

**PRO**moting real **Life** **O**bservations for **G**aining  
**U**nderstanding of road user behaviour in **E**urope



# Identification of potential areas of application and research

## An overview of WP1

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## Task 1.1

### Experiences from ND related studies

- previous and current studies
- different methodologies (EDR, instrumented cars, "real ND")
- input from organisations (European and world-wide)



## Task 1.2

### Interests of user groups

- literature scan
- input from Advisory Board members
- communication with SHRP2 programme
- questionnaire to User Forum members



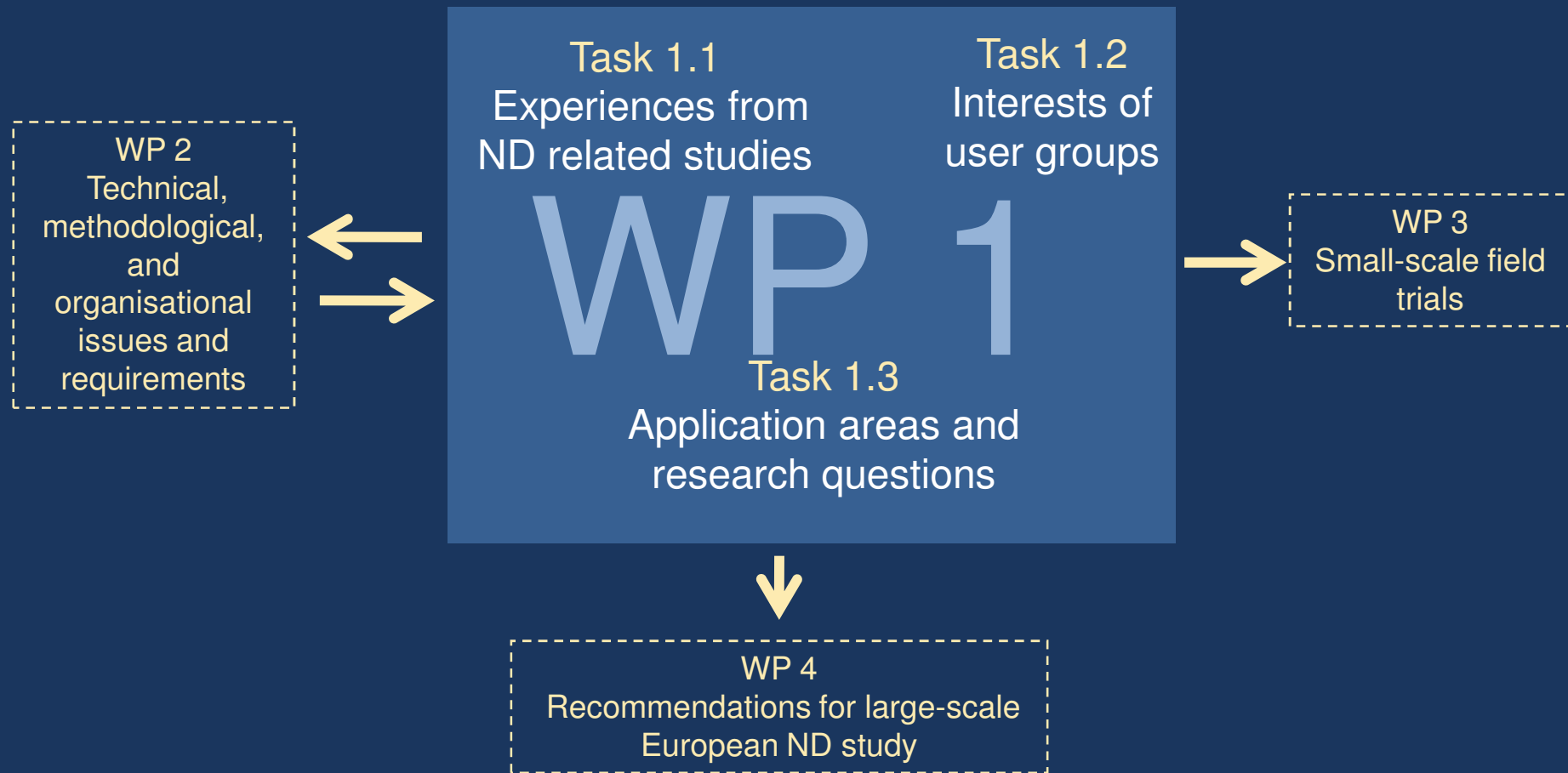
## Task 1.3

### Application areas and research questions

- actual and potential areas

# WP 1

## Relation to other WPs



# Task 1.1 Previous and current research Findings



Main areas investigated with ND methods:

