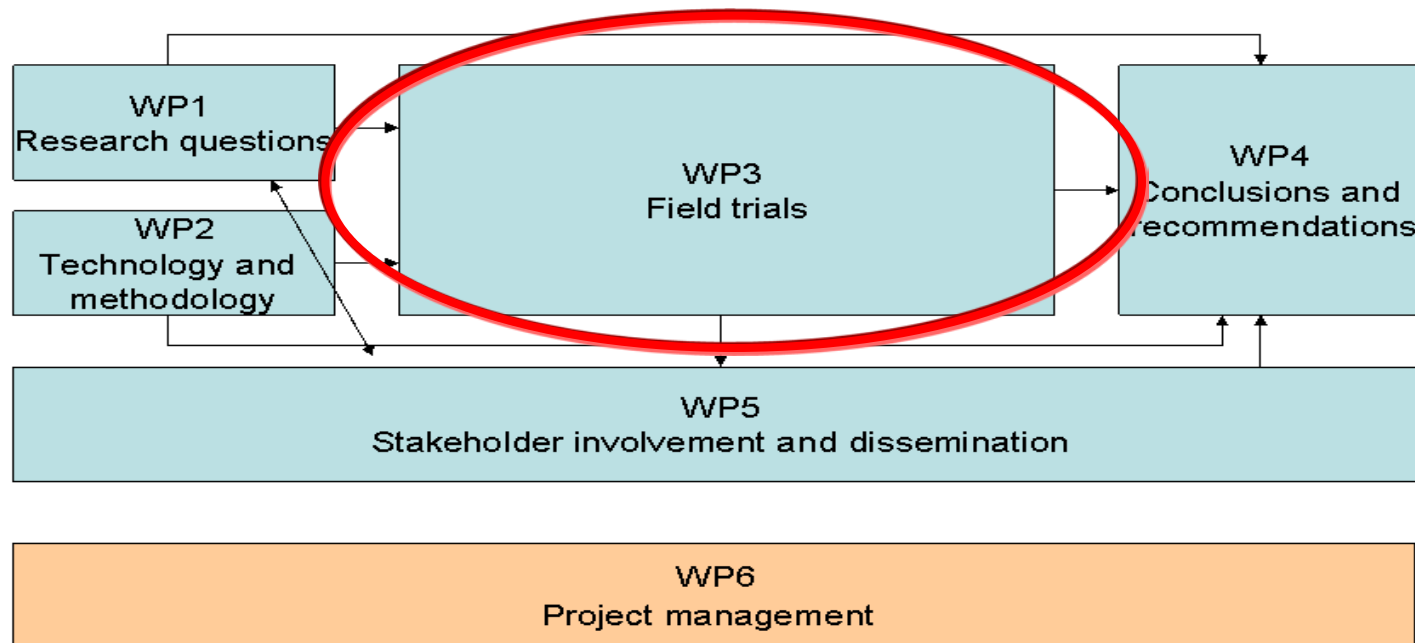


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WP3: Small-scale field trials



