SAFER

VEHICLE AND TRAFFIC SAFETY CENTRE AT CHALMERS

Naturalistic Driving Research at SAFER

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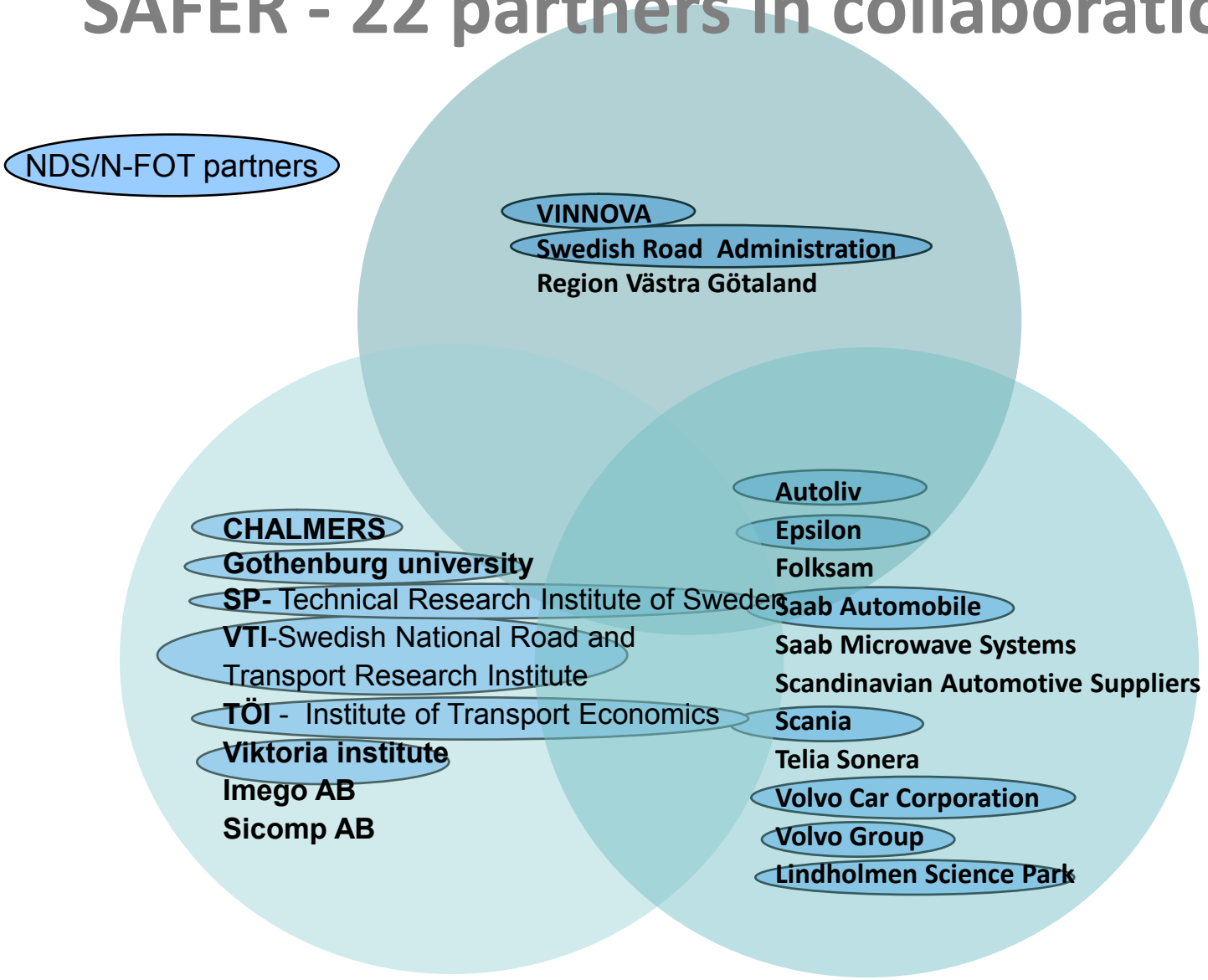
SHRP2 Symposium 2011-07-15

