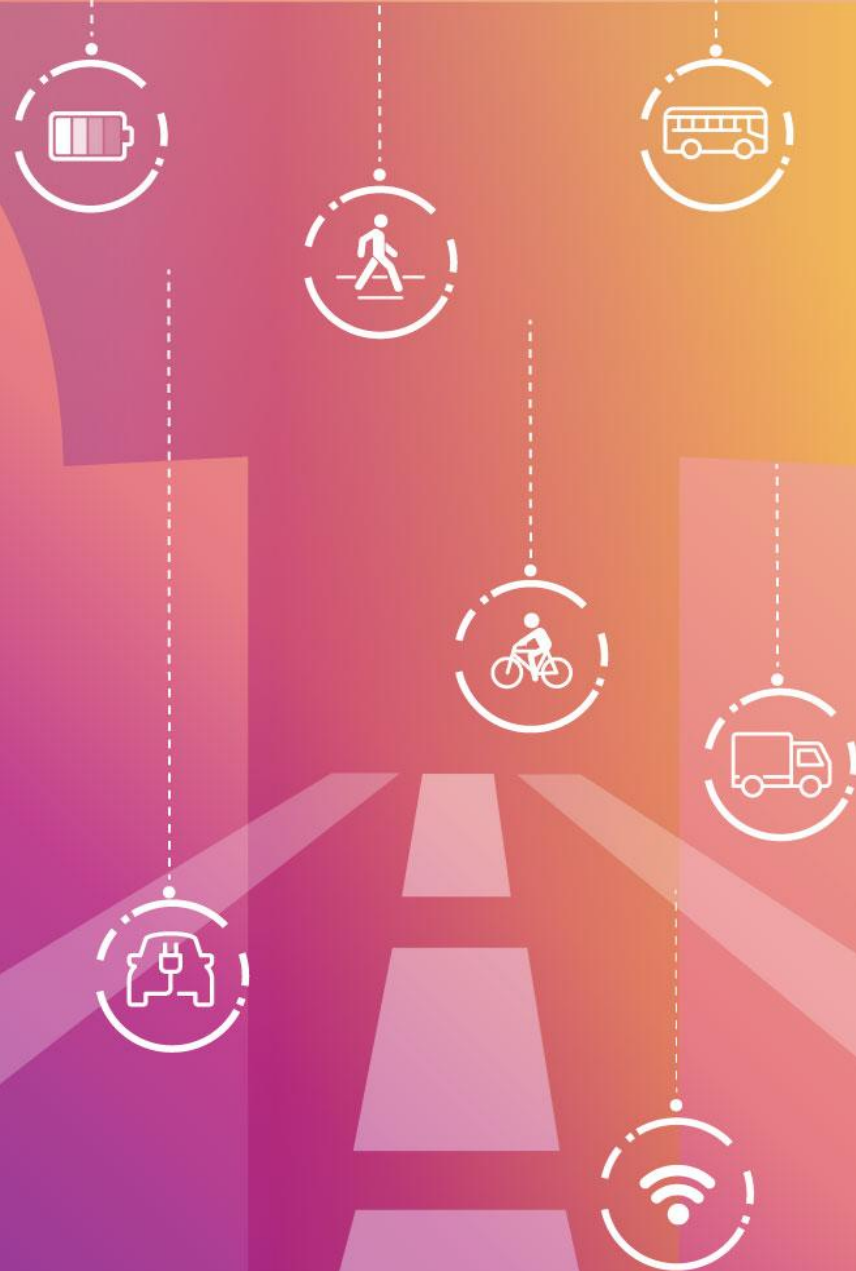


PANACEA

Fitness to drive



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. XXX





PANACEA

FITNESS TO DRIVE

Basic facts

Duration: 42 months (May 2021-October 2024)