- Driver distraction and inattention
- Drowsiness and fatigue
- In-vehicle systems
- Lane change behaviour
- Heavy-vehicle – light-vehicle interaction
- Driver characteristics and states
- Applied use of naturalistic driving – e.g., in driver training and graduated driver licensing programs

# Task 1.2 User interests

## Survey among User Forum members

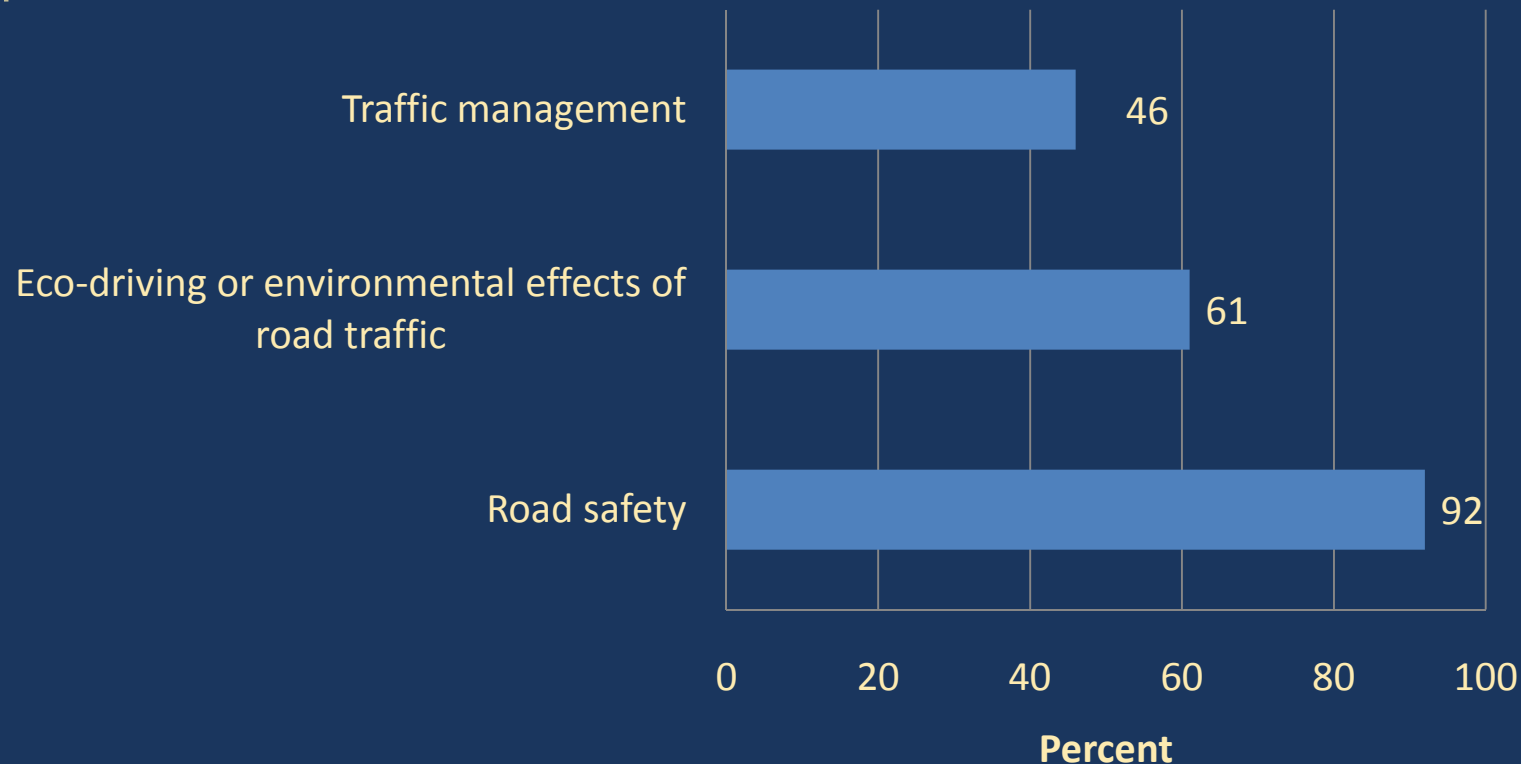


- About 150 persons received the questionnaire
- 72 persons responded
  - 18 countries
  - different types of organisations
    - government 10
    - industry 6
    - research 31
    - other 25

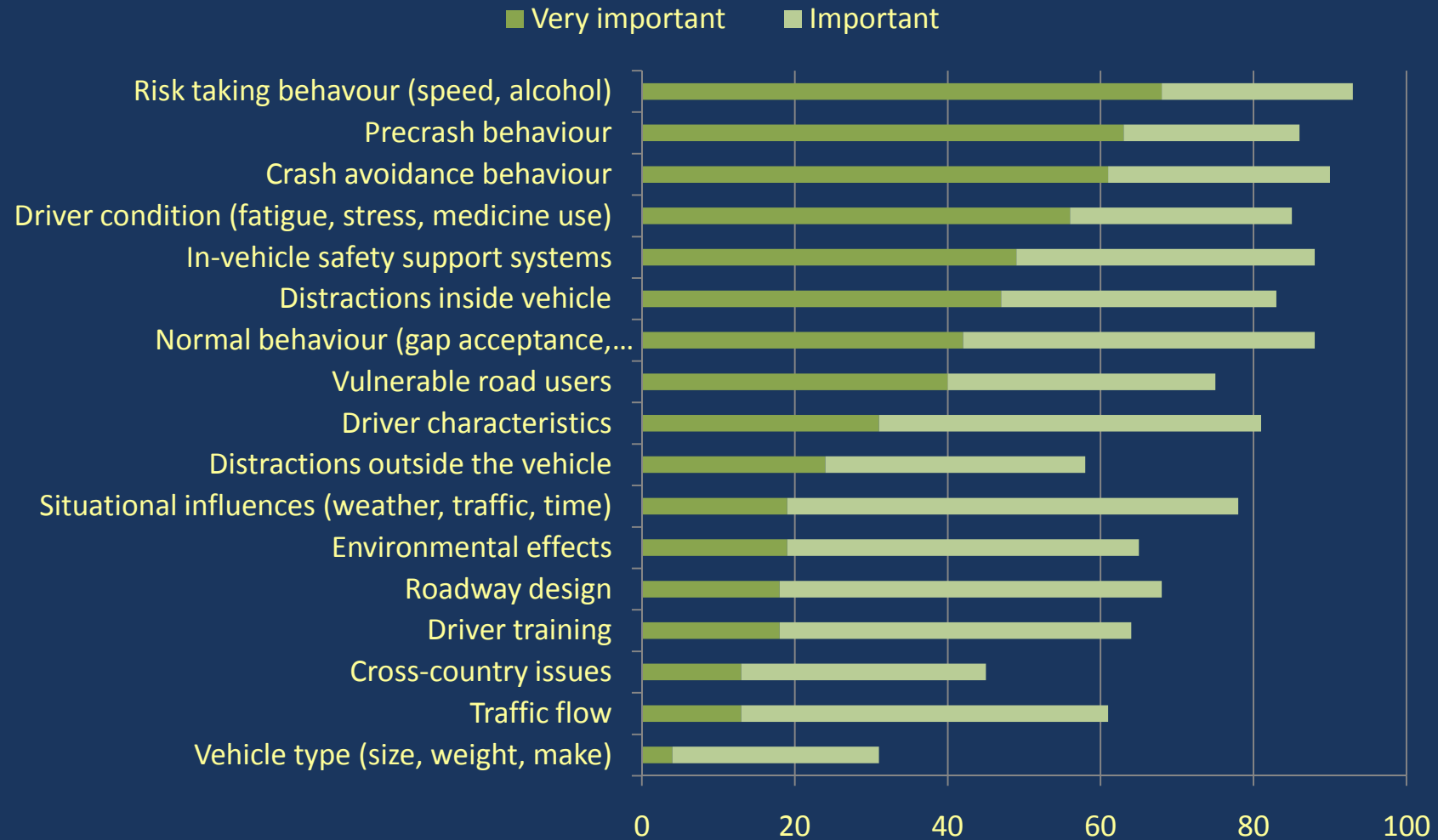
# User survey: General areas of interest