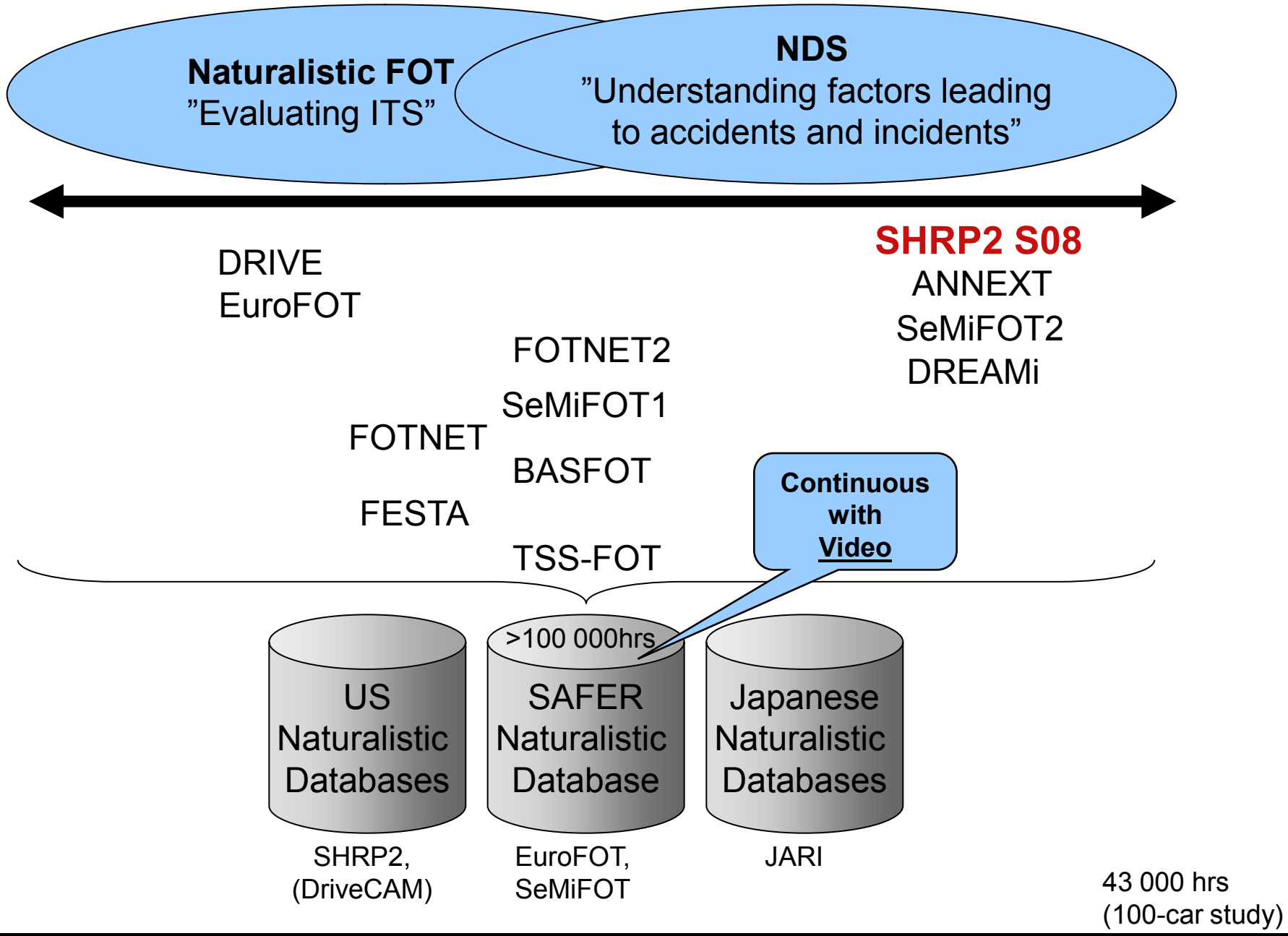
SAFER - 22 partners in collaboration



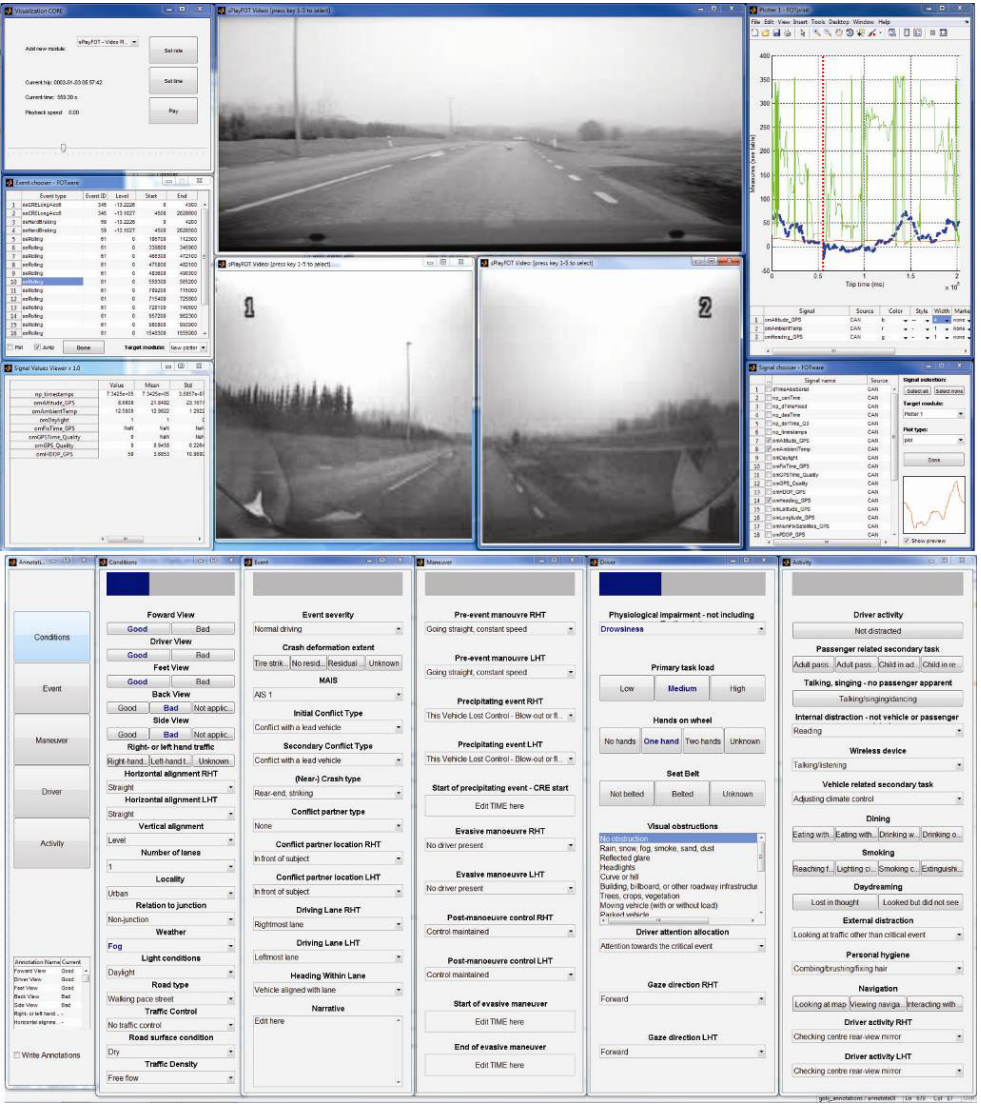
Progress

1. **Many SAFER Partners Involved**

2. **Collaboration with "the sources" of ND**
   - SHRP2, UMTRI, Japan, (VTTI)
3. **Advances in Technology and Implementation**:
   - 4 generations of loggers
   - Database structures, upload, quality monitoring, etc
   - Analysis tools
4. **Naturalistic Data**:
   - 80-100 000hrs (about twice the size of 100-car) at SAFER
   - Japanese data,
   - SHRP2 data
5. **Advances in Analyses**:
   - (Below)


