Semiautonome Systeme

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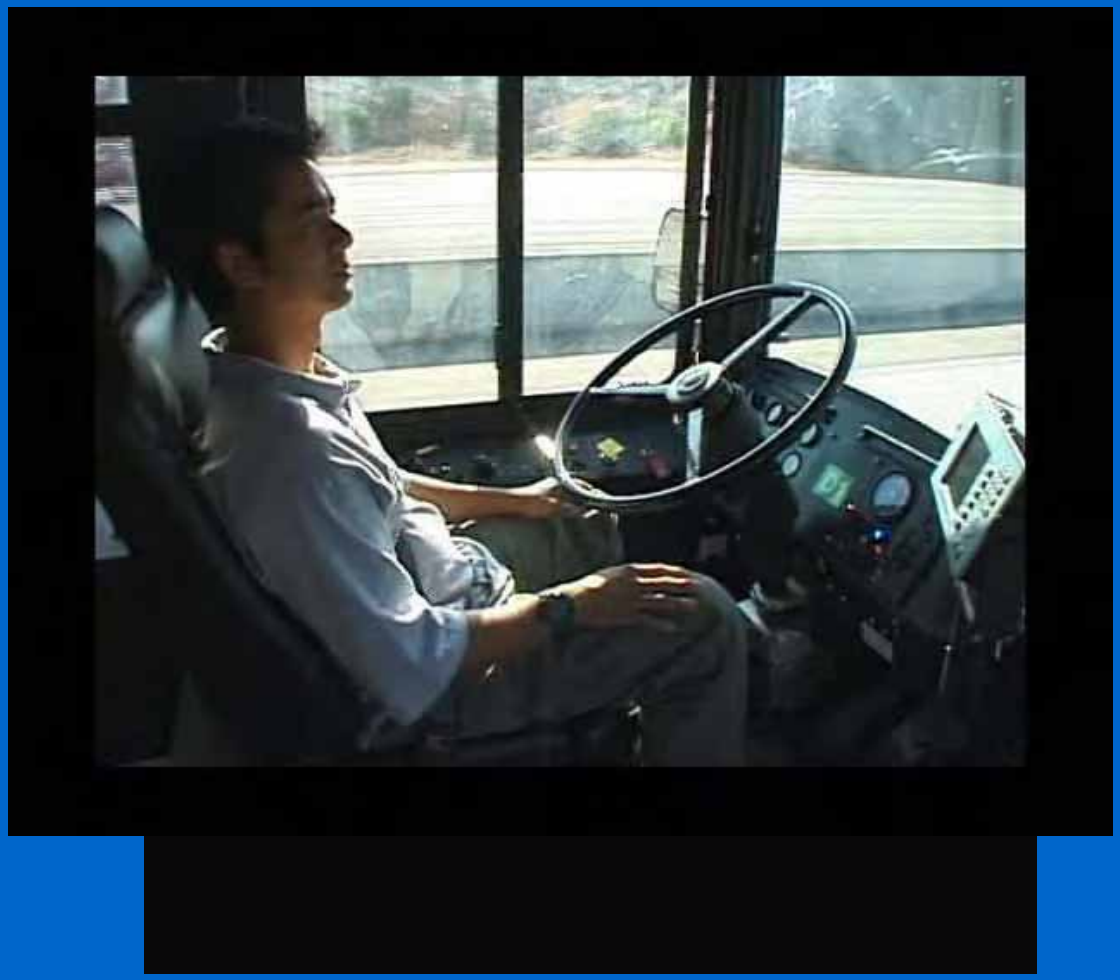
- Bussysteme im Fahrzeug
  - Flexray
  - MOST
  - Autosar
- EU Integrated Safety program
  - Prevent „The virtual Safety belt“
    - Profusion 2
- Great Urban Challenge

UCB Path – Bus Docking System



Bus-Systeme im Fahrzeug

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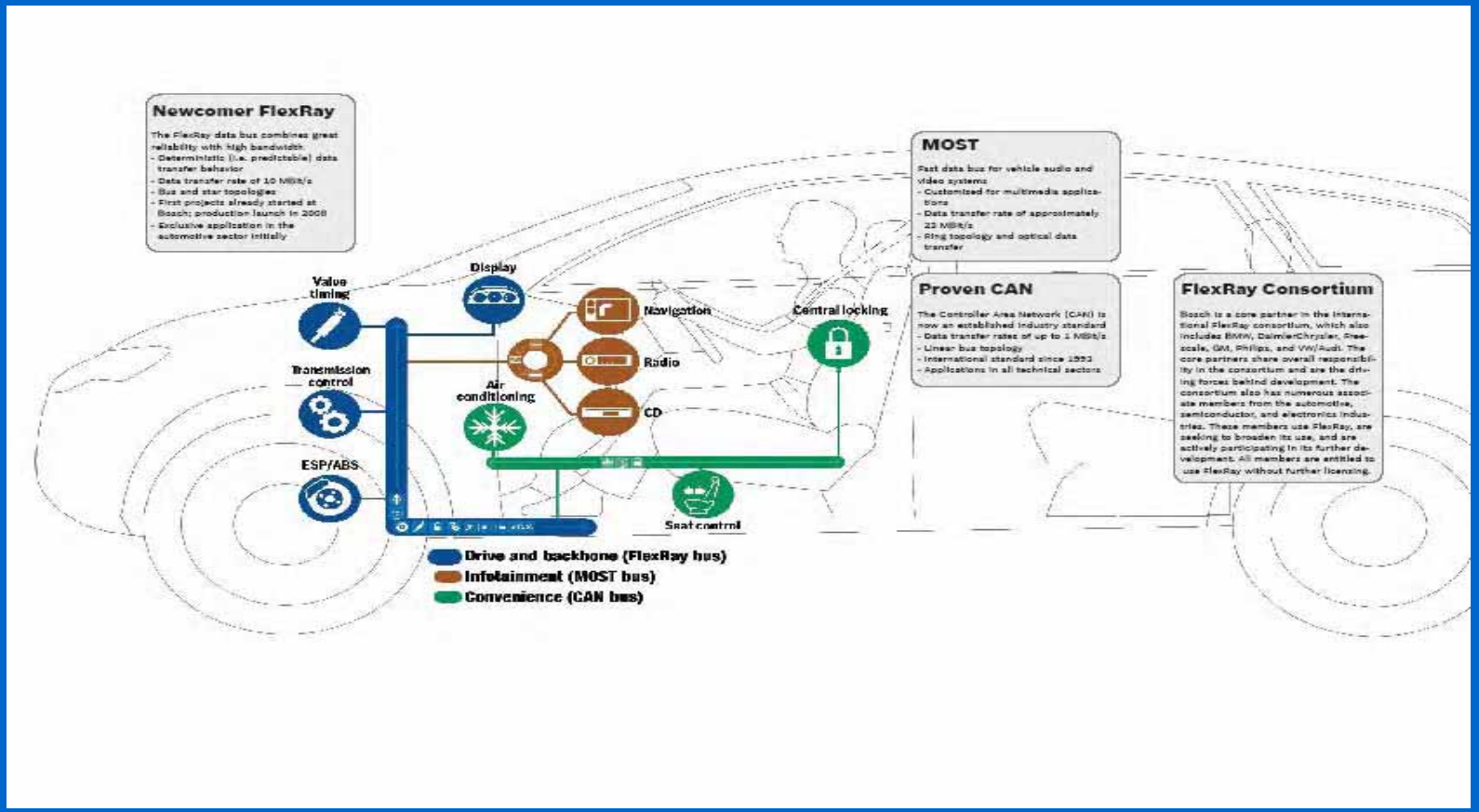