”Which of the following areas would you consider to be interesting to investigate with the use of a large-scale European naturalistic driving experiment?”



# User survey: Prioritized topics



# User survey: Additional topics



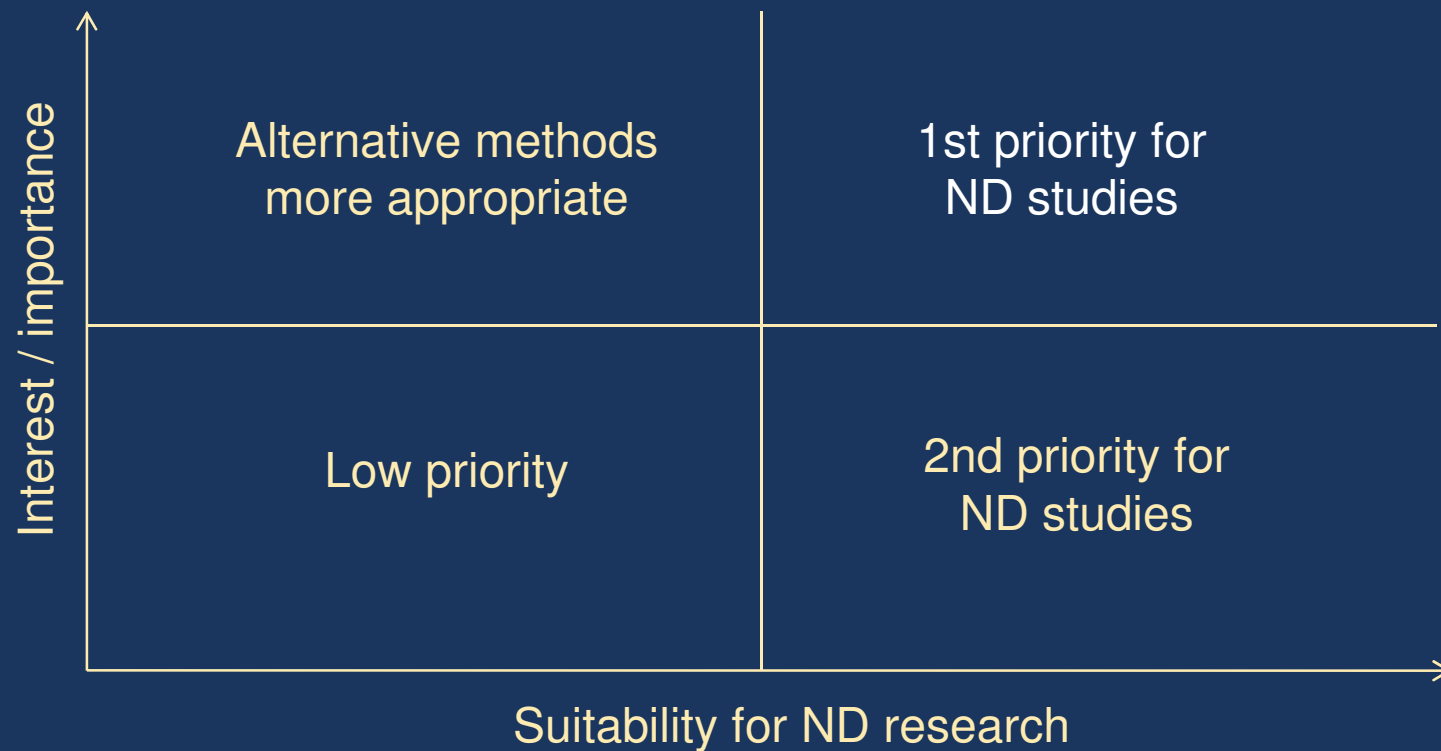
- Visual attention of drivers
- Low speed manoeuvres (parking etc.)
- Influence of new co-operative systems on driver behaviour
- eSafety effectiveness
- Distraction from children and other passengers
- Validity of performance indicators
- Definition of extreme driver behaviour groups (teen drivers), and passive methods to reduce their risk
- Effects of platooning
- CBA
- Car drivers' detection of and accommodation to MCs
- Speed changes as function of other vehicles' speed
- Collision partners of cars (e.g. vulnerable road users)
- Influence of parents on children's driving behaviour
- Information of information/education on driving style
- Feedback on driving by video
- Human errors and violations