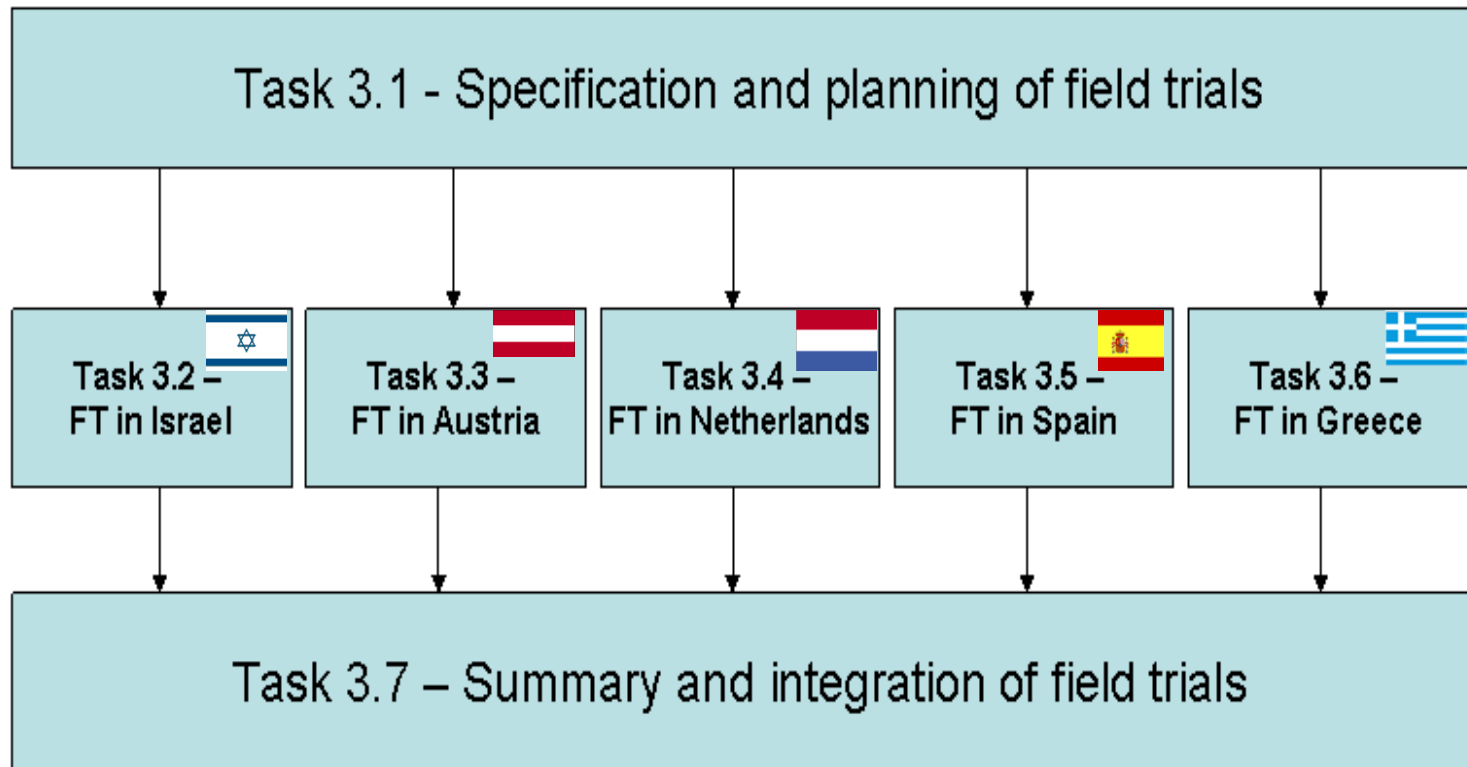




Objectives

Within this work package five small-scale naturalistic observation field trials with various types of equipment will be conducted to identify the potential usefulness and pitfalls in a variety of applications. These trials are intended to serve two main purposes:

- 1. To demonstrate the potential usefulness of naturalistic observations for various aspects of road safety through fundamental research questions and applied research.**
- 2. To serve as pilots for a future large-scale naturalistic study by revealing strengths and weaknesses of the data collected by the various instruments used, by identifying solutions for potential difficulties with data collection and data analysis.**



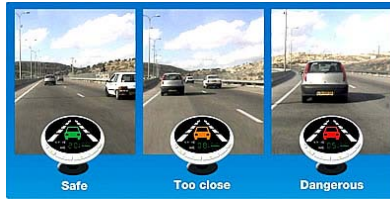
Israeli field trial: Potential Benefits of In-Vehicles Systems for Understanding Drivers Behaviour