Naturalistic FOT
”Evaluating ITS”
NDS
”Understanding factors leading to accidents and incidents”
DRIVE
EuroFOT
FOTNET2
SeMiFOT1
FOTNET
BASFOT
FESTA
TSS-FOT
SHRP2 S08
ANNEXT
SeMiFOT2
DREAMi
Continuous with Video
>100 000hrs
US Naturalistic Databases
SAFER Naturalistic Database
Japanese Naturalistic Databases
SHRP2, (DriveCAM)
EuroFOT, SeMiFOT
JARI
43 000 hrs
(100-car study)

NDS Data in SE-VMC (EuroFOT)



Cable harness
CAN access
and baseline

Logger

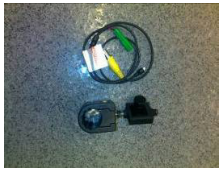
Cam
Drivers Foot

Cam
Front

Cam
Cabin

Eyetracker

Cam
Blind Spot



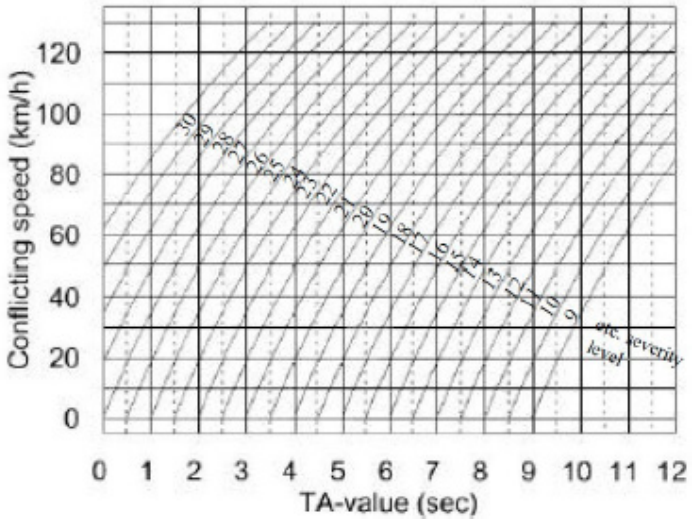
GPS

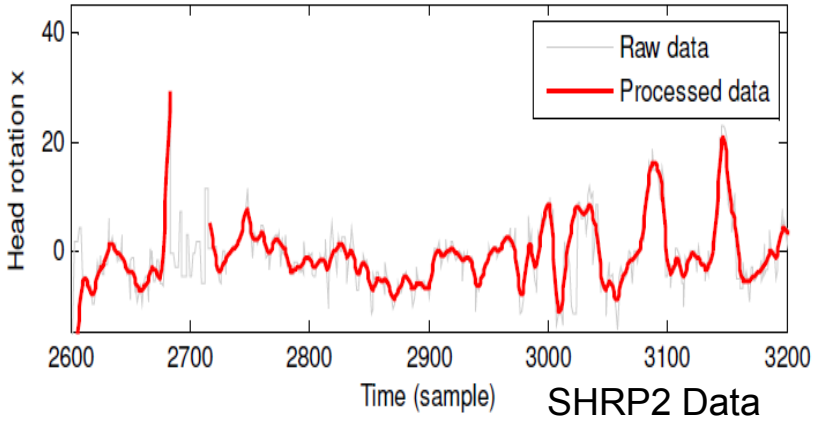
NDS Research Highlights

1. Definition of crashes, near-crashes, incidents (SeMiFOT2, SHRP2 S08)
   - Continuous event severity measure
     - Severity = f(safety margin, injury risk)

2. New Statistical Approaches to the Analysis of factors causing Near-crashes and Crashes (SeMiFOT2, SHRP2 S08)
   - Extreme value theory, Multivariate