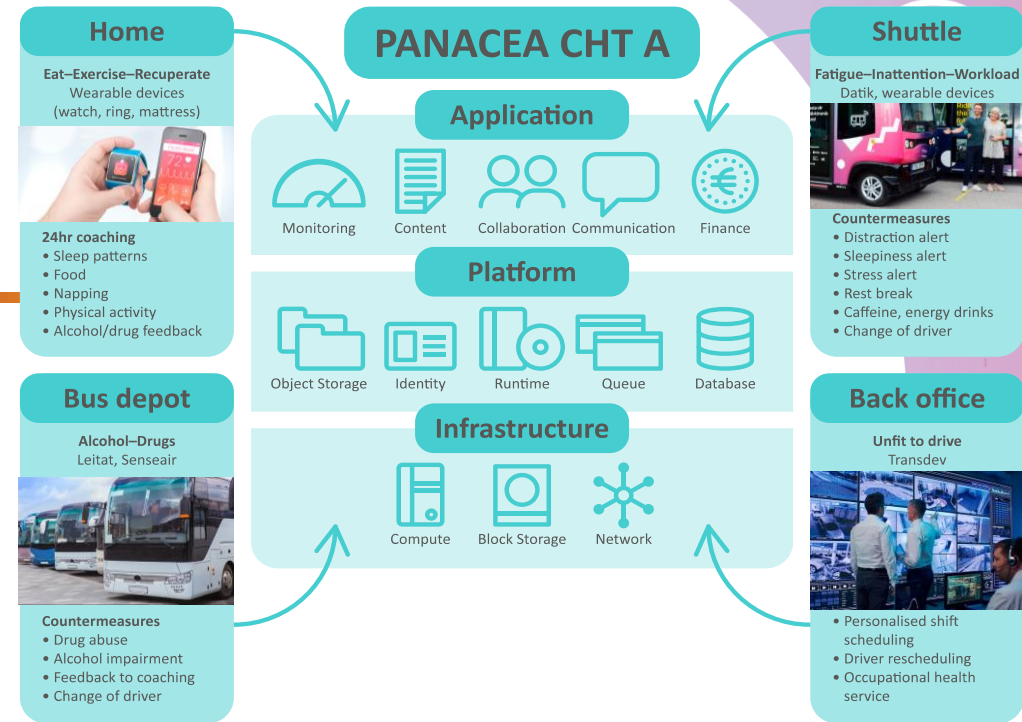
Budget: €3.49 million

10 Work Packages

16 Partners

4 Use Cases

- Shuttle and city bus drivers, Linköping, Sweden (UCA)
- Taxi drivers and Courier service riders, Thessaloniki, Greece (UCB)
- Coach drivers, San Sebastian, Spain (UCC)
- Transferability to other transportation modes (UCD)



Aims

- Holistic pre-, during and roadside monitoring and assessment system of driving ability
- Assess physical, cognitive, and physiological Fitness-to-Drive (commercial drivers)
- Cloud-based countermeasures and coaching tool deploys solutions to drivers, operators, and enforcement





Results

Web app for drivers / riders

Mobile app for drivers / riders

Web app for operators

USER FACING

Snap4city platform

DSS

CCS

BACK FACING



STRESS

Stress Sensor (GSR)



Stress and Cognitive Load Sensor (ViF/DeepBlue)

Fatigue, Stress and Cognitive Load Sensor (AIT)

FATIGUE

Fatigue Sensor (BMM fatigue model)



Drive State Monitor (Datik)

Fatigue Sensor (Optalert)

ALCOHOL & DRUGS

Alcohol sensor (Wall)



Drug Sensor (LEITAT)

Alcohol Sensor (Go)



BACtrack Skyn (Wristband)

CHTA

CHTB

CHTC

CHTs

The PANACEA solution

Decision making

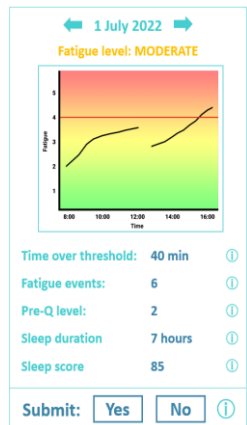
STAGE 1 Collect data from each sensor and assess impairment for each sensor (i.e. allocate a PANACEA score)

	1	2	3	4	5
Drugs	Not present	Present			
Alcohol	Normal to low risk	Slightly to extremely increased risk			
Fatigue	Alert	Neither alert nor fatigued	Fatigued, but no effort to stay awake	Fatigued, with some effort to stay awake	Very fatigued, fighting sleep
Stress	No stress	Low stress	Moderate stress	High stress	Severe stress
Cognitive Load	Very low cognitive load	Low cognitive load	Moderate cognitive load	High cognitive load	Severe cognitive load
Cognitive Distraction	No cognitive distraction	Low cognitive distraction	Moderate cognitive distraction	High cognitive distraction	Severe cognitive distraction