Or Yarok

אור ירוק
המחננת לשינוי תרבות הנסיעה בישראל
www.oryarok.org.il



Israeli Field Trial



IL1



IL2

new experienced drivers



IL3



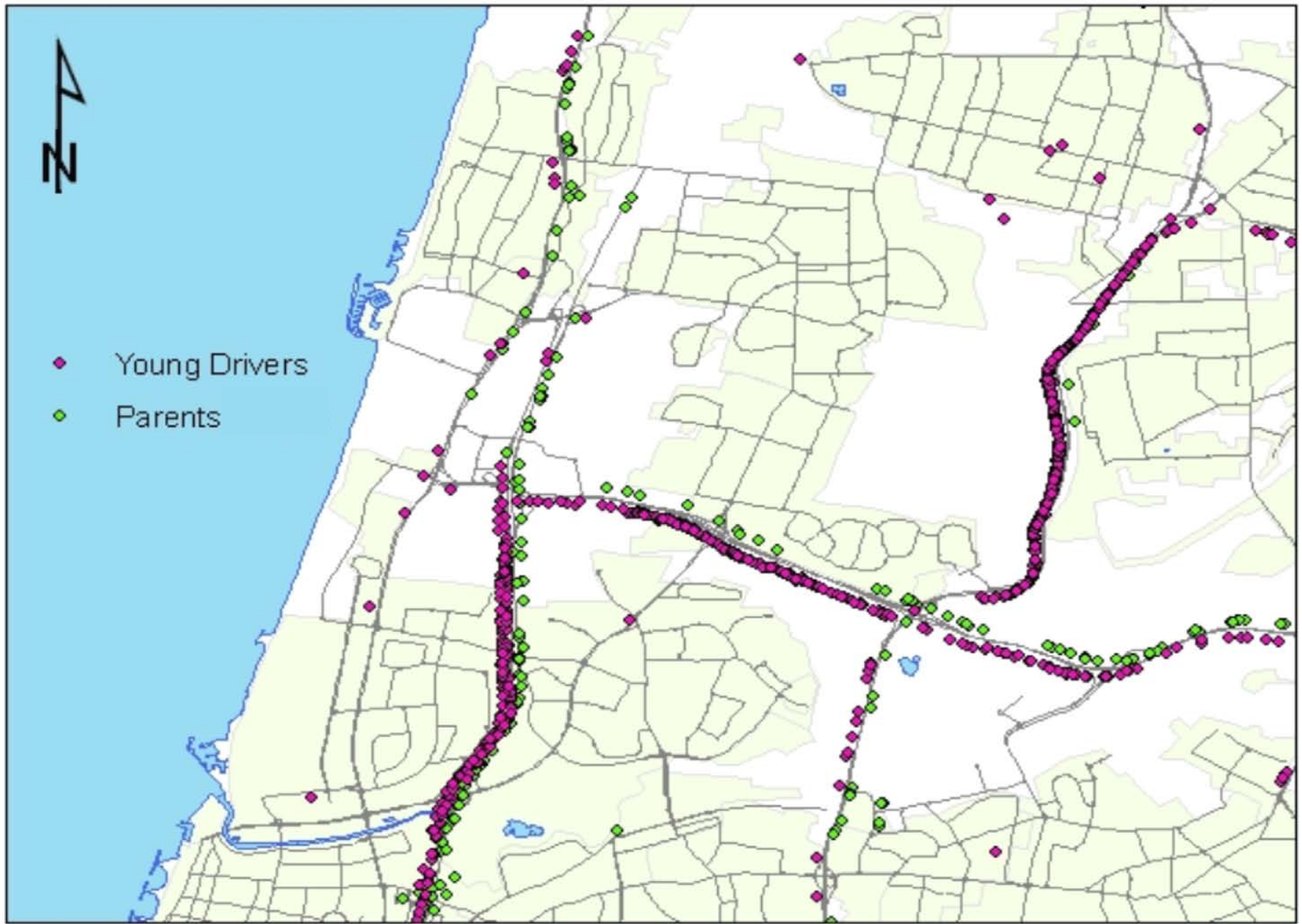
IL4

Israeli Field Trial – map matching



- Identify route from discrete GPS observations
 - Candidate nodes
 - Distance
 - Speed
 - Heading
 - Point sequence
 - Short paths between points

