



# The broader scope: monitoring behaviour by ND and other types of study

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# Background

## We want

- more data
- better data



## Why

- to monitor road safety developments and compare Member States
- to identify opportunities for safety improvements

## So we need

- Efficient and accurate data collection
- good comparability

## Current approaches lead to incomparable data

- Number of crashes/casualties
  - Safety Performance Indicators (SPIs)
  - Risk Exposure Data (RED)
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- Incomplete data (e.g. crashes/casualties)
  - Different definitions (e.g. injury severity)
  - Different data collection methods (e.g. period)
  - No information at all (e.g. exposure per road type)

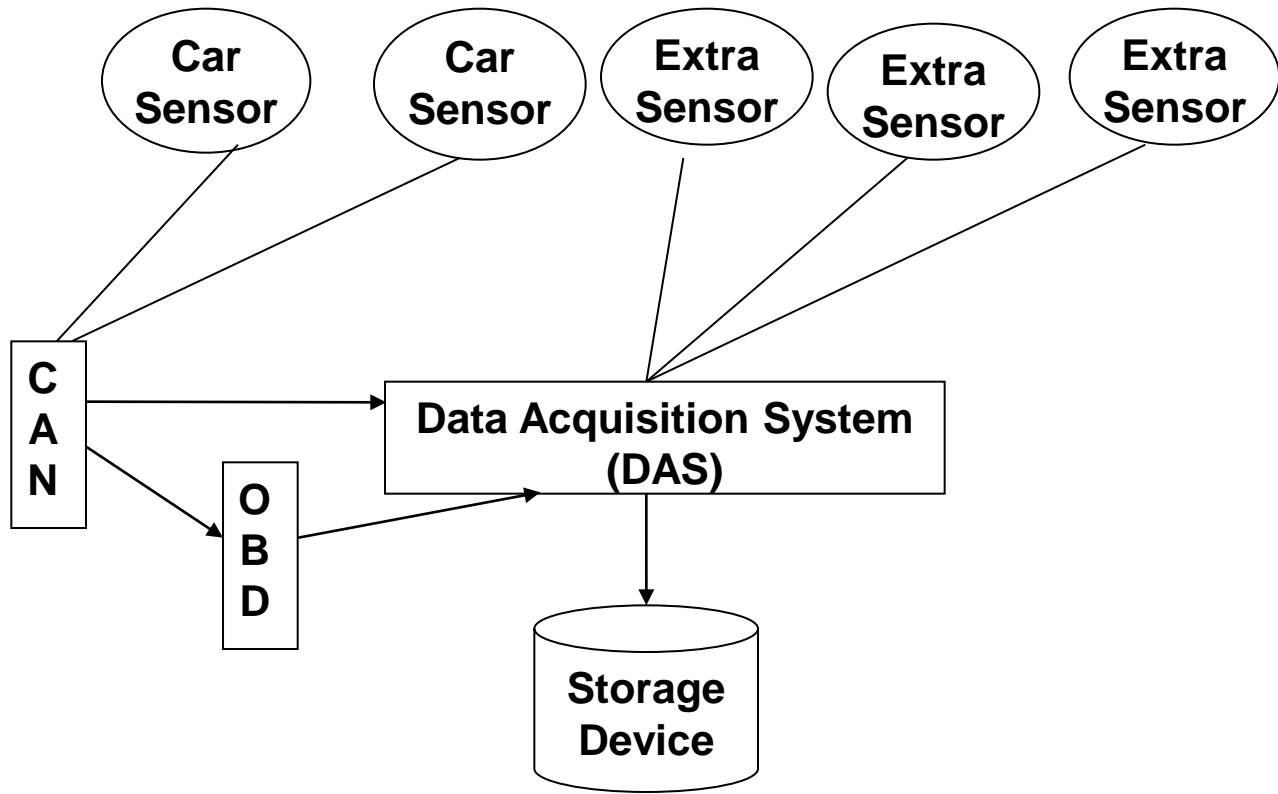
## An alternative?

- Applying the Naturalistic Driving approach for behaviour *monitoring* SPIs and RED

i.e:

- Broadening current use of the ND approach:
  - *Understanding* normal road user behaviour and crash causation factors (e.g. SHRP2, UDRIVE)
  - *Evaluating* the use of in-vehicle functions in normal driving conditions (Field Operational Tests)

