



FORSCHUNGSINITIATIVE
K O - F A S

BMWi Funded Project Ko-PER: Compendium and Digest

BMWi Förderprojekt Ko-PER:
Leitfaden und Übersicht

Dr. Reiner Wertheimer
Management & Consulting

Gefördert durch:



aufgrund eines Beschlusses
des Deutschen Bundestages

Basic Motivation of Ko-PER (Slide I)

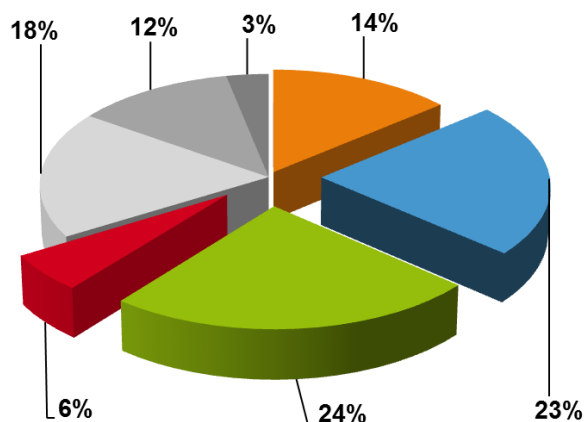
Increasing Complexity of Accident Scenarios

- Existing driver assistance and active safety systems (e.g. ECC/ESP, ACC and EBA), already significantly reduce the frequency of accident types in comparatively simple traffic scenarios (e.g. single vehicle driving accidents, rear-end collisions, etc.).
- Hence, the *relative* incidence of accidents in *complex* traffic situations increases continuously.
- Complex situations often require a virtually complete representation of the local driving environment and thus tend to overburden drivers as well as “self-sufficient” on-board vehicle perception systems.
- Because of occlusions and unexpected behavior of fellow road users, human drivers (and purely intra-vehicle perception systems as well) are often caught by surprise.
- Temporary inattentiveness is an added factor in case of humans.

Basic Motivation of Ko-PER (Slide II)

Major Accident Types (Germany, 2012)

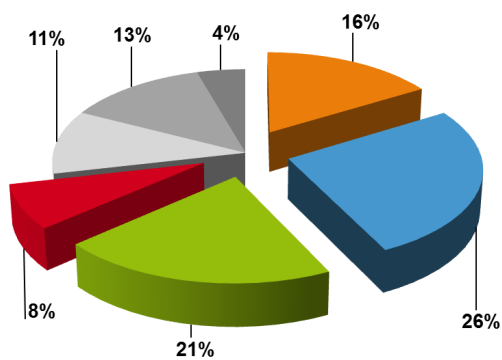
Accidents with personal injuries: total (100% = 206.696)



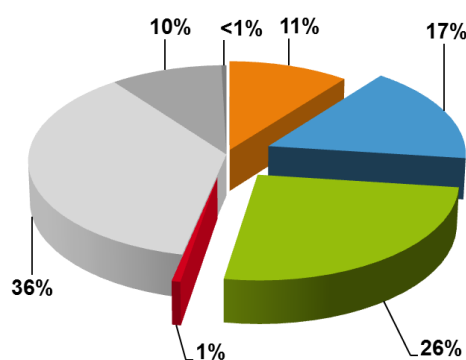
Type of accident

- Turning off the road (Abbiegeunfall)
- Turning into the road/crossing (Einbiegen/Kreuzen)
- Vehicles moving along in carriageway (Längsverkehr)
- Crossing the road (Überschreitenunfall)
- Driving accident (Fahrerunfall)
- Other accident (Sonstiger)
- Stationary vehicles (Ruhender Verkehr)

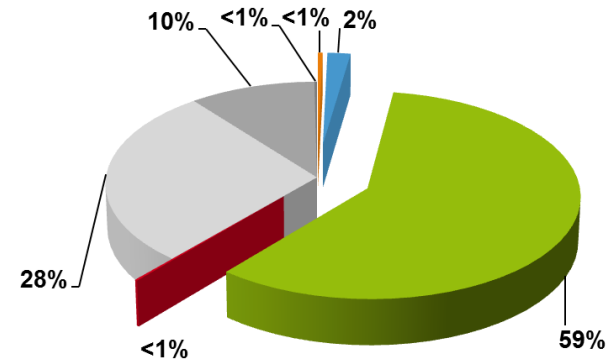
In town/village (68,9 %)



Rural roads w/o highways (25,1 %)



Highways (6,0 %)