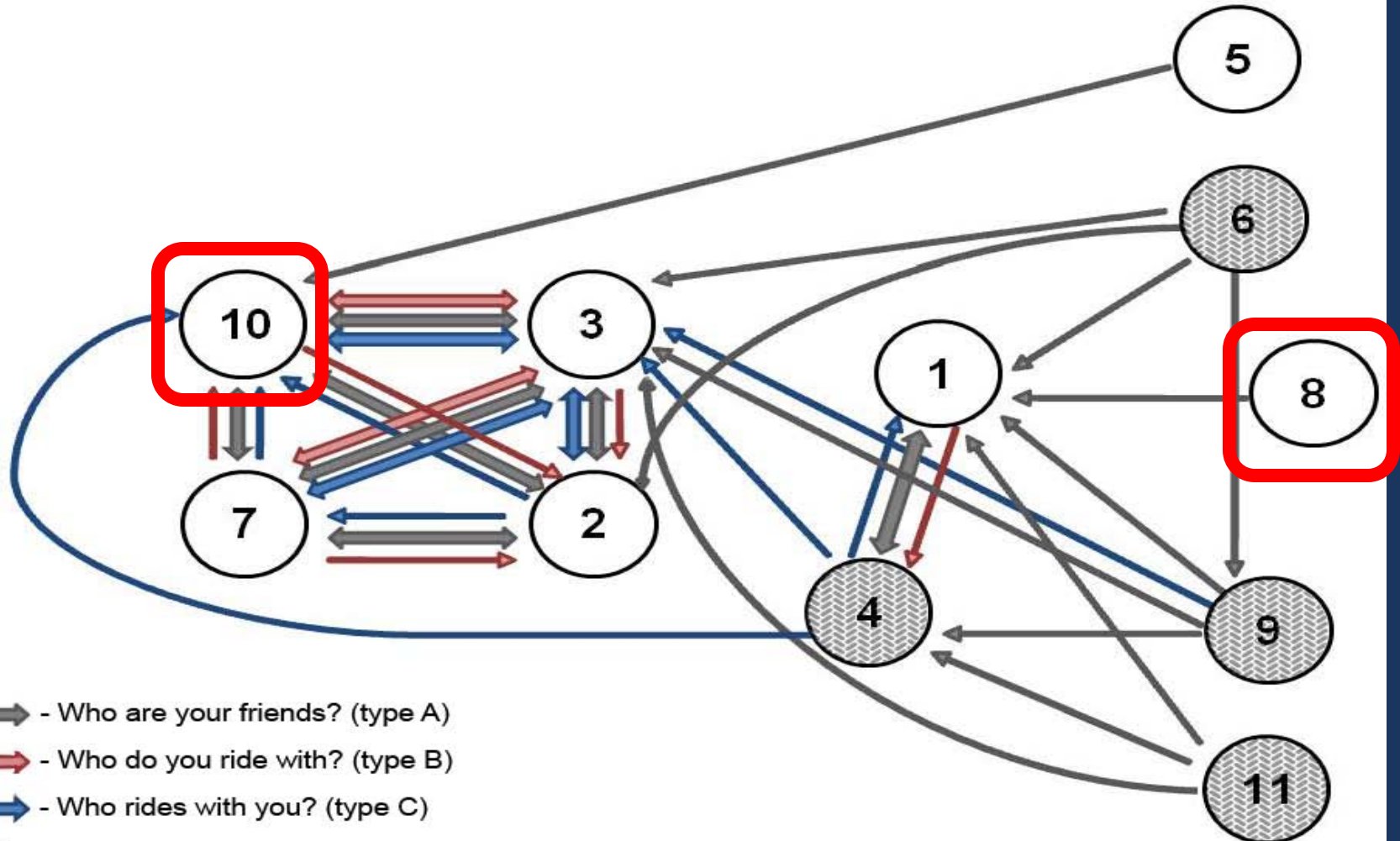




Israeli Field Trial



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↔ - Who are your friends? (type A)

↔ - Who do you ride with? (type B)

↔ - Who rides with you? (type C)

● - Female



Austrian field trial: Video Based Feedback for Learner and Novice Drivers

Test & Training International



Trial design (n=12):

Two groups of learner drivers (6 each) completed a simulated test drive, where one group received **training with an in-car video-aided feedback system**, whereas the other group received standard driving education without the system. Subsequently, driving data was collected up to two months after the driving test.

Collected parameters:

- Speed
- GPS-Position
- longitudinal and lateral forces
- Driving errors: minor, middle, major; learning phase only
- engine load; learning phase only
- risk events; observation period only





Pilot study Austria (n=12):

Main research results:

1. During the simulated test drive, the intervention group showed more minor errors, but **less severe errors** and drive more economically
2. Successful generation of **risk scores** and risk scales (risky events per hour driven)
3. Significant group and sex differences in risk scales could be observed, i.e.
 - Control group had more risky events in urban areas,
 - Specifically at braking and acceleration manoeuvres
 - The event rate of male participants was 2-3 times higher
 - Female subjects had generally low event rates



Dutch field trial: In-Vehicle and Site-Based Observations of Vehicles and Cyclists

TNO & SWOV



- Combination of site based observation (TNO) and in-vehicle observation (SWOV)
- Focus on behavior at intersections
-interactions with vulnerable road users



Dutch Field Trial



- video of driver (no sound)
- video of forward view (no sound)
- GPS location
- GPS Speed
- Accelerations in 3-axis



- Video is trigger based, only records at predefined intersections and at extreme events (hard breaking and speeding)

Dutch FT: Equipment side based



- Intersection equipped with 2 camera's
- Vehicle detection and trajectories
- Exposure



Dutch Field Trial



PROmoting real **Life** **O**bservations for **G**aining
Understanding of road user behaviour in **E**urope

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Spanish field trial: Using a Highly Instrumented Car for Naturalistic Driving Research

Valencia University

VNIVERSITAT ID VALÈNCIA
INTRAS
Institut de Trànsit
i Seguretat Viària



Spanish Field Trial



Main parameters measured:

- Frontal distance
- Lateral Distance (left and right)
- Speed
- Acceleration
- Steering wheel rotation angle
- Speed of steering wheel rotation
- Brake pressure
- Number of revolutions
- Position of gas pedal
- Gear
- ...

