ASECAP DAYS

COSTA NAVARINO 2019

47TH ASECAP STUDY & INFORMATION DAYS

Road Safety for Fleet Management through innovative driver behavior monitoring

Anastasia Pnevmatikou, Ph.D.

NeaOdos KentrikiOdos

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The motorway at a glance

Facts and Statistics_2018	
Axes	Nea Odos & Kentriki Odos
Total Length	513,5 km
Average veh – km	2063 M
Fleet	153
Total km travelled by yellow marked cars (km)	5.6 M
Number of yellow marked car accidents	8

Risky Driver Behavior and Safety

70% of all fatal accidents in Greece in SEMA 2018 were due to **driver behavior**.

Top causes of human error are **priority violation (28%), distracted driving (11%)** and **excessive speeding (6%)**[1].

The cause of the **30%** of fatal accidents **is not** specified.

Distracted Driving is established as major safety risk (IRTAD Annual Report, 2019), with significant environmental and economical impact.

Distracted driving law – effective from April 2018, in Greece.

[1] Source: www.astynomia.gr

Need for evidence

Lack of actionable information/data related to the extent and type of driver distraction and their role in crashes.

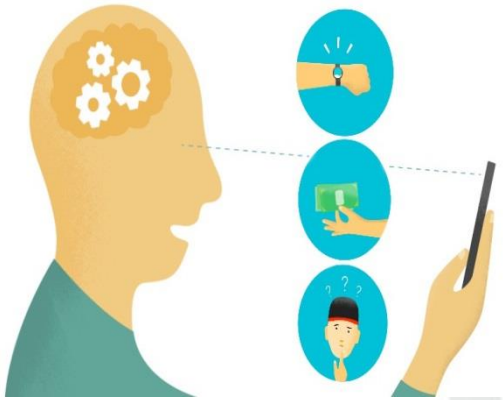
Lack of data on the driving speeds of the vehicle and the type of maneuvers.

Accident data recording system is outdated and not based on new technologies.

Incorrect interpretation of events does not allow for effective prevention strategies to be created.

How we approach the problem

- Explore ways to estimate the relative contribution of different forms of distraction and speeding to road crashes. This will be achieved using a smartphone application as a data collection mechanism and the application of analytics techniques across the collected data.



- Participation as pilot user in the BESMART R&D project:

Our ultimate goal is to change the traffic safety culture of our company by coaching and motivating our fleet drivers to adopt safe and eco-driving behavior

Nea Odos contribution in R&D BeSmart Project

- **Research groups:**
- National Technical University of Athens
  Department of Transportation Planning and Engineering
  https://www.nrso.ntua.gr/
- OSeven Telematics
  https://www.oseven.io/

- **Pilot User:**
- Professional fleet drivers of Nea Odos & Kentriki Odos
  (~65 drivers)
- Duration of study: 12 months

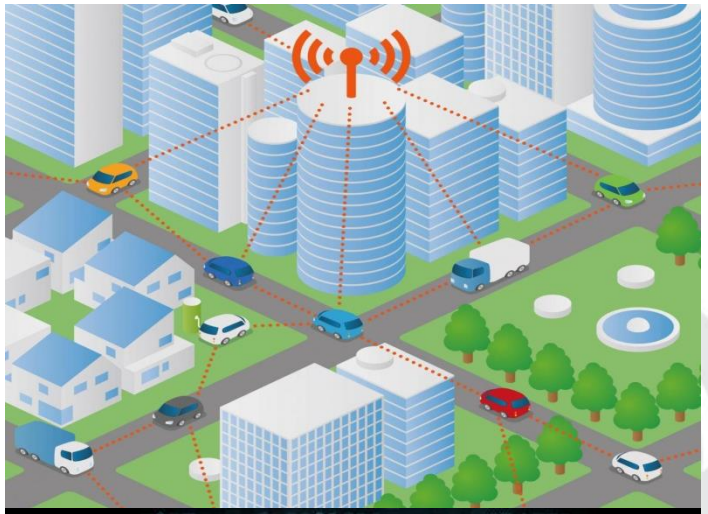
- **Project Duration:**
- 36 months (07/2018 – 07/2021)