# Questions about research questions.....



- Interesting vs. less interesting ?
- Suitable vs less suitable for investigations by ND ?



# Task 1.3 Framework for defining research topics and questions



- Dimension 1:  
Categories of behaviour suitable for observation in ND studies
  - Which behavioural indicators can be observed?
- Dimension 2:  
Situations/conditions
  - Under which conditions is observation of these behaviours relevant?
- Combining the two dimensions into a "Behaviour X Situation" matrix
- Each cell of the matrix indicates a global research topic
- Several specific research topics and questions can be specified in each cell

# Behaviour categories



- Distraction and inattention
- Fatigue, sleepiness and other impairments
- Decision-making, errors, driving style/performance
- Lane change/position
- Speed and acceleration
- Gap acceptance
- Aggressive driving
- Learning

# Situational categories (conditions)



- Driver background, trip characteristics
- Road system/environment, ambient conditions
- Vehicle design/equipment/condition
- Traffic volume/composition, other road users

# Matrix – examples of research topics/questions



SITUATION BEHAVIOUR	Driver background, trip characteristics	Road system/ environment, ambient condtions	etc.
Distraction and inattention	Young drivers and engagement in distractive activities	Distraction under different environmental conditions	-----
Fatigue, sleepiness, other impairment	How often and under what circumstances do drivers drive while fatigued?	Is falling asleep while driving more likely on monotonous roads?	-----
Decision making, driving errors/ style/performance	What is the role of inattention in intersection errors/conflicts?	Are drivers less likely to pass with centreline rumble strips?	-----
etc.	-----	-----	-----

# Matrix – a useful tool for specifying research questions for ND research?



- Keep simple
  - A limited number of categories is preferable
- Missing topics?
  - Can existing categories be expanded/redefined?
  - If "no", add new category

# Non-safety related research topics



- Eco-driving, environmental effects
- Traffic management
- Can be included in present matrix

# Non-research applications of ND



- Driver training
- Accident investigation?
- Promoting safe and or environmentally friendly driving
  - Feedback
  - Knowledge of being observed



# Methodological research issues



- Validation of alternative methods, e.g. self-reports
- Validation of accident reconstruction methods
- Validity of ND method:
  - Do drivers modify their behaviour when driving an ND-equipped vehicle?
- What are the best surrogate measures for crashes?
  - An important objective is to get knowledge about crash causation, but crashes are rare
  - How to define near-crashes and incidents?
  - Are there differences in risk factors between near-crashes/incidents and real crashes?

# Additional results from user survey



- Some difference between countries grouped by mortality rate:
  - High-mortality countries less interested in environmental effects, and in driver training
- Small differences between types of organisation
  - Tendency for governments to be more interested in traffic flow issues, environmental issues and vehicle characteristics
- Strong interest in contributing to large-scale European study
  - Participating: 82 %
  - Funding: 4 %
  - In kind funding: 10 %



Thank you for your attention!

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