AMS Flexray Transceiver

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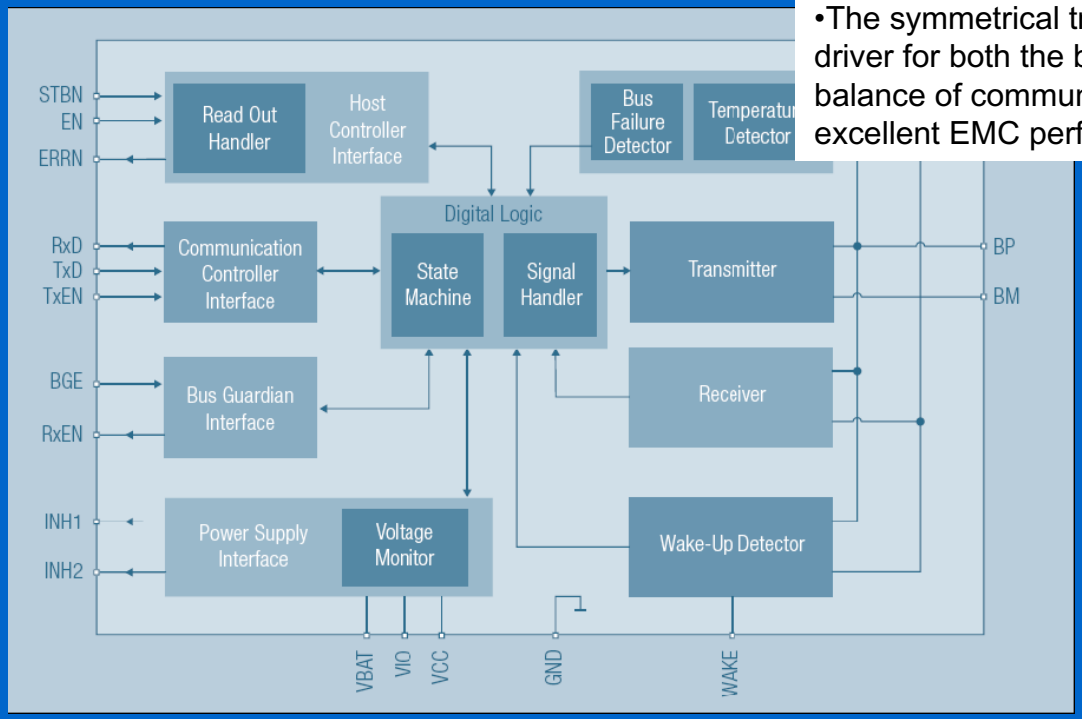
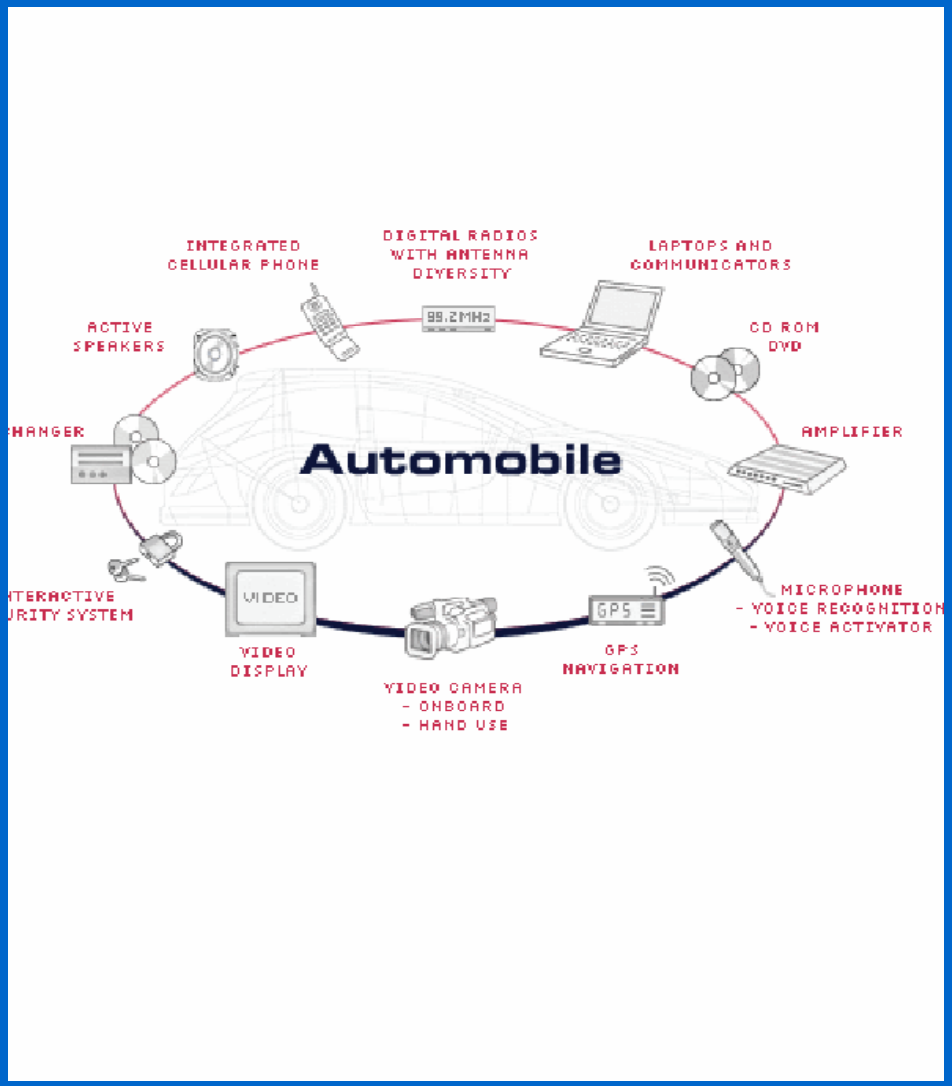
•An extended diagnostic interface, offers advanced busfailure detection capabilities with the intelligent combination of bus-current measurement and logical comparators.
•A thermal sensor circuit with an integral shutdown mechanism prevents damage to the device in extreme temperature conditions.
•The symmetrical transient control for the high- and low-side driver for both the bus-minus and bus-plus line allows an ideal balance of communications over different network topologies, with excellent EMC performance.





