# Naturalistic driving studies: an update from Europe

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# This presentation

- European projects
- New European initiatives
- Dutch projects and initiatives
- Some remarks for discussion

# Naturalistic Driving in Europe

- Strategic Research Agenda ICT for Mobility
- (TRA Ljubljana 25 April 2008)
- www.esafetysupport.org


- High priority R&D topics
  - Clean, safe, secure and efficient mobility of people and goods
  - Mobility and transport in urban areas
  - Intelligent Vehicles and Infrastructure towards cooperative systems
  - Field Operational Tests
    - E.g. Naturalistic driving observation
  - Horizontal issues

# Naturalistic Driving research

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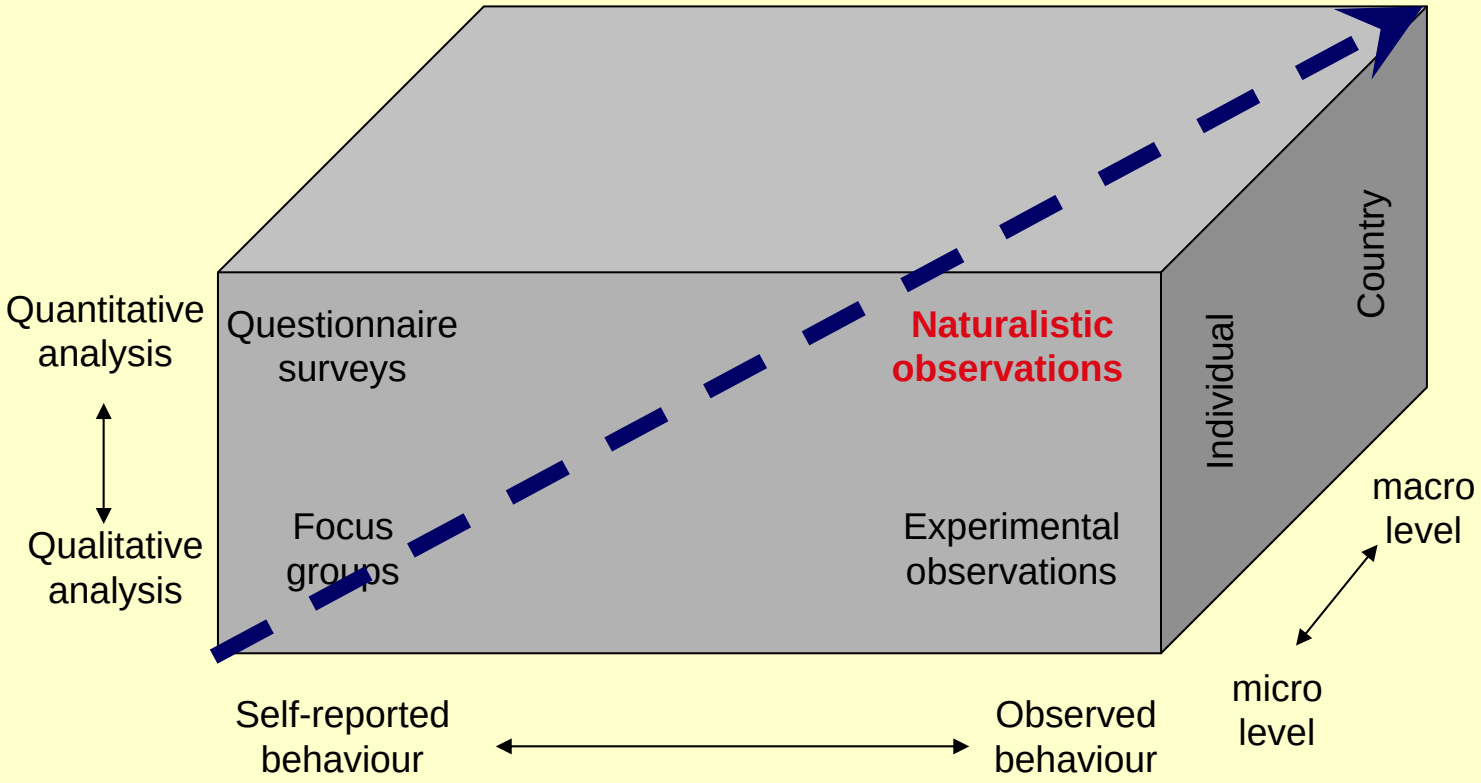
- Naturalistic Driving
  - Unobtrusive observation of driver behavior in daily journeys
    - Video (inside/outside)
    - GPS/Galileo
    - Vehicle dynamics data collection
  - Analysis of all data after observation period