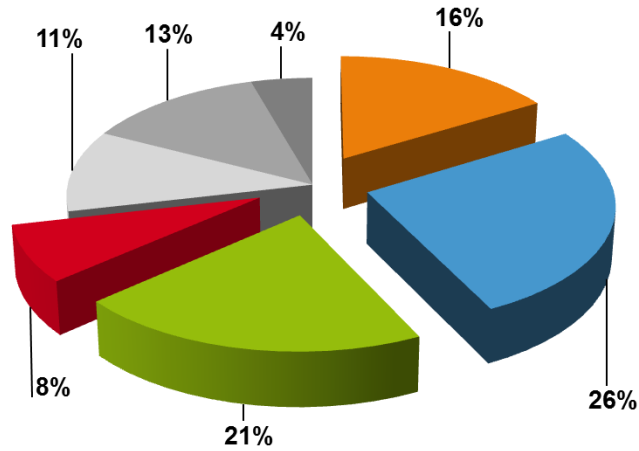


One Major Result of Ko-PER

Vast Reduction of Safety-Critical Situations

Accidents with personal injuries in town/village (Germany, 2012)

Source: German Federal Statistical Office

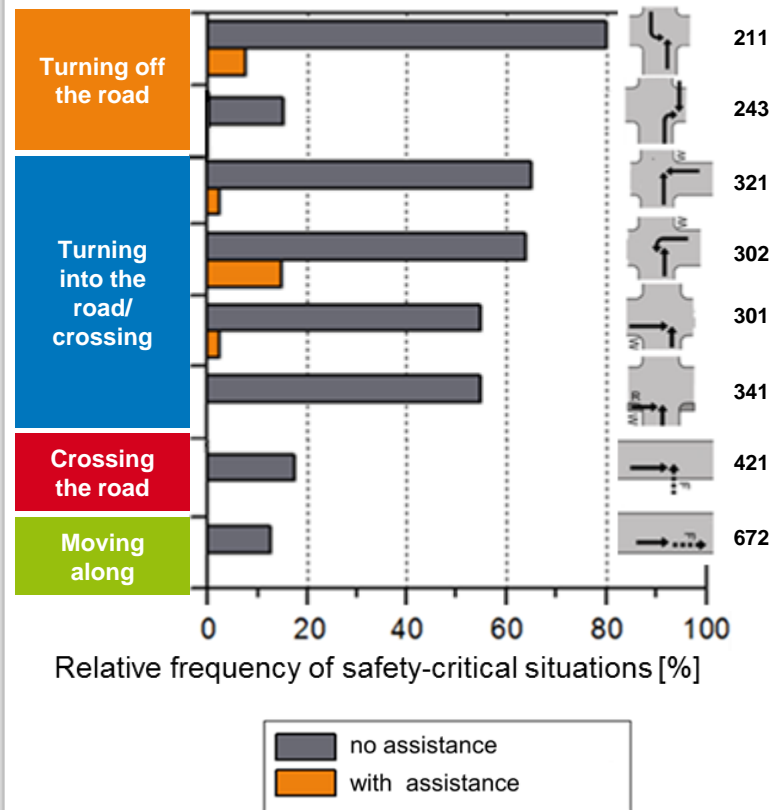


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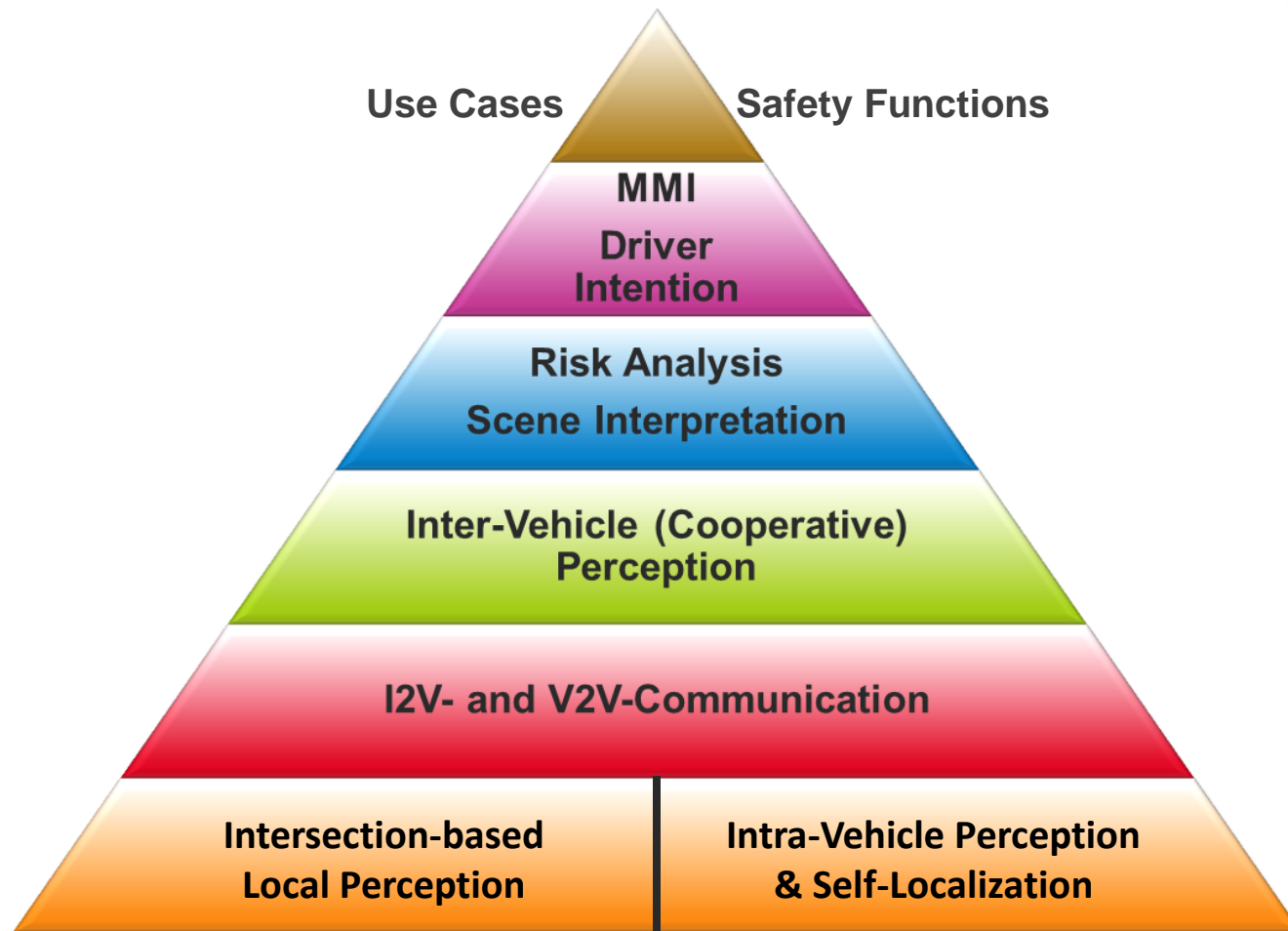
Assessment of potential benefit