MOST Media Oriented System Transport

AUTOSAR 1

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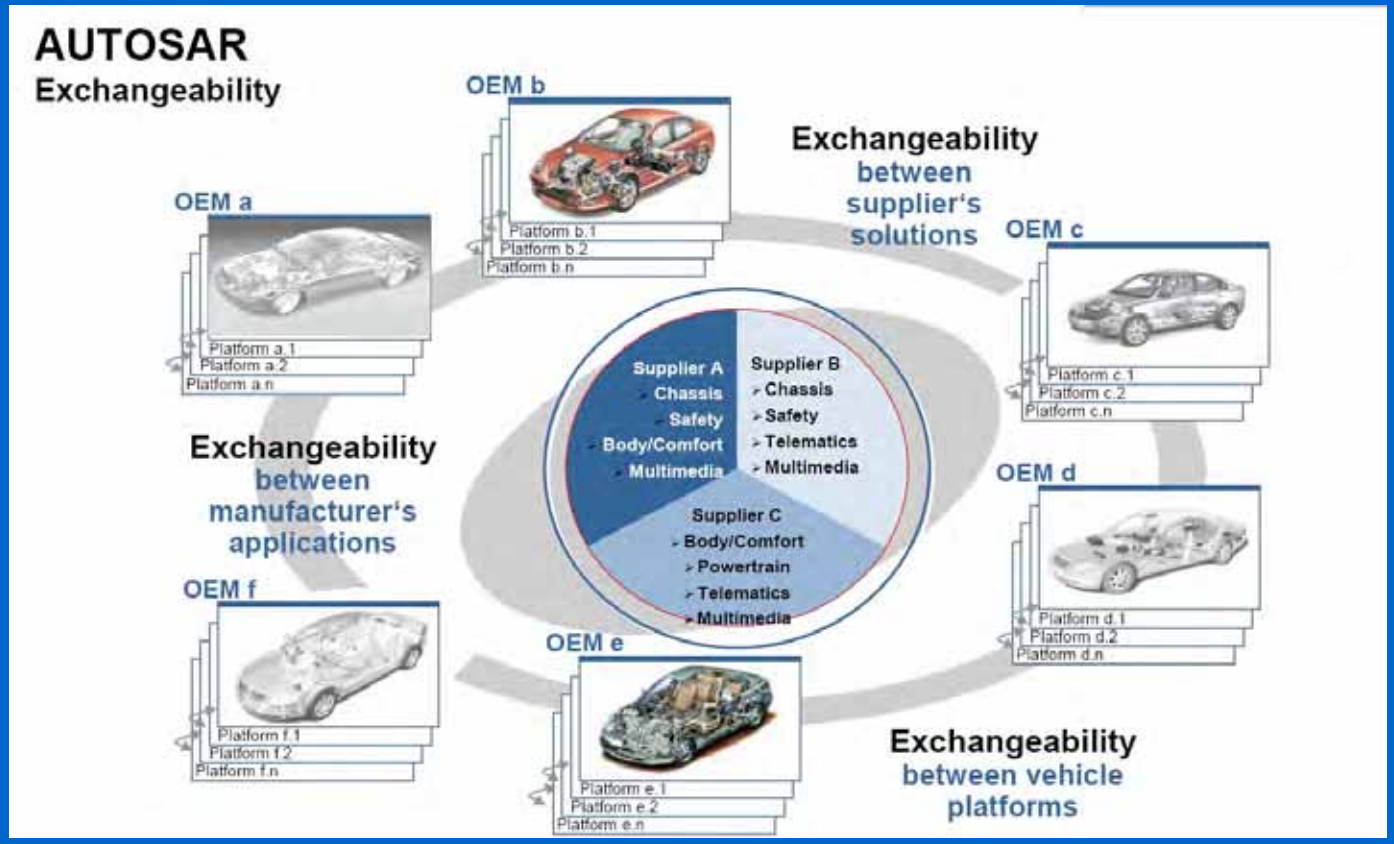

AUTOSAR 2

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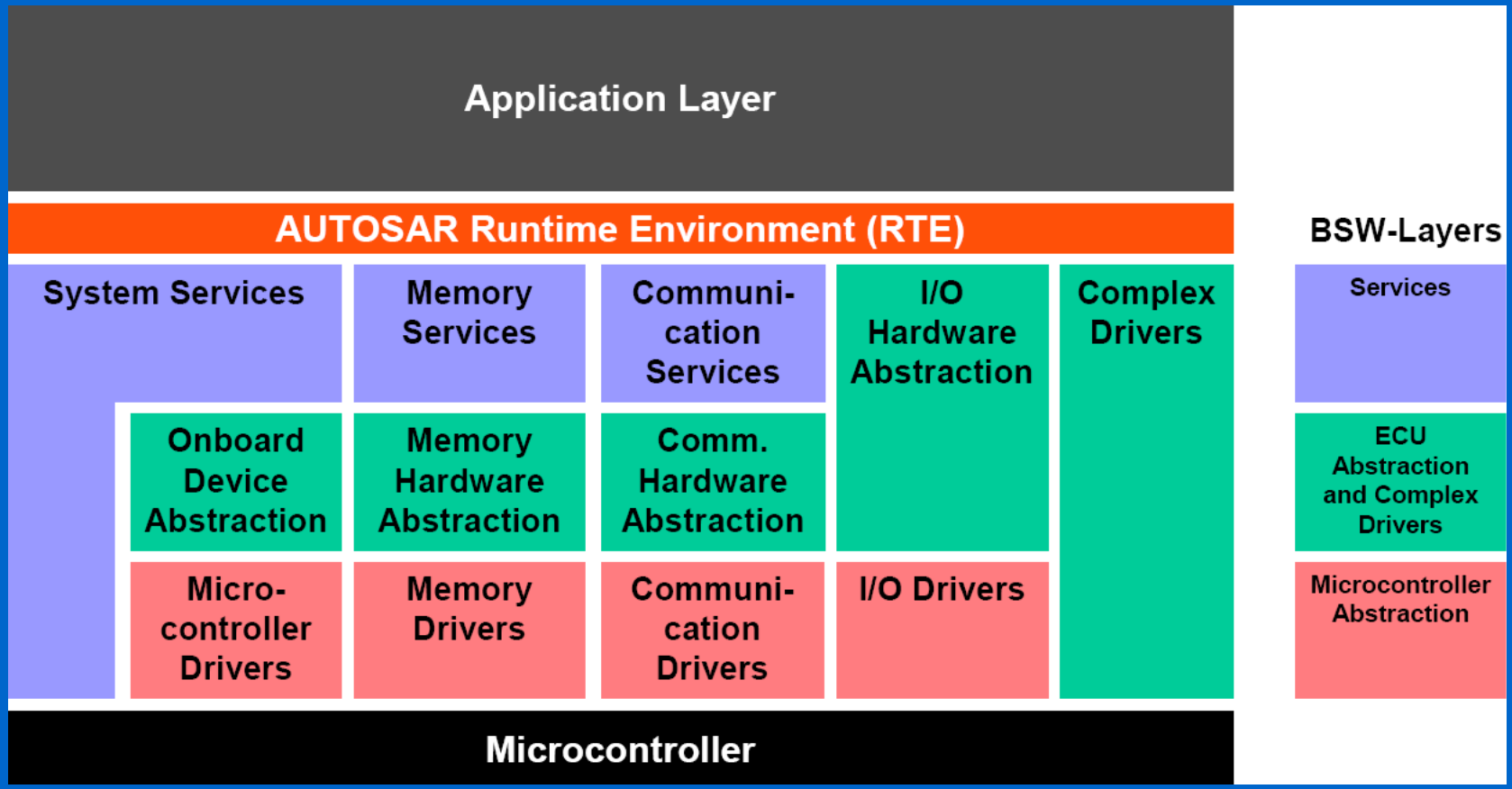
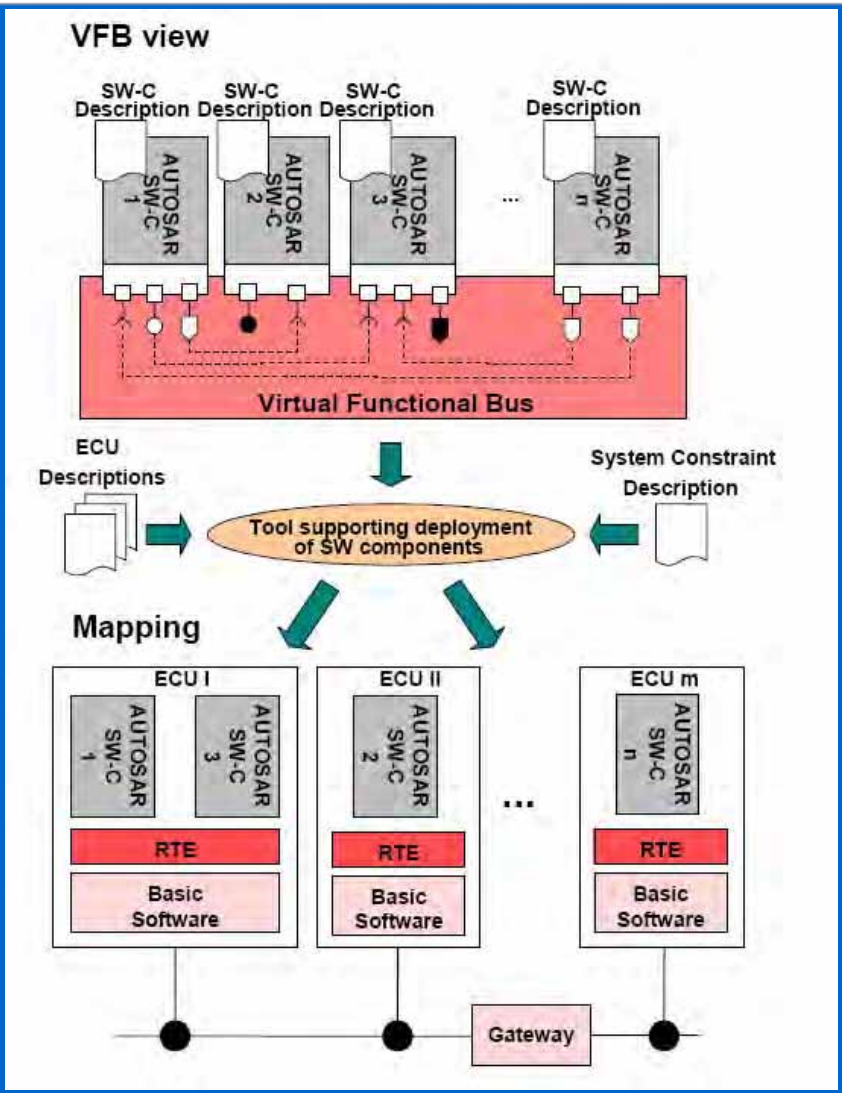