3. Inattention-risk Function (SeMiFOT2, SHRP2 S08)
   - Leading eye tracking analysis software
   - Metrics of inattention



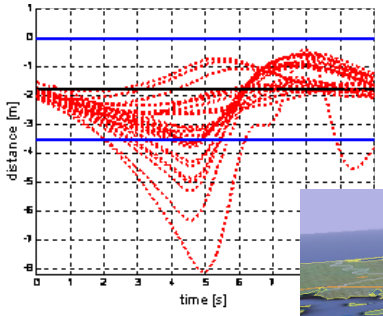


SHRP2 Data

NDS Research Highlights

4. In-depth Video Case Study Methodologies (DREAMi, ANNEXT)
   - Apply DREAM method to video analysis of accidents and incidents
   - Event Onset and inattention

5. "What-if" Simulation Techniques (SeMiFOT1&2)



6. Driver Modelling, Behavioral Adaptation, Crash data collection method comparison, etc – PhD projects

7. Other – Oops reaction by machine vision, Map-Crash DB matching

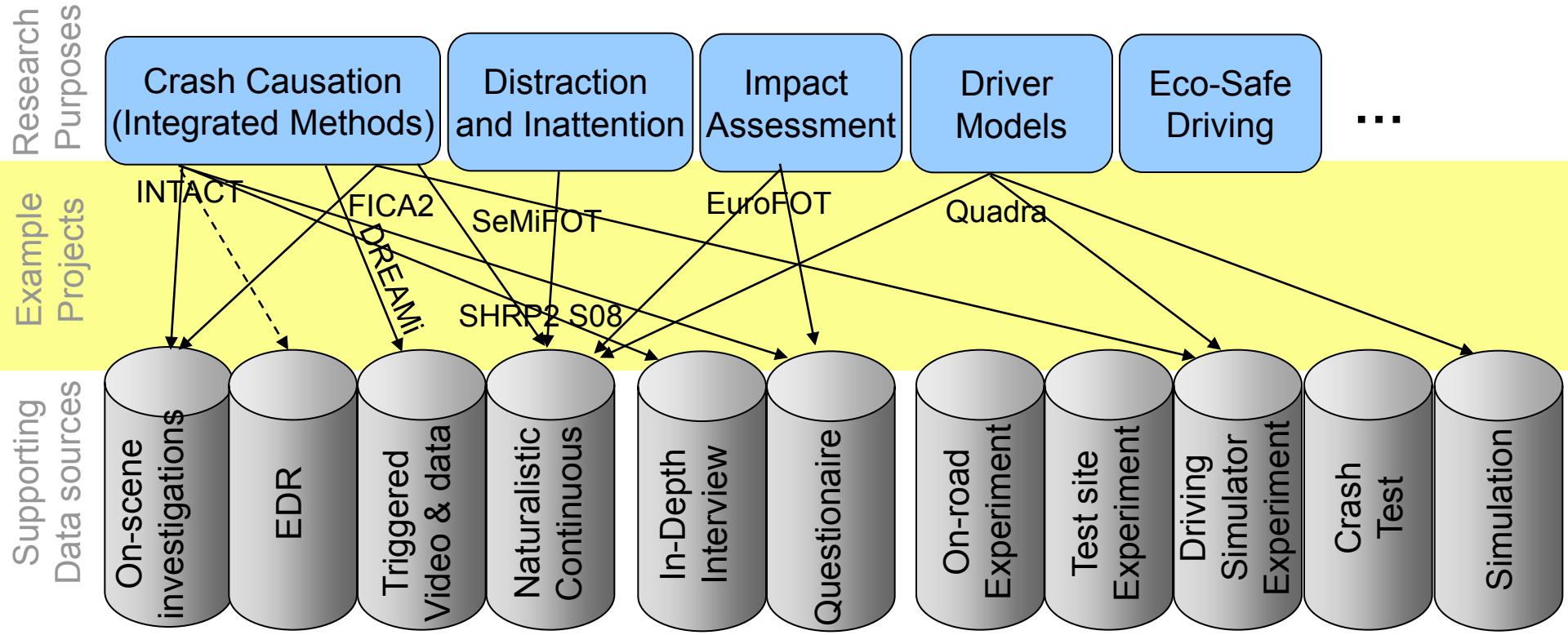
Work towards a vision of a future safety analysis for preventive safety in a representative ND database