Result of extensive driving simulator studies (IZVW)



The Ko-PER Pyramid

Layers of Information Processing

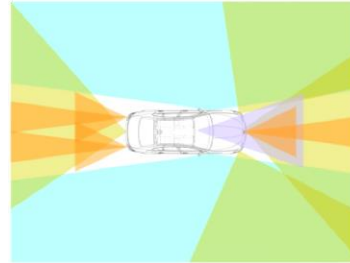


Ko-PER Building Blocks: From Sensor Data to Situation Awareness

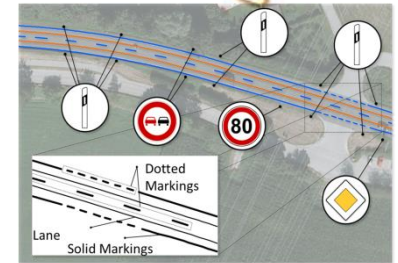
Perception Network Intersection



In-Vehicle Perception



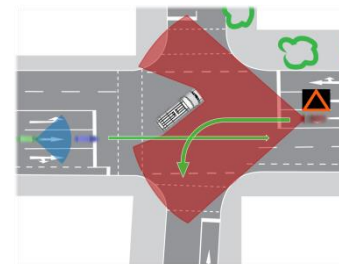
High Precision Self-Localization



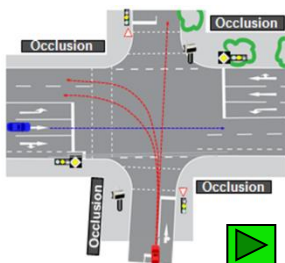
Wireless I2V and V2V Communication



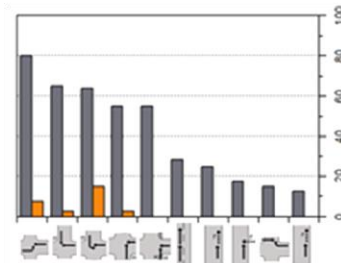
Inter-Vehicle Sensor Data Fusion / Cooperative Perception



Situation Analysis



HMI Composition / Effectiveness



Preventive Safety Functions



Ko-PER Will Contribute 16 Talks Grouped in the Following 4 Sessions

Bezeichnung der Session	Session Moderator	Corporation / Institution
Eigenlokalisierung und Kommunikation	Dr.-Ing. Felix Klanner	BMW Group Forschung und Technik
Infrastrukturbasierte Perzeption und Informationskarten	Prof. Dr.-Ing. Klaus Dietmayer	Universität Ulm
Kooperative Perzeption und Situationsanalyse	Dr. rer. nat. Andreas Wedel	Daimler Aktiengesellschaft
Situationsinterpretation und aktive Sicherheit / neuartige Fahrerinformationskonzepte	Dipl.-Psych. Alexandra Neukum	Interdisziplinäres Zentrum für Verkehrswissenschaften IZVW

Enjoy!

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Now Enjoy

Selected Presentations

provided by the three funded projects

Ko-TAG, Ko-KOMP and Ko-PER

affiliated in

Research Initiative Ko-FAS