- Allows to build a database and to study
  - drivers' behavior under normal, critical and crash conditions
  - + exposure to risk
  - + safety performance indicators

# A comprehensive framework for road safety research (used in Interaction)



# European projects

- FOTs
  - Several European + Member States activities (not yet S05/S07-scale)
  - EuroFOT, FESTA, FOT-net

- INTERACTION
  - European project (formally still under negotiation)
  - Naturalistic Driving observations on drivers INTERACTION with in-vehicle technologies

# INTERACTION proposal
# Objectives

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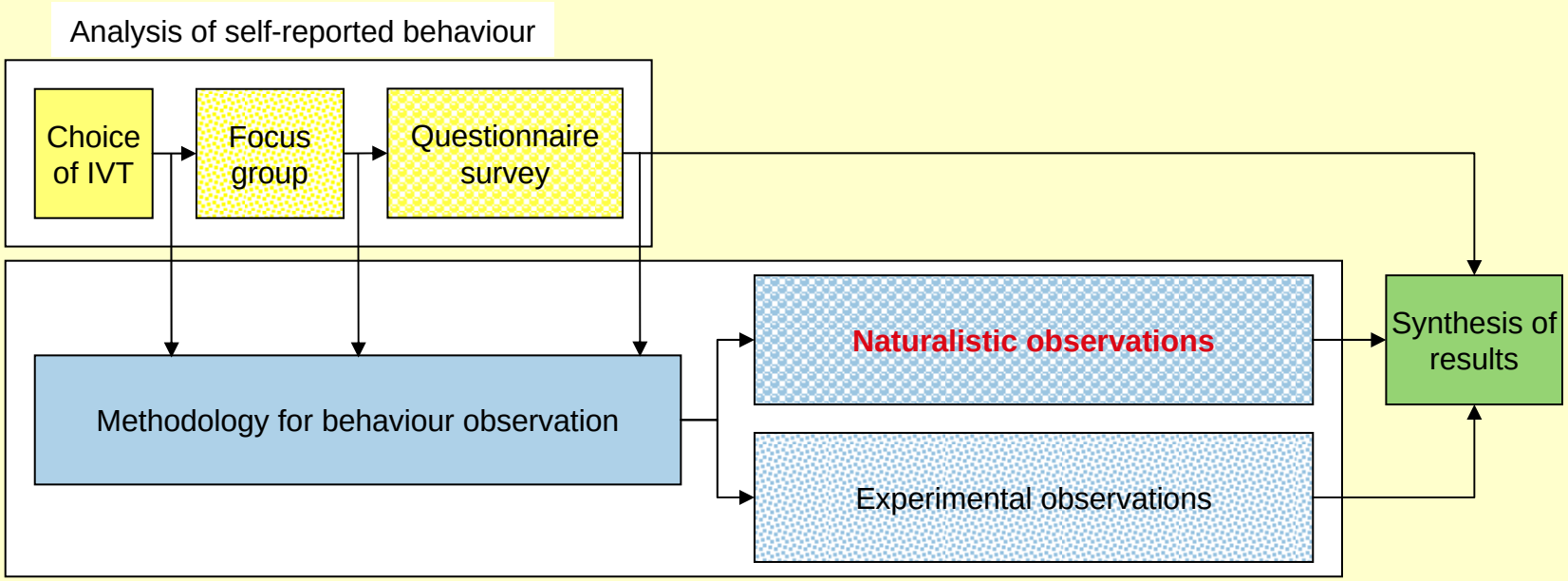
Study on differences and similarities in driver INTERACTION with in-vehicle technologies

- to gain a better understanding of driver interactions with in-vehicle technologies;
- to focus on technologies already available on the European market;
- to identify patterns of use of these systems by European drivers in everyday life;
- to analyse their effects on driver's behavior and skills, in normal and emergency situations;
- to highlight individual and cultural differences that influence the nature of driver interactions with in-vehicle technologies and their impacts on road safety.

