOL European Roads Policing Network · deepblue · uni.systems · Senseair · CERTH Centre for Research & Technology Hellas · CTL Centro di Ricerca per il Trasporto e la Logistica

Project Goals

Objectives

- Create 3 Commercial Health Toolkits (CHT) (Health monitoring, assessment methodologies and technical solutions for commercial drivers)
- Estimate their sensitivity, specificity, effectiveness and operability (alcohol, licit and illicit drugs, fatigue stress and cognitive load)
- Evaluate their usefulness, ease-of-use, satisfaction and acceptance (3 Use-Case Pilots)
- Develop and evaluate cloud-based coaching and supporting solutions
- Create a new definition of Fitness to Drive
- Suggest policy and legislative recommendations and updates of existing standards
- Assess the safety, socioeconomic and Quality of Life impacts.

Project Use Cases (UCs)



PROJECT SOLUTIONS AND RESULTS

AIT Center for Technology Experience: Countermeasures

The AIT Center for Technology experience contributed to the development of the PANACEA countermeasures. Together with Commercial Health Toolkits (CHTs) and a cloud-based coaching system they result in a new "fitness to drive" approach for commercial vehicles.

This aims to help drivers, operators, and enforcement personnel manage driving impairment. The countermeasures were chosen based on behavior change theories and are designed fit each target user, UCs, and different time frames.

The final selection of 10 countermeasures is divided in:

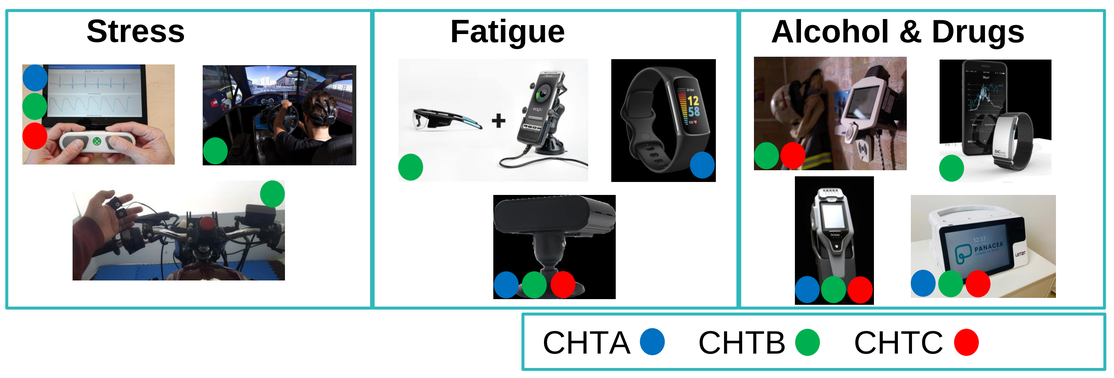
- Operational (short-term, immediate real-time feedback and intervention)
- Tactical (medium-term, performance overview, tracking, and guidance)
- Strategic (long-term, continuous lifestyle coaching for performance enhancement)

Name	Target	Type
Fatigue Report	Driver	Tactical
Fatigue Questionnaire	Driver	Strategic
Stress Management	Driver	Operational
Fatigue Debriefing	Operator	Strategic
Fatigue alert	Operator	Operational
Licit Drug Debriefing	Operator	Operational - Strategic
Roadside Assessment Drugs	Enforcement	Operational
Roadside Assessment Alcohol	Enforcement	Operational
Training of enforcement officers (Drugs)	Enforcement	Tactical
Training of enforcement officers (Alcohol)	Enforcement	Tactical

Project Results and Achievements

Three CHTs have been developed and estimated in relation to different states of impairment (alcohol, licit and illicit drugs, fatigue, stress and cognitive load), leading to the identification of specific thresholds for each state of impairment and a decision-making process to assess drivers' fitness.

Cloud-based apps and web interfaces for the drivers and operators (and to administer the countermeasures) and backend control systems have been developed and evaluated.



Evaluations in the UCs of users' acceptance and satisfaction with the countermeasures and CHTs, their ease of use and usefulness show overall positive system usability and willingness to try the system upon further improvements. Participants also reacted positively to the countermeasures, seen as improving their self-awareness (about stress and fatigue).

Finally, open challenges include:

- Integration of the PANACEA solution into existing systems and structured working environments and busy work schedules
- Roadside assessments remain more difficult compared to pilots
- Sensor assessment require more data.

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