AUTOSAR 3



- Functional software is described formally in terms of “Software Components” (SW-Cs).
- Using „Software Component Descriptions“ as input, the „**V**irtual **F**unctional **B**us“ validates the interaction of all components and interfaces before software imple-mentation.
- Mapping of “Software Com-ponents” to ECUs.

The Integrated Safety programme

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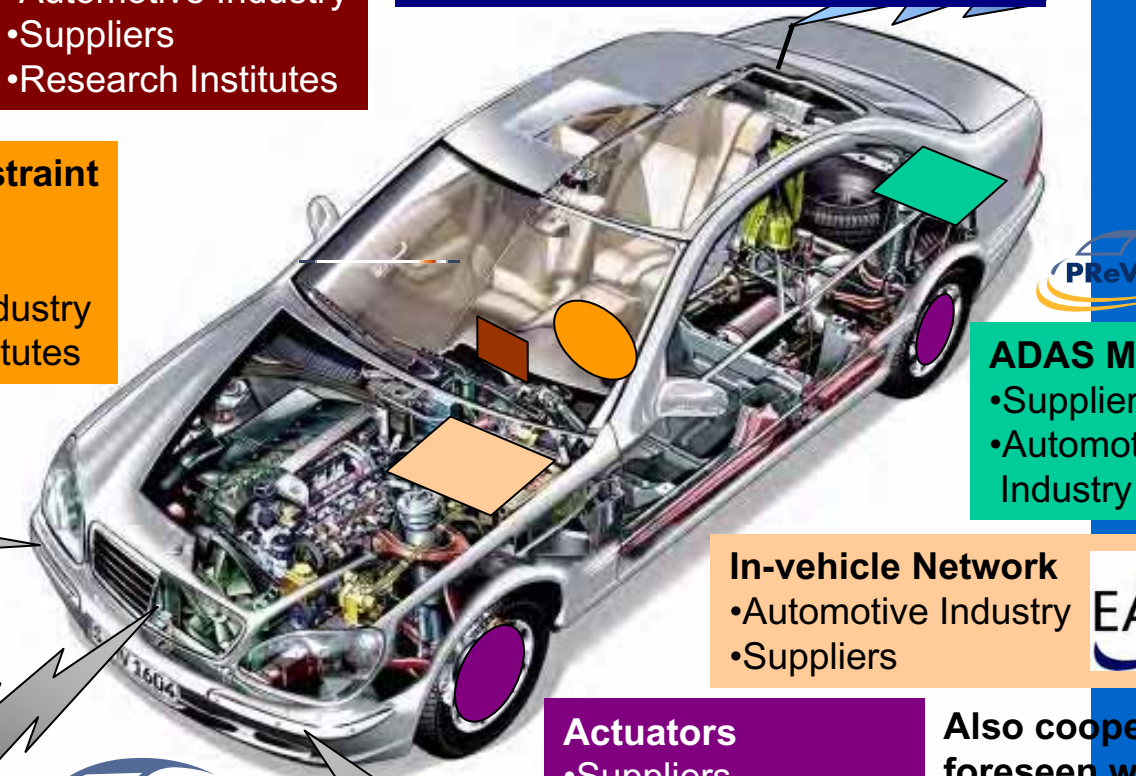
C2C and C2I Comm.
•Suppliers
•Automotive Industry

HMI Concept
•Automotive Industry
•Suppliers
•Research Institutes

Advanced Restraint Systems
•Suppliers
•Automotive Industry
•Research Institutes



ADAS Maps
•Suppliers
•Automotive Industry

In-vehicle Network
•Automotive Industry
•Suppliers

Environment Sensing / Sensor Fusion
•Suppliers
•Research Institutes
•Automotive Industry

Actuators
•Suppliers
•Automotive Industry
•Research Institutes

Also cooperation foreseen with SPARC and ADASIS Forum

IP PReVENT Phase 1:

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Safe speed & Safe following

SASPENCE:	Safe speed and safe distance
WILLWARN:	Wireless local danger warning

Lateral Support & Driver Monitoring

SAFELANE:	Situation adaptive system for enhanced lane keeping support
LATERALSAFE:	Lateral support and driver diagnostics

Intersection Safety

INTERSAFE:	Intersection safety

Vulnerable Road Users & Collision Mitigation

APALACI:	Advanced pre-crash and longitudinal collision mitigation
COMPOSE:	Collision mitigation and protection of road users
USERCAMS:	Use of active range cameras for RU protection and collision mitigation

IP PReVENT Phase 1:

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Code of Practice, Impact Assessment

RESPONSE:	Code of Practice for ADAS

Maps & Location Related Tasks

MAPS & ADAS:	Development, test and validation of digital MAPS and standard interface to ADAS

Sensors & Sensor Data Fusion

PROFUSION:	Robust and optimised perception by sensor data fusion

Integration of functions

INSAFES:	Phase 2 project focusing on the integration of the results from functional subprojects

Call 4: Collaboration and Synergies

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Communication Architecture Co-operation