STAGE 2 Based on the data collected in Stage 1, assess the overall fitness to drive

Drugs	Alcohol	Fatigue	Stress	Cognitive Load	Cognitive Distraction	Decision
2						NOT FIT TO DRIVE
1	2					NOT FIT TO DRIVE
1	1	5				NOT FIT TO DRIVE
1	1	4				NOT RECOMMENDED TO DRIVE
1	1		5			NOT RECOMMENDED TO DRIVE
1	1			5		NOT RECOMMENDED TO DRIVE
1	1				5	NOT RECOMMENDED TO DRIVE
1	1	< 4	< 5	< 5	4	STRONG SUSPICION NOT FIT TO DRIVE - WARNING
1	1	< 4	< 5	< 5	3	SUSPICION NOT FIT TO DRIVE - ADVISORY

Fatigue report



Fatigue questionnaire

How problematic did you find fatigue this week?

Not at all | A little | Somewhat | Quite | A lot

Close Next

What would you like to change the most?

Have more breaks
Make it shorter
Change shift type
Other

Back Next

Stress management

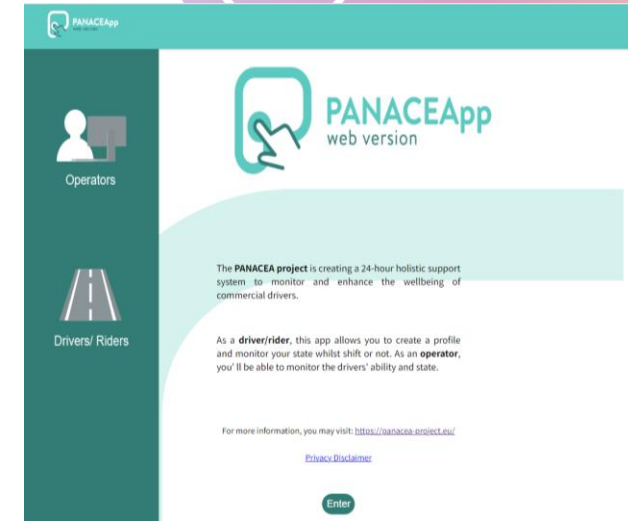
You seem stressed, *DriverName*. This could present a safety risk.

Take a break
No thanks

Let's relax for a bit

Open Balloon Game
I'll relax on my own

Countermeasures



The apps



The PANACEA project is creating a 24-hour holistic support system to monitor and enhance the wellbeing of commercial drivers.

As a driver/ rider, this app allows you to create a profile and monitor your state whilst shift or not.

For more information on the project, you may visit: <https://panacea-project.eu/>

[Privacy Disclaimer](#)

Enter

Results from the Use Cases

- Despite some technical hurdles, participants showed a positive attitude towards the solution, believing it can enhance future road safety.
- The comprehensive countermeasures targeting both drivers and fleet operators are among the most effective.
- The PANACEA solutions' holistic approach has the potential to enhance safety and health in the transportation industry.



Achievements

- **Developed** and evaluated cloud-based coaching and supporting apps and solutions for drivers and operators
- **Piloted** the PANACEA solution and integrated CHTs with drivers and riders in Sweden, Greece, and Spain
- **Recommended** updates policy, legislative and standards and a new definition of Fitness to Drive
- **Assessed** the safety, socioeconomic and Quality of Life impacts

Achievements

- **Created 3 Commercial Health Toolkits (CHT)**
(Health monitoring, assessment methodologies and technical solutions for commercial drivers)
- **Estimated their effectiveness and operability**
(Alcohol, licit and illicit drugs, fatigue, stress and cognitive load)
- **Evaluated their usefulness, ease-of-use, satisfaction and acceptance**
(3 Use-Case Pilots)