Objective: Application & Development of a road safety toolkit

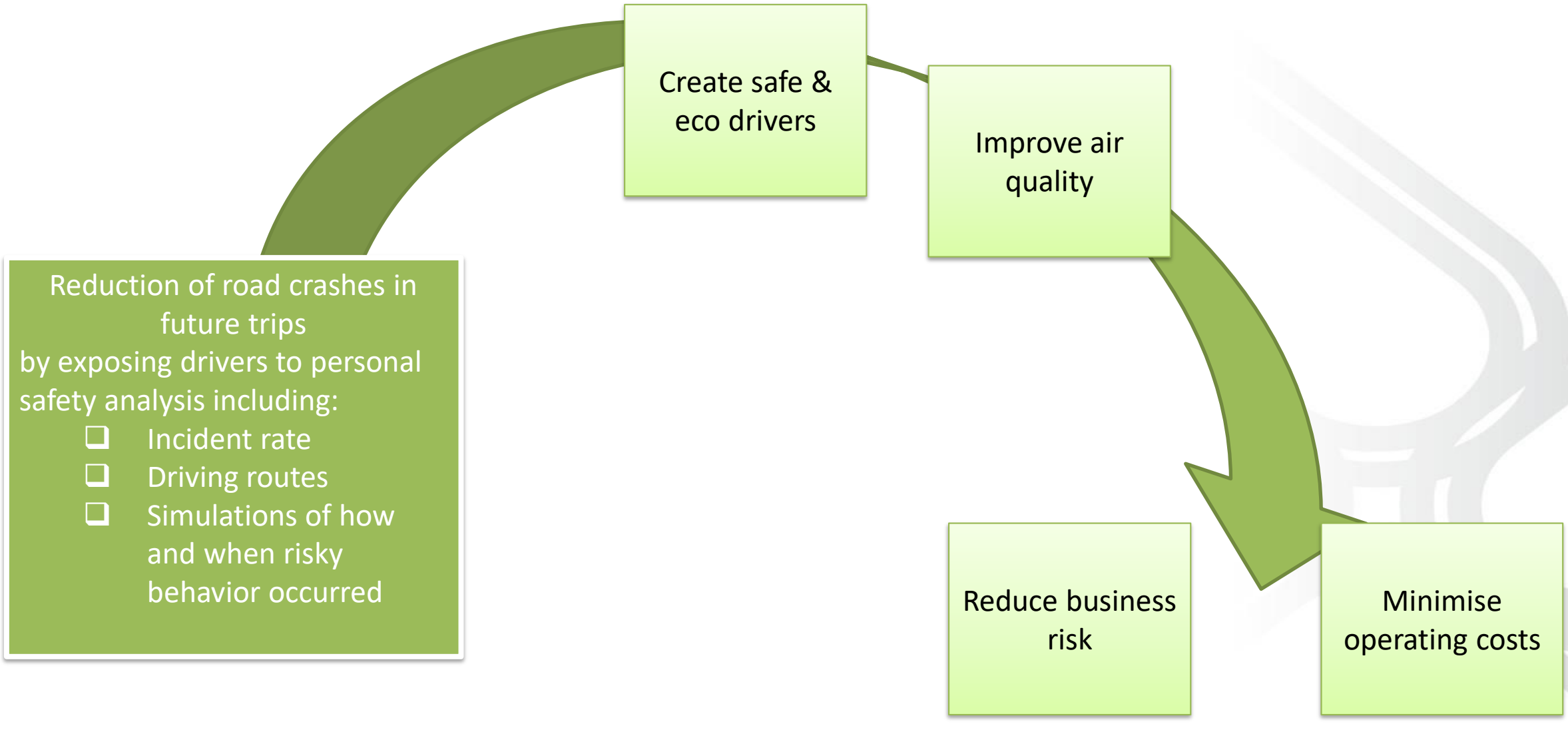
- **Development of** an innovative and seamless IOT app
- **Naturalistic driving experiment on ~65 professional** fleet drivers monitoring driver behavior using mobile app in order to:

  - ❑ **Collect data** along trips – driver's footprint (driver behavior, driver's exposure to risk)

  - ❑ **Develop 2-level measures/interventions** through mobile phone and web platform applications to inform, alert, motivate, and educate drivers:
    - ➢ **Personalized feedback**
    - ➢ **Social gaming incentive schemes**



Expected Outcome of the Experiment based on Literature Statistics



System Overview

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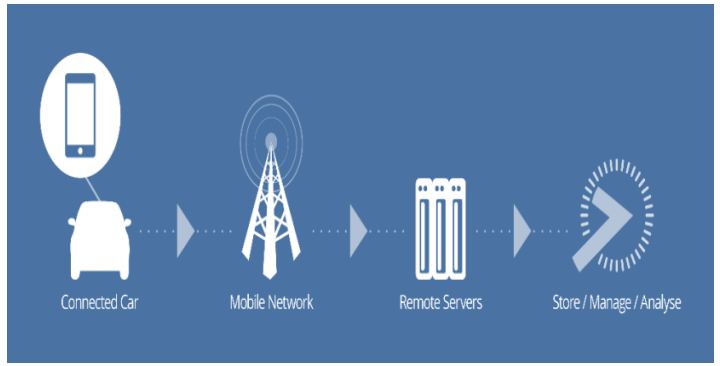
Data collection