CVIS
COOPERATIVE VEHICLE-INFRASTRUCTURE SYSTEMS

Coordinator: **ERTICO**
Total budget: € 41 Million
EC contribution: € 22 Million
Consortium: 61 partners - 12 countries

SAFESPOT

Coordinator: **Fiat Research Centre**
Total budget: € 38 Million
EC contribution: € 20,5 Million
Consortium: 51 partners - 12 countries

coopers

Coordinator: **Austria tech**
Total budget: € 16,8 Million
EC contribution: € 9,6 Million
Consortium: 37 partners - 14 countries

ting projects also includes: **SEVECOM, COMeSafety, Car-2-Car**
munications Consortium (C2C-CC), Network on Wheels (NoW), INVENT
ACTIV (Germany), CVHS (UK), IVSS (Sweden)

Concertation Meeting
July 6th, Leuven

Information Society and Media 2

On-going projects: CVIS

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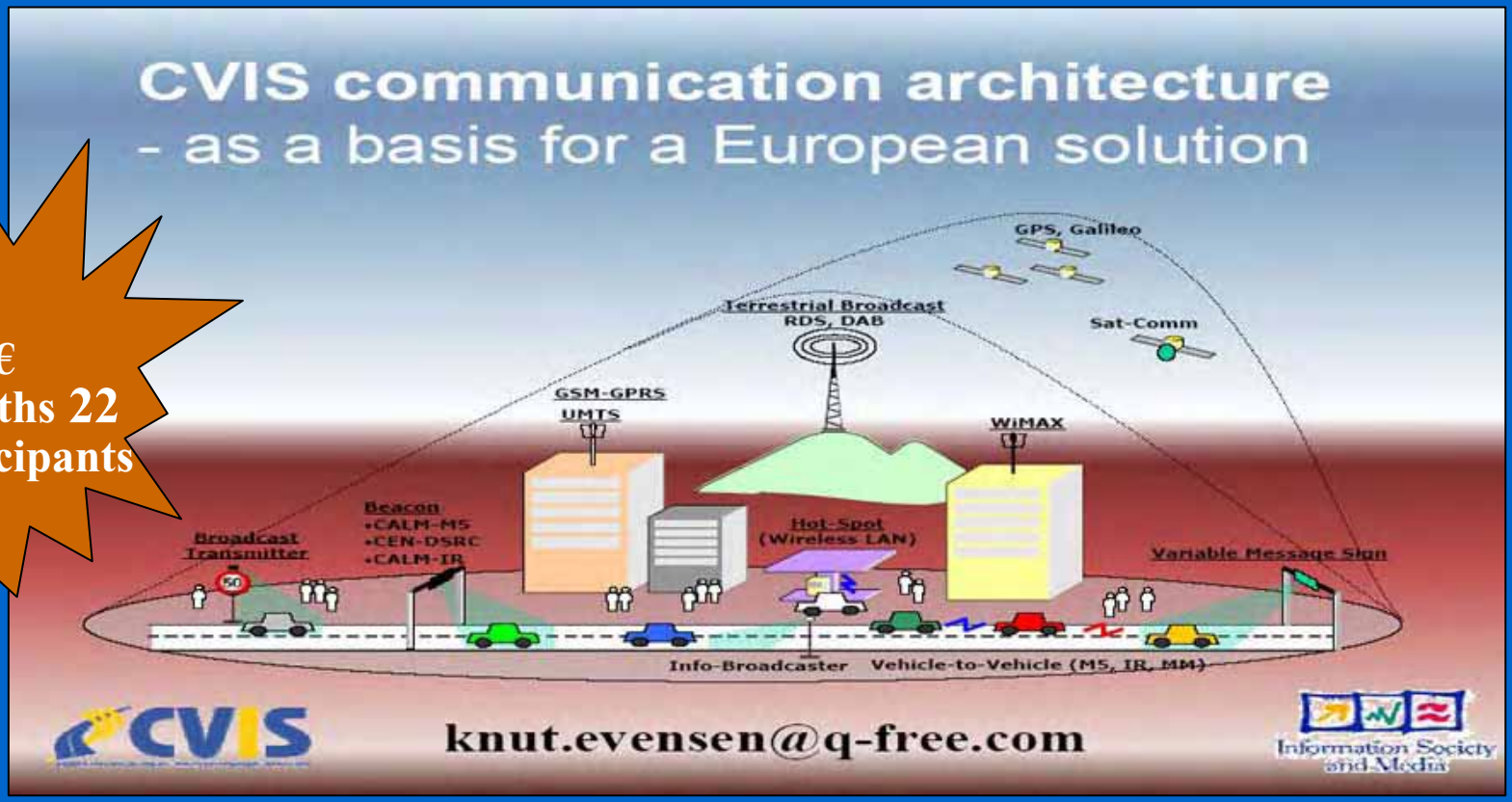
M€
48 months 22
75 participants



On-going projects: SAFESPOT (IP)