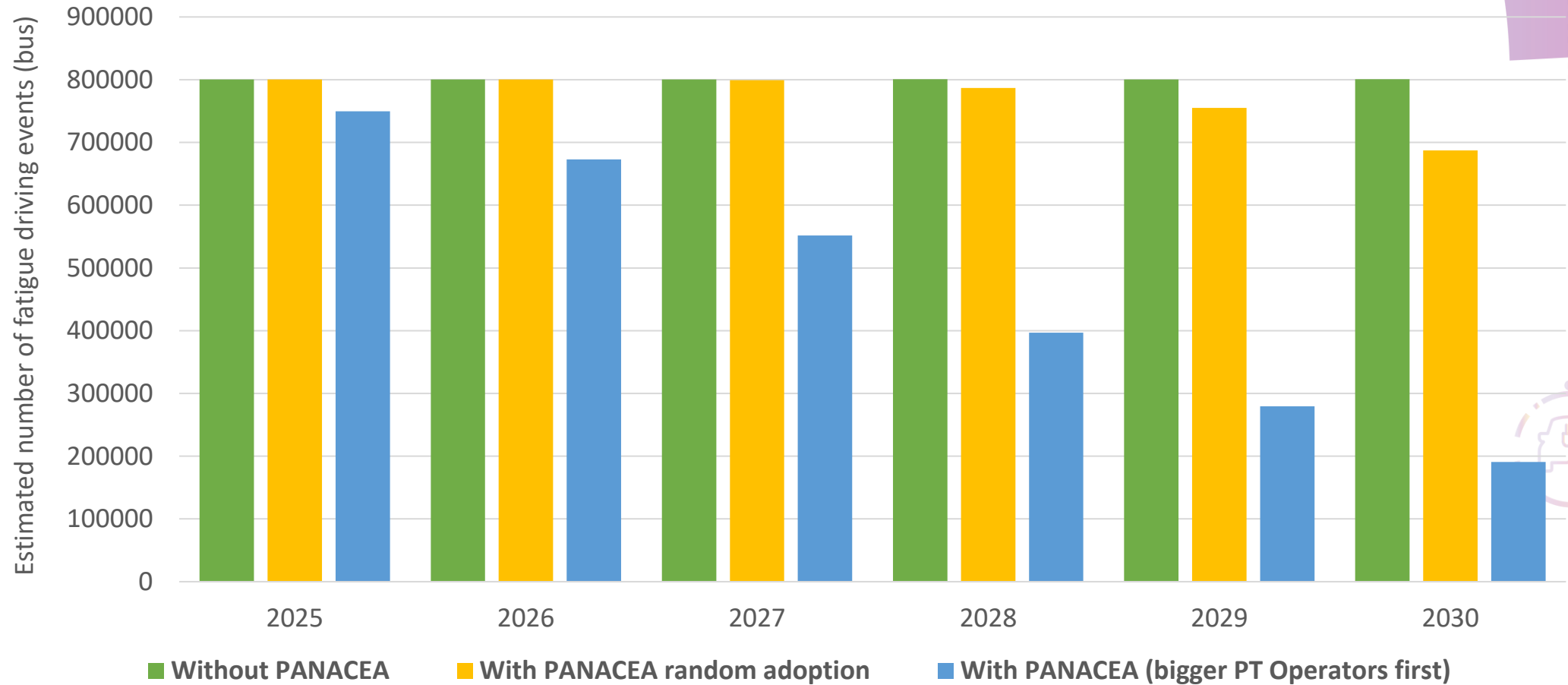


Mid to long term expected impacts of the project

Lessons learnt

- Impairment in a professional setting is more sensitive and complex than foreseen with diverse inherent cultural aspects (e.g., acceptance or experience in being monitored).
- Importance of getting drivers/ operators/ relevant stakeholders involved early in the process for better adoption.
- Challenges and successes in integrating new technology into existing systems.
- In testing and evaluation of the solutions and developments we require a research team.
- Can improve road safety by ensuring drivers are fit to drive.
- The solution developed has the potential to be used across various modes of transportation, not just commercial driving.

Safety impact of PANACEA solution



Exploitation, Standards and Policy

- **Exploitation**

- Pilot testing showed that high-TRL components can succeed but require strong partnerships to address adoption barriers.
- A diverse revenue model is essential for financial sustainability, but initial costs can be a challenge for smaller operators.

- **Standardisation**

- Addressing gaps in Fitness to Drive standards revealed the importance of stakeholder input and real-world validation.
- Ensuring compatibility with existing international standards is necessary for widespread adoption.

- **Policy**

- Aligning Fitness to Drive technologies with evolving EU regulations highlighted the need for proactive regulatory engagement.
- Adoption incentives like subsidies or tax breaks are vital to overcome financial barriers for fleet operators.



THANK YOU

Anna Anund

anna.anund@vti.se

panacea-project.eu



PANACEA
FITNESS TO DRIVE