- Pre-Crash (and Baseline) behavior IRL

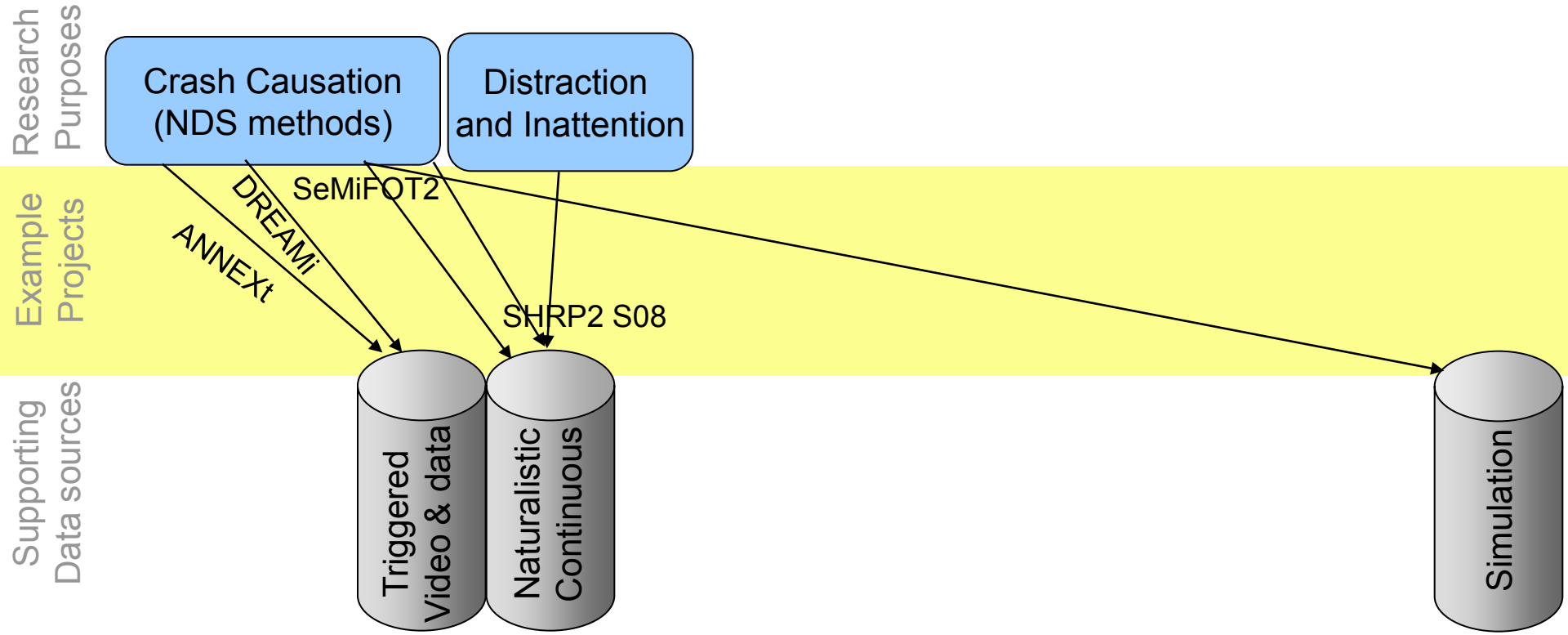
ND Vision: A representative sample of pre-crashes and baseline driving enabling post-hoc analyses

→ All future vehicles are NDS-capable? E.g. ND from customer vehicles with preventive safety systems (no need to equip)

Integrated Traffic Safety Analysis



Integrated TSA (NDS Example)



Thank you for your attention!

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