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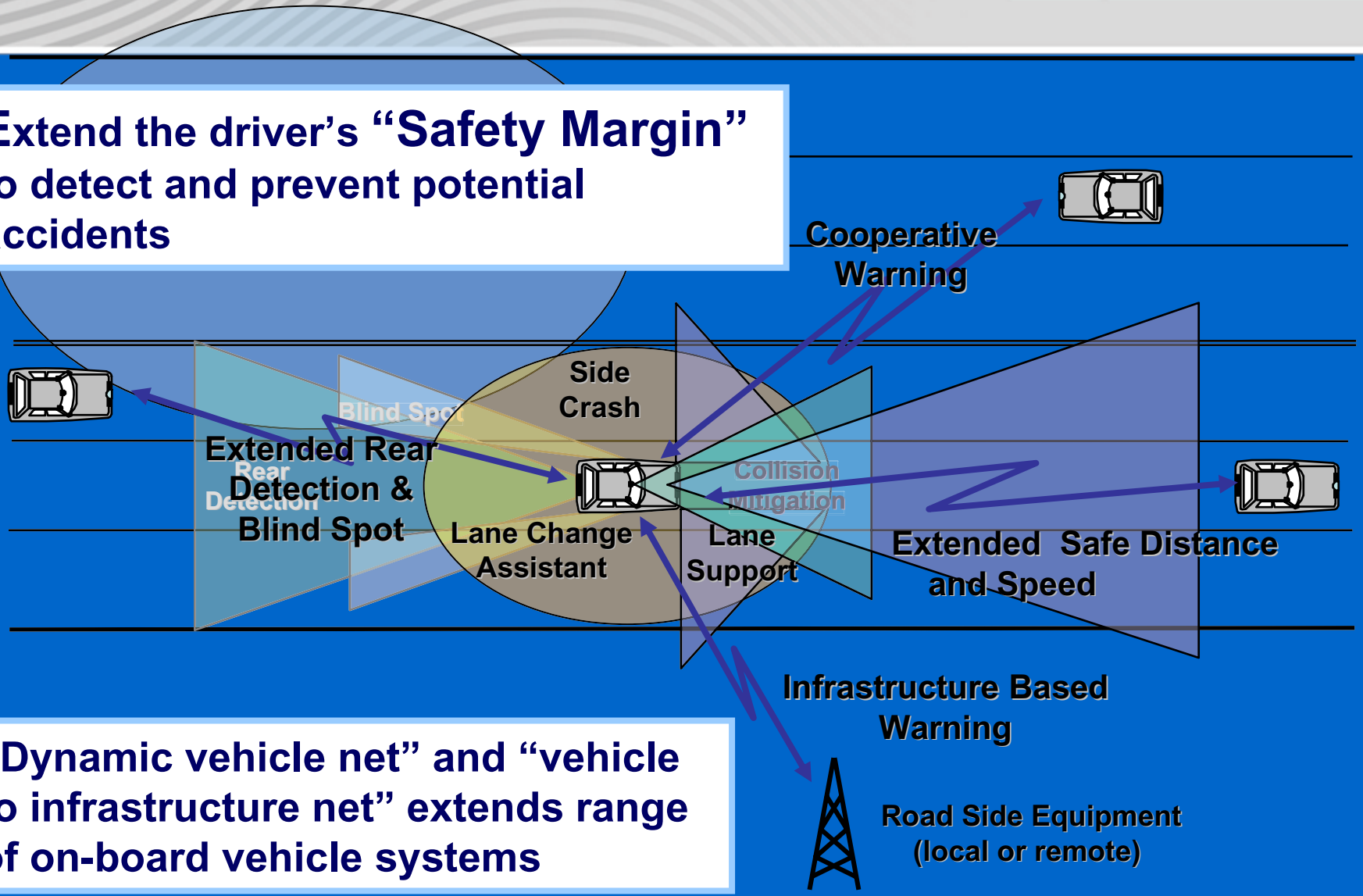
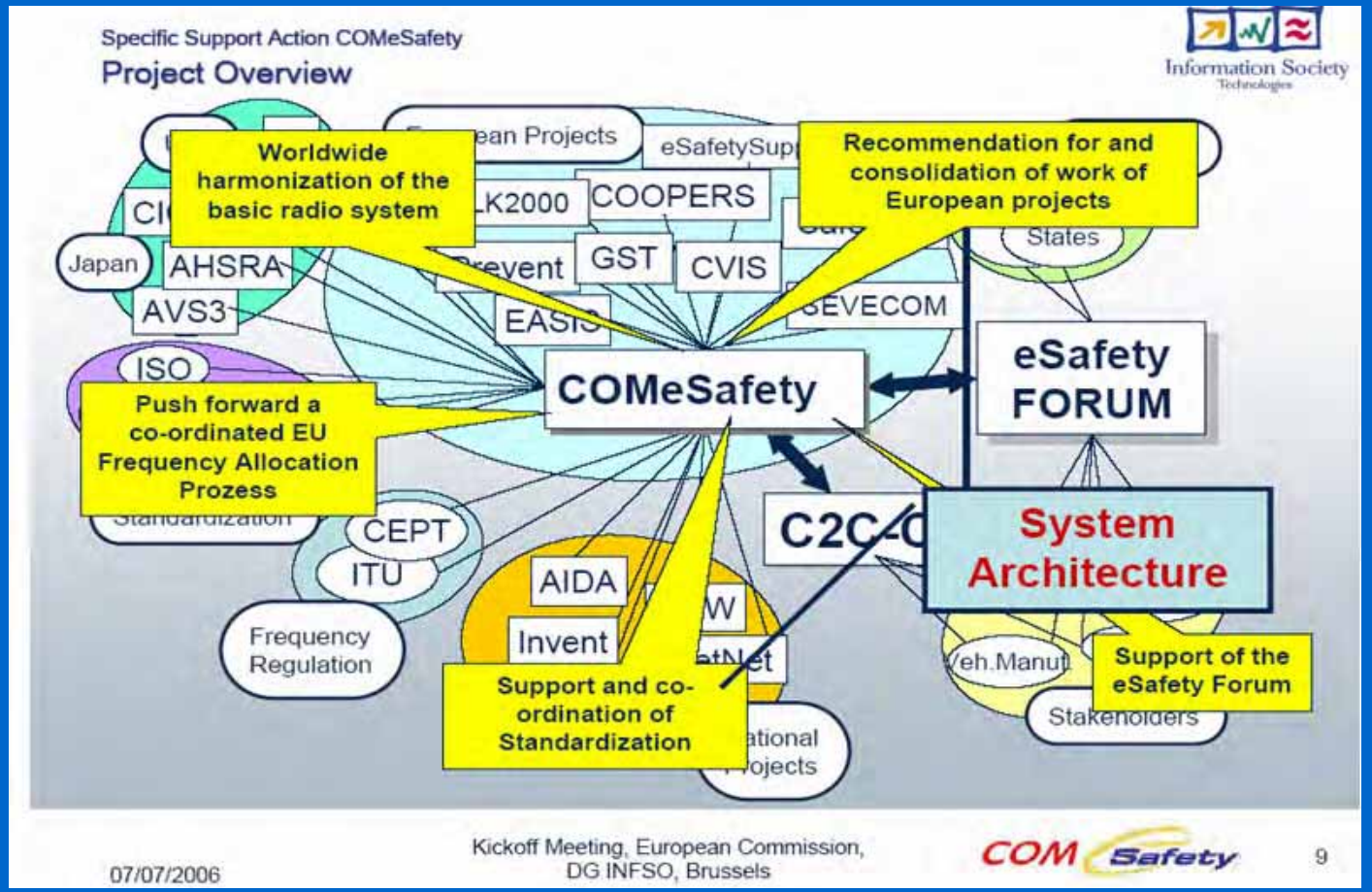
Extend the driver's "Safety Margin" to detect and prevent potential accidents