# INTERACTION proposal

- INTERACTION is an innovative combination of well-established research methodologies and techniques structured in a comprehensive framework
- 12 partners under the leadership of INRETS France
- 9 countries involved (8 European + MUARC Australia)
- INTERACTION duration 42 months (start Autumn 2008?)
- 7 countries involved in naturalistic observations (Czech Republic, Finland, France, Spain, Netherlands, UK and Australia, under the leadership of SWOV NL)
- Small-scale pilots (7 countries, 20 persons per country, a few months of observations, 3500 hours of data)

# INTERACTION research program




Analysis of observed driver behaviour

| | Countries involved | Drivers population | | Driving hours | |
|---|---|---|---|---|---|
| | | by country | Total | by driver | Total |
| Focus groups | 5 countries | 32 | 160 | | |
| Questionnaires surveys | 9 countries | 1000 | 9000 | | |
| Naturalistic observation | 7 countries | 20 | 140 | 25 | 3500 |
| Experimental observation | 6 countries | 20 | 120 | 1.5 | 180 |

# European Initiatives on ND
## (7thFP, call 2008)

- PROLOGUE
  - European project submitted to the EC
  - Prologue of a large-scale ND study in Europe similar to SHRP2-safety
- DaCoTA
  - European project submitted to the EC
  - Road safety Data Collection, Transfer and Analysis
- 2BESAFE
  - European project submitted to the EC
  - Naturalistic Driving observations on powered two-wheelers

# Two complementary proposals on Naturalistic Driving in Europe

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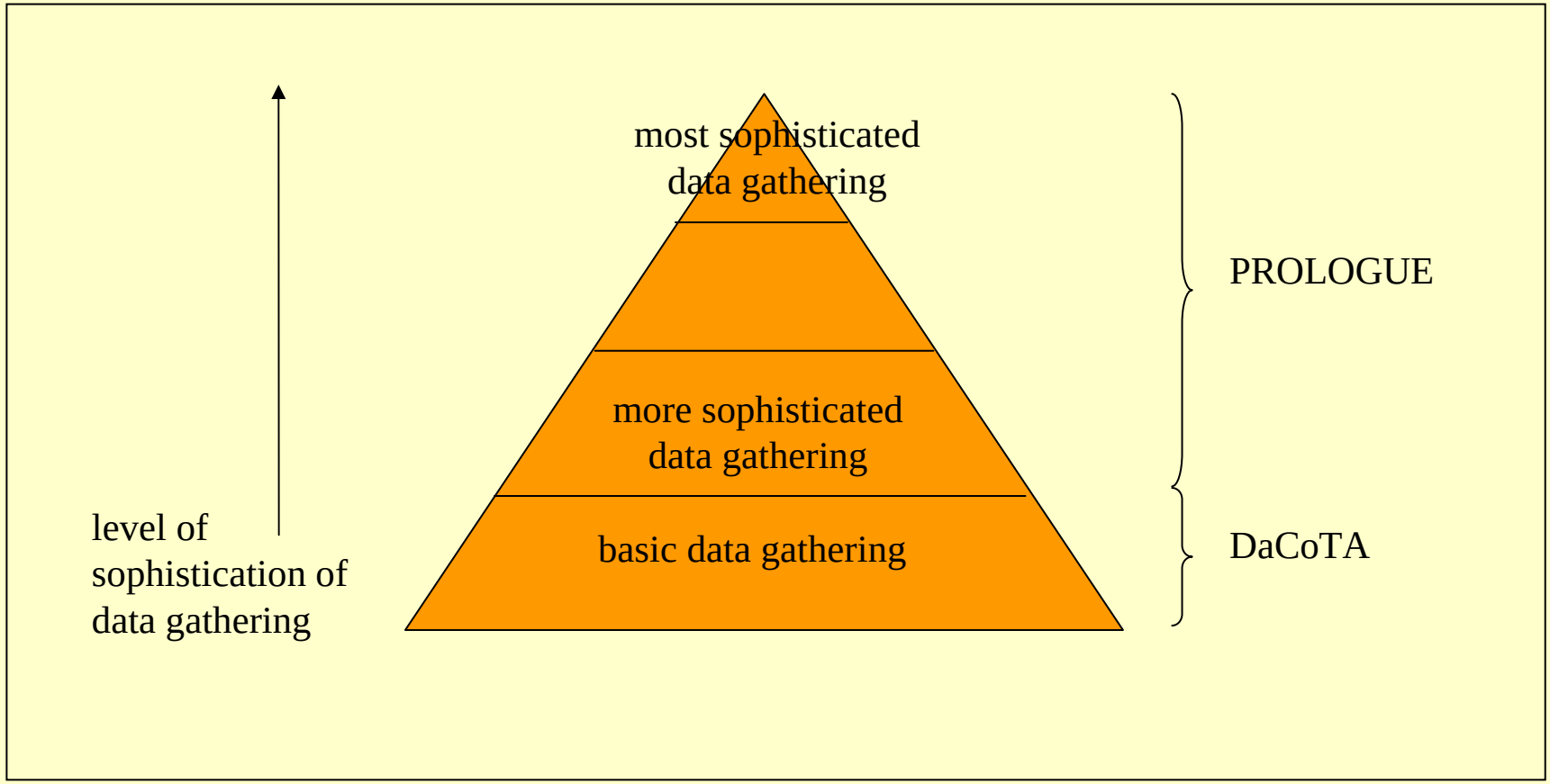
- DaCoTA en PROLOGUE