Phone use while driving | At-risk speeding

Driving behaviors

Hard braking | Harsh acceleration and cornering

Analysis with machine-learning techniques and big data mining

Risk Indices & Classification	Aggregated Predictors
•Driver •Trip Level	•Fuel Consumption •Accident Risk

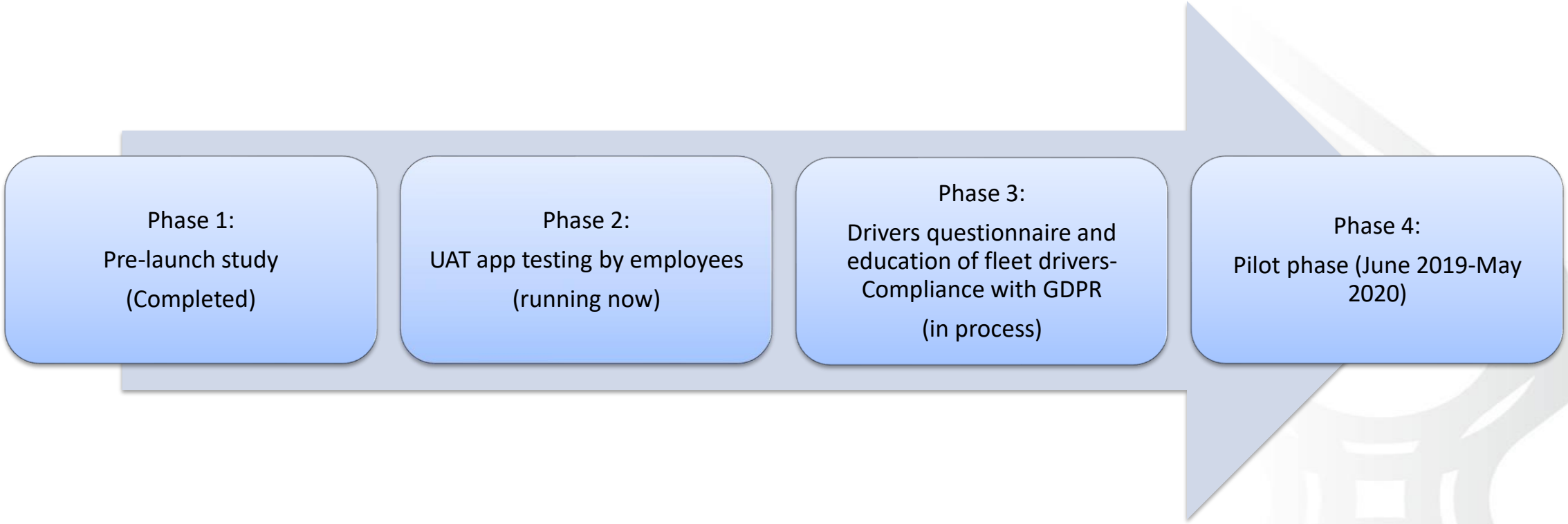
Driver Feedback and Incentives

Campaigns - Rewards

Off-line Feedback

Gamification

Phases of pilot study of BeSmart

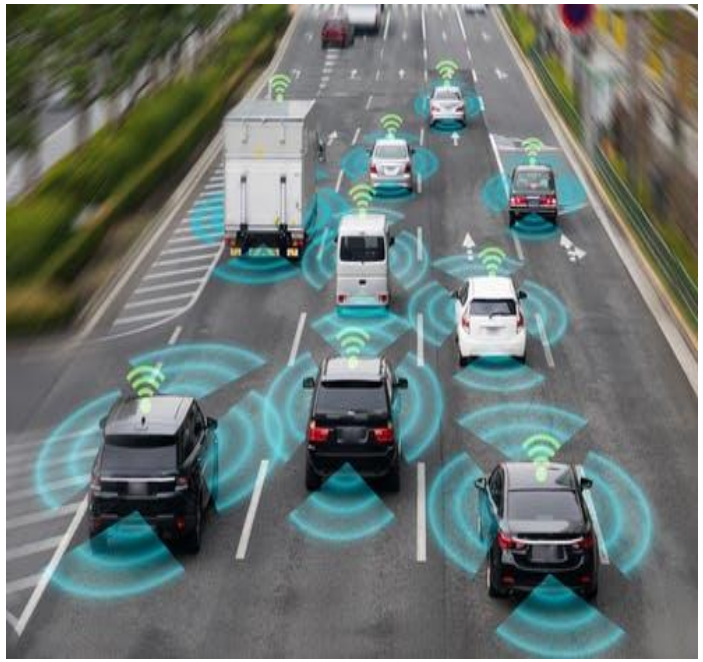


Results of Pre- launch study

	Across 100 drivers in 4 month period	
Harsh events	Increasing driving distance in urban & interurban	Reduction of steep events (acceleration, deceleration, maneuvers, etc) per unit of distance traveled
Mobile use while driving	Increased in urban roads (7% of time)	Decreases in motorways (1% of time)

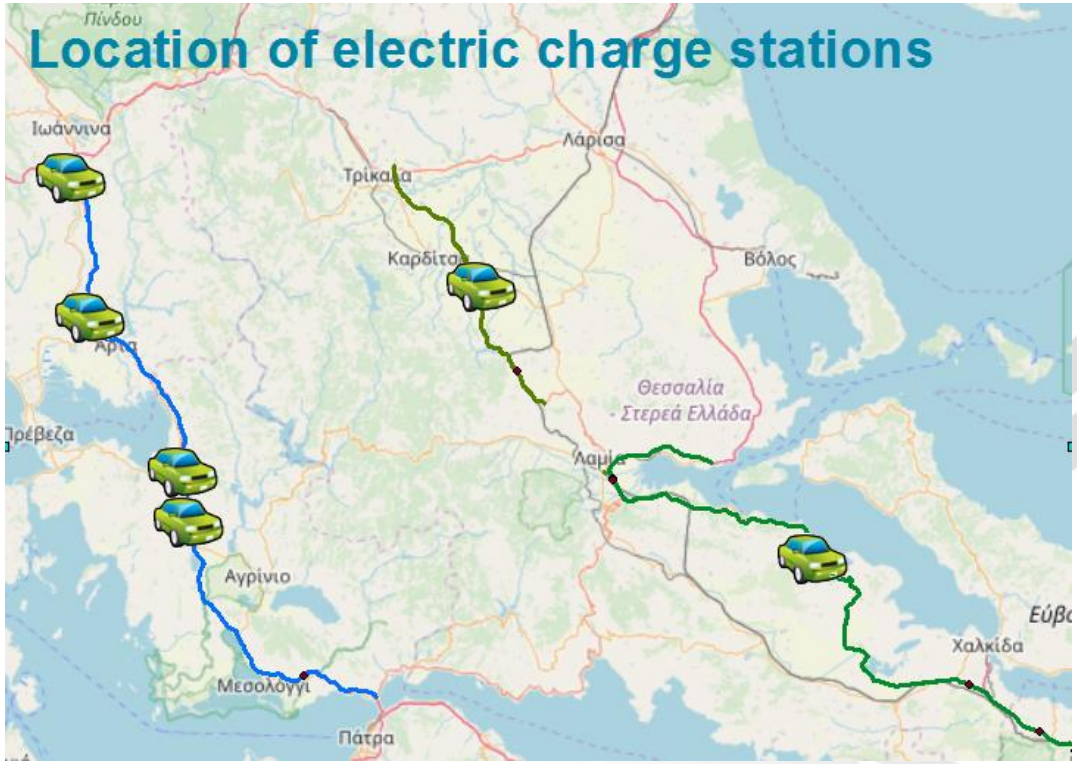
Across 23 drivers after feedback		
Impact on	Incentive/Measure given	Results
Harsh events, Mobile use	Feedback given	Significant reduction in drivers' abrupt events, mobile use and over speeding was achieved
Fuel consumption	Feedback given	**10.8%** reduction in average fuel consumption (lt / 100 km)

Fleet App Challenges



Not applicable in autonomous vehicles

GDPR Compliance



Algorithms need to be adjusted for electric cars

Conclusions

- Mobile-based telematics & apps that measure driving behavior may be the future of safer roads
- Insurance companies use the data to offer rewards & discount to safe drivers
- The app's effectiveness lies in the incentives (social games, feedback to drivers, friendly competitions with prizes).
- Overcome GDPR issues & apply it to all motorway users

Safe drivers are made, not born!

Anastasia Pnevmatikou, Ph.D.
Email: apnevmatikou@neaodos.gr