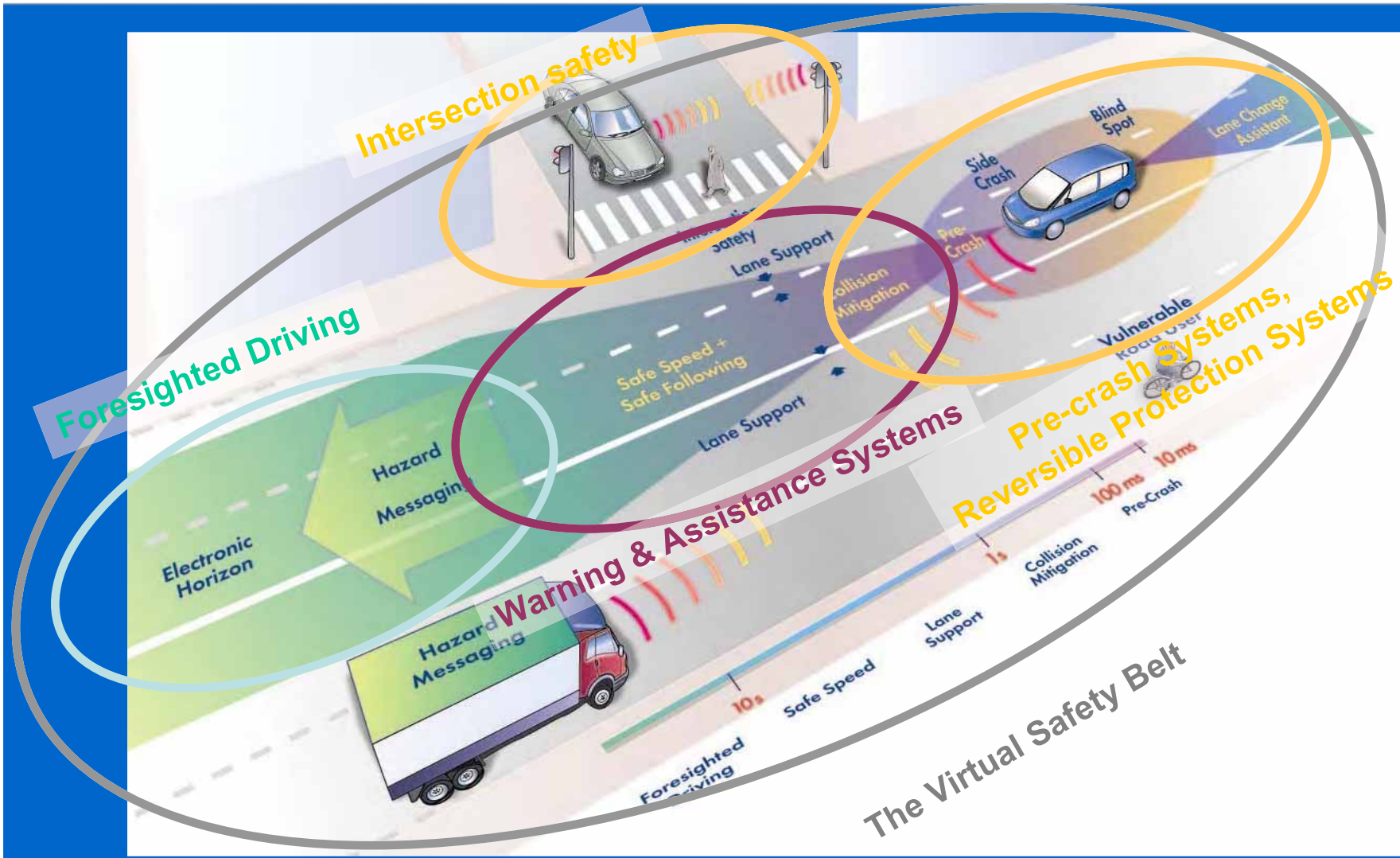


"Dynamic vehicle net" and "vehicle to infrastructure net" extends range of on-board vehicle systems

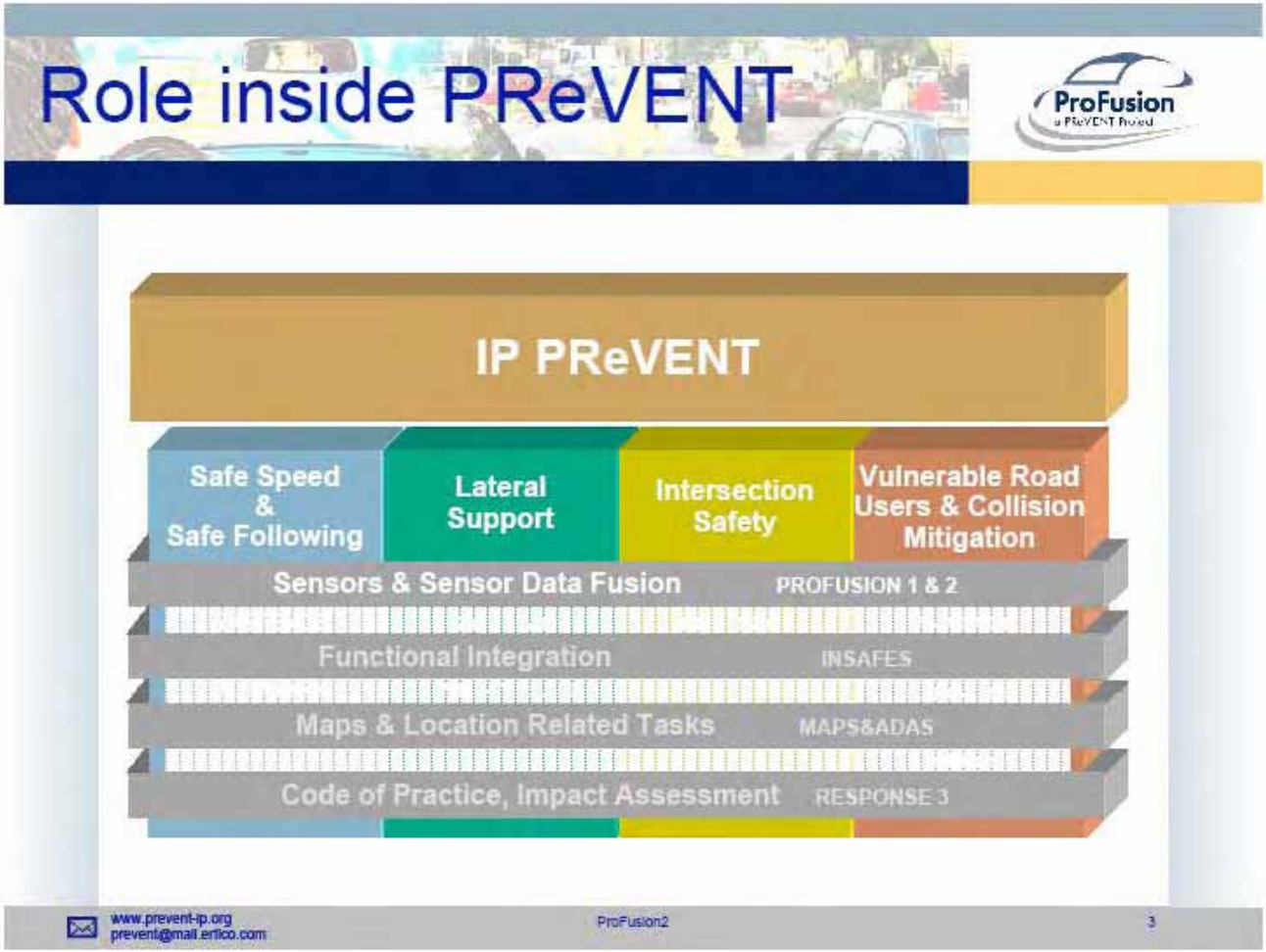
On-going projects: COMeSafety (SSA)



The „virtual safety belt“



Profusion 2 - 1



Profusion 2 - 2

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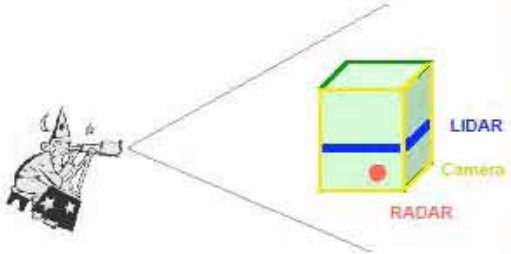
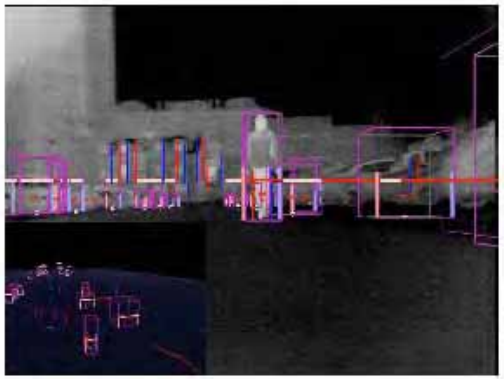
Early Fusion

ProFusion
a PReVENT Project

- Object modeling with sensor specific views
- Object specific prediction of respective sensor data





- Generate object hypotheses on all aggregated sensor measurements
- Rough pre-classification