# Typical instrumentation for ND research





# Data collection technology

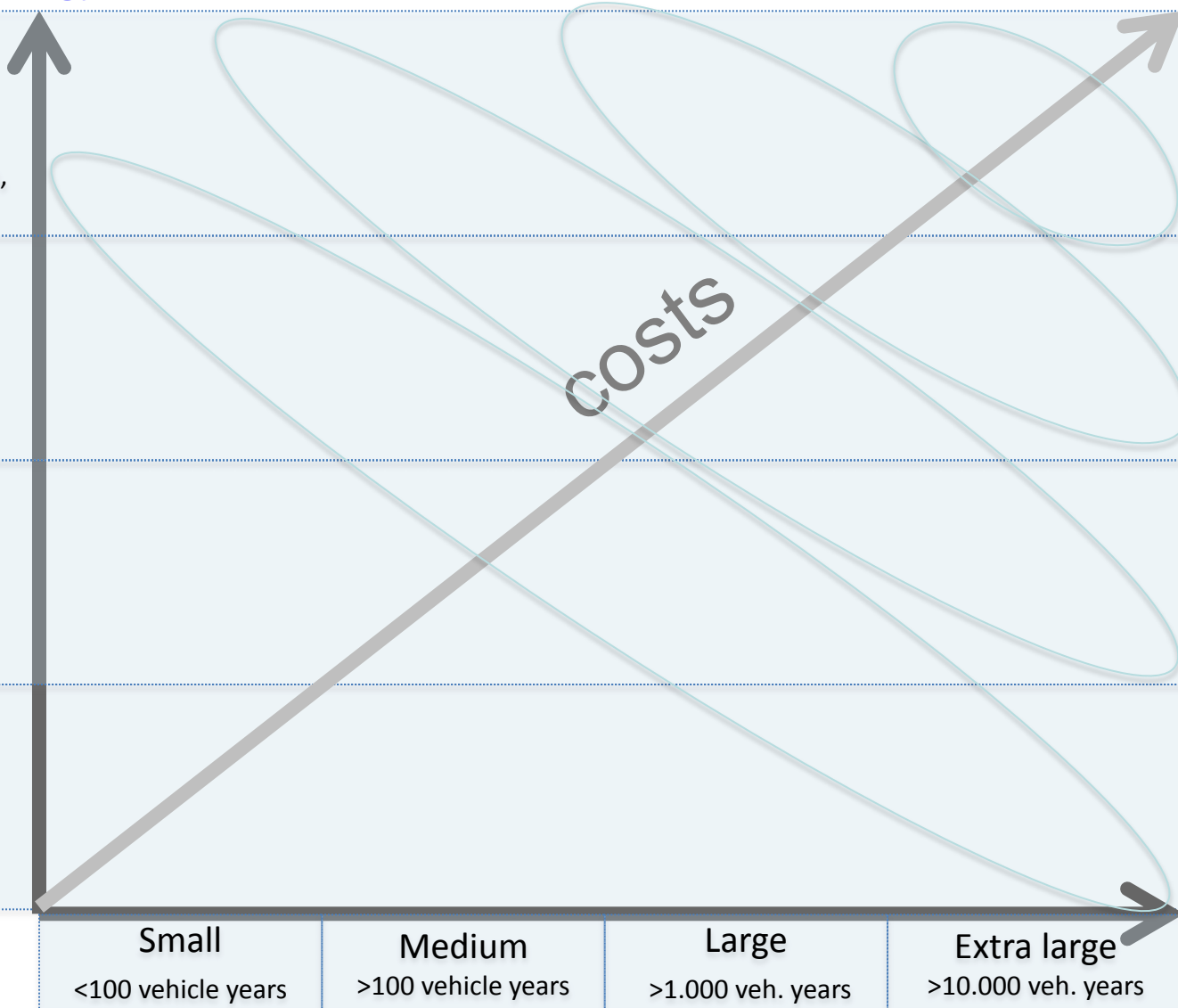
DaCoTA

Additional measures or data sources (site based observations, data enrichment)

Continuous advanced measures (incl. video)

Trigger based measures incl. video

Continuous basic measures



Sample size

## ND for monitoring: some considerations

- Large sample for reliable, representative data
- Hence, start with relatively simple/cheap DAS:
  - GPS
  - Speed
  - Acceleration } Smartphone-type of DAS
- Plus some simple sensors (e.g. seat belt, light use)
- Context data: network, vehicle, driver
- No video data (i.e. no information on fatigue, distraction)

# Resulting information

- Scenario 1: Various RED and some SPI with basic DAS
  - Vehicle & person kilometres
  - Number of trips
  - Time in traffic
  - Excessive speed
  - Acceleration
- Scenario 2: more SPIs with extra sensors/data sources
  - Inappropriate speed
  - Light use
  - Seat belt use
  - Lane behaviour
  - Headway



## And what about near crashes?

- Scenario 3: the SPI near crashes
  - Event triggered video (in part of sample)
  - To assess and quantify the link between vehicle parameters en near crashes
  - To understand the link between near crashes and real crashes

## Added value of ND for monitoring

- Continuity of data gathering
- Scale, representative and comparable
- Simultaneous measurements
- Focus on SPIs and RED
- Information for different
  - road categories (map-matching)
  - age and gender groups
  - vehicle types

## Some concerns

- Huge amounts of data to transfer, store, check and analyse
- Large samples needed: relatively high costs
  - DAS
  - Installation, maintenance, de-installation
  - Participant recruitment and incentives
  - Sample maintenance
- Important legal and ethical/privacy issues
- Selection bias: voluntary participation

# Recommendations

- Start simple:
  - Scenario 1, small sample, few Member States
- When operational, extend scope:
  - Scenario 2/3, full sample size, all Member States
- Perform data storage and analysis at national level
- Transfer results to ERSO
- Install a cross-national coordinating body

## Scenario 4 ..... :

- Involve car industry to get vehicle-based data
  - e.g. CAN, OBD, event/trip recorder, E-call devices
  - more reliable (larger samples), less expensive
- Elaborate the requirements for this data
- Call on EU to promote/regulate
  - access to this data
  - harmonisation of this data

## In Summary

- ND research suitable for cross-national monitoring of RED and SPIs
- Continuous, comparable and detailed data
- However, costly and labour intensive
- Start simple and elaborate scope gradually
- Organisation/implementation at national level
- Coordination at cross-national level
- Start now exploring the future role of car industry

# Thank you for your attention

More information on  
[www.dacota-project.eu](http://www.dacota-project.eu)  
[safetyknowsys.swov.nl](http://safetyknowsys.swov.nl)

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