Position of cameras:





- Main findings
 - critical thresholds in data analysis do not identify all incidents
 - driving is full of suspicious values of certain parameters although no incident happened (= false alarms)
 - video analysis is essential for the identification and suitable assessment of incidents while driving
 - side cameras would give useful information for video analysis
 - small number of incidents: for 100 incidents one would need about 250 hours of recorded driving
 - highly instrumented cars allow an in-depth analysis of certain manoeuvres



Greek Field Trial: Effects of Forward Collision and Lane Deviation Warnings on Road User Behaviour

CERTH/HIT





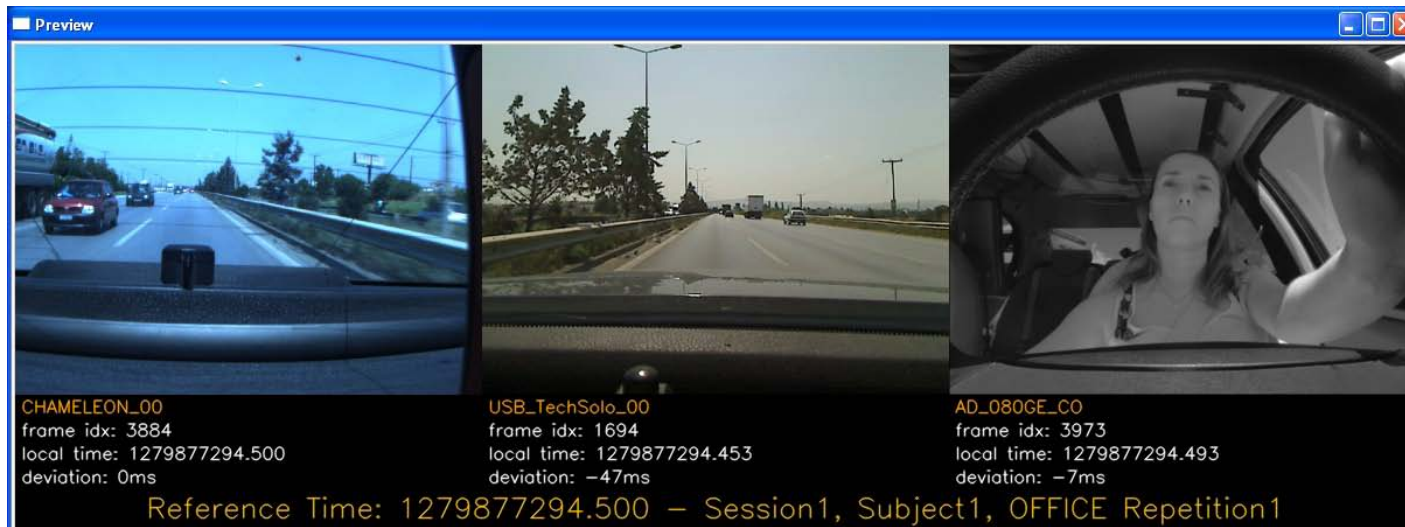
Research questions:

- Does *LDW* and *FCW* application affect inattentive/distractive behaviour in drivers?
- Does warning signals play a mitigation role in distraction and/or inattention?

Greek Field Trial



- Participants drove an instrumented vehicle on a daily basis for 3 consecutive weeks:
 - 1st week: Baseline assessment
 - Systems Off (though warnings were recorded but not provided)
 - 2nd week: Forward Collision Warning (FCW)
 - 3rd week: Lane Departure Warning (LDW)





- The complexity and the difficulty of a naturalistic study may be surpassed only by the richness of its findings
- This study spans across quasi-experimental tests with naturalistic elements (not all elements controlled whilst driving)
- A recap of the main findings:
 - **Higher number of secondary tasks** was associated to the FCW and LDW conditions compared to the baseline condition
 - However **the total number of secondary tasks** in the condition where the warnings were activated is **less than half** of the total number of secondary tasks recorded in all conditions

In summary - small-scale field trials



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- **diversity**
- **tradeoffs**
- **innovation**
- **collaborations**
- **input to recommendations**



Thank you