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ProFusion2
11

Profusion 2 - 3

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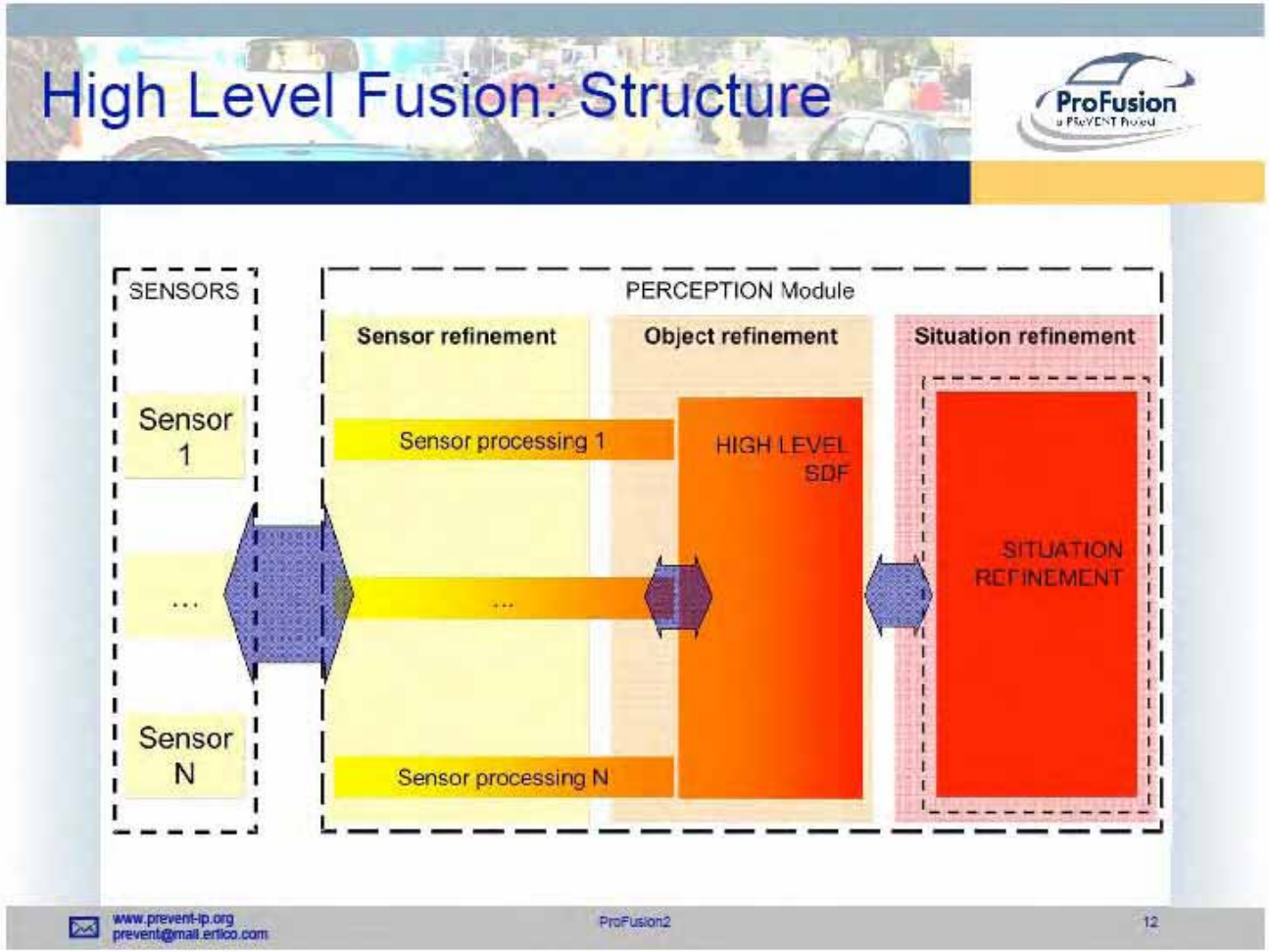

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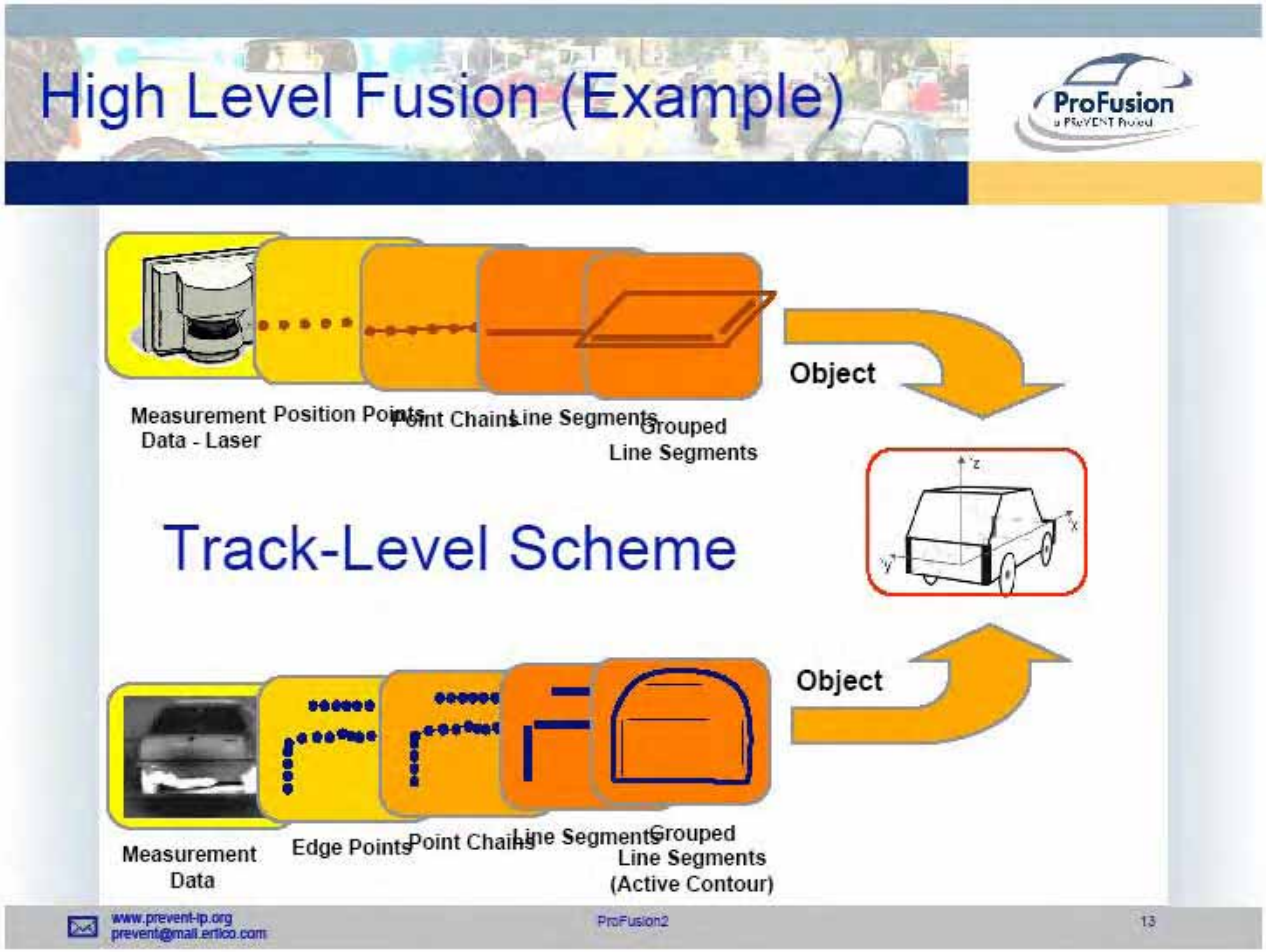