## DaCoTA proposal

- Further improving the European Road Safety Observatory (ERSO) by enhancing, structuring and applying the data and knowledge it contains
- Follow-up of SafetyNet/SUNflower
- 17 partners from 13 countries under the leadership of Loughborough University UK
- *(two other proposals submitted)*
- DaCoTA duration: 30 months (start 2009?)
- 6 workpackages; Wp6: Driver behaviour monitoring through ND observations
- In Wp6: 6 countries involved under the leadership of SWOV NL

# DaCoTA WP6 Naturalistic driving (I)

- To develop an *implementation plan* (methodology, technology, feasibility) for *continuous monitoring* of relevant road safety data within the framework of the European Road Safety Observatory (ERSO)
- ND offers the possibility of more, better and more efficient data collection compared with interviews, surveys, field experiments, police records, etc.
- ND allows for better comparability of data between countries

# DaCoTA WP6 Naturalistic driving (II)

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- Complementary to or instead of data on
  - Police data/hospital data on road crashes
  - In-depth data
  - Risk exposure data
  - Safety performance indicators (speed, drinking and driving, seat belt use, daytime running lights, crash notification etc.)

# PROLOGUE proposal

- Aims to contribute to the reduction of the number of road casualties in Europe by further exploring, developing, testing and promoting the ND methodology
- Position this research in a broader perspective (environmental issues and traffic management/reliability)
- 9 partners involved under the leadership of SWOV NL
- 8 countries (7 European + Israel)
- PROLOGUE has an Advisory Board incl. US and Canada
- PROLOGUE duration 24 months (start in 2009?)
- PROLOGUE as a start up for a similar study as SHRP2safety

# ND activities in the Netherlands

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- Anti-collision systems for trucks
- Traffic management around Amsterdam (Dutch FOT)

# From Ertico website

- **Partner News: Test of anti-collision systems for trucks kicks off**
- **Date:** 11 July 2008
- On 9 July, the Secretary General from the Dutch Ministry of Transport, Public Works & Water Management launched a series of large scale tests of anti-collision systems for trucks at an event in Delft, The Netherlands. Five anti-collision systems will be tested: Forward Collision Warning and Headway Monitoring, Adaptive Cruise Control, Lane departure Warning and Directional control. The systems will be tested over a period of four months, involving 3000 trucks. A black box will be used to measure and record the driver behaviour on the road.

# Anti-collision systems (AOS) for trucks

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- AOS project in the Netherlands
  - 2008-2009; started 9 July 2008, 4 months?? (at least one year!!)
  - 3000 trucks
  - Project budget: 10 million euros
  - Dutch Ministry of Transport and Connekt/ITS Netherlands
- Systems tested
  - Lane Departure Warning Assist (LDWA) *retrofit*
  - Headway Monitoring and Warning and Forward Collision Warning (HMW and FCW) *retrofit*
  - Adaptive cruise control (ACC)
  - Directional Control (DC)
  - Black Box Feed Back (BBFB) *retrofit*

# Anti-collision systems (AOS) for trucks (II)

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- Large scale pilot study
- Haulage industry heavily involved (participation of 60 transport companies so far)
- Quasi “Case control” (no randomisation, but attempts to matching)
- 400 LDWA, 400 FCW + HMW, 400 DC, 400 ACC, 400 RoC, 600 black boxes + Feedback, 400 control group: total of 3000 trucks, Systems: OEM, Mobileye, CarrierWeb
- Roll over tests on test track

# Anti-collision systems (AOS) for trucks

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# Closing remarks for discussion

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- ND allows obtaining insight in behavior that is not possible to investigate by traditional research methods
  - in depth insight in pre-crash (history of pre-crash conditions), reliable insight in important but 'hard to investigate' subjects such as distraction and fatigue, real measurement of exposure to risk
- Large data-sets can be built that allows for analyses, but these large data sets are bringing their own problems
- How to comply with scientific robustness?
- Integration with environmental issues (e.g. eco-driving behavior) and traffic management should be considered
- International cooperation is needed, but how to organize this with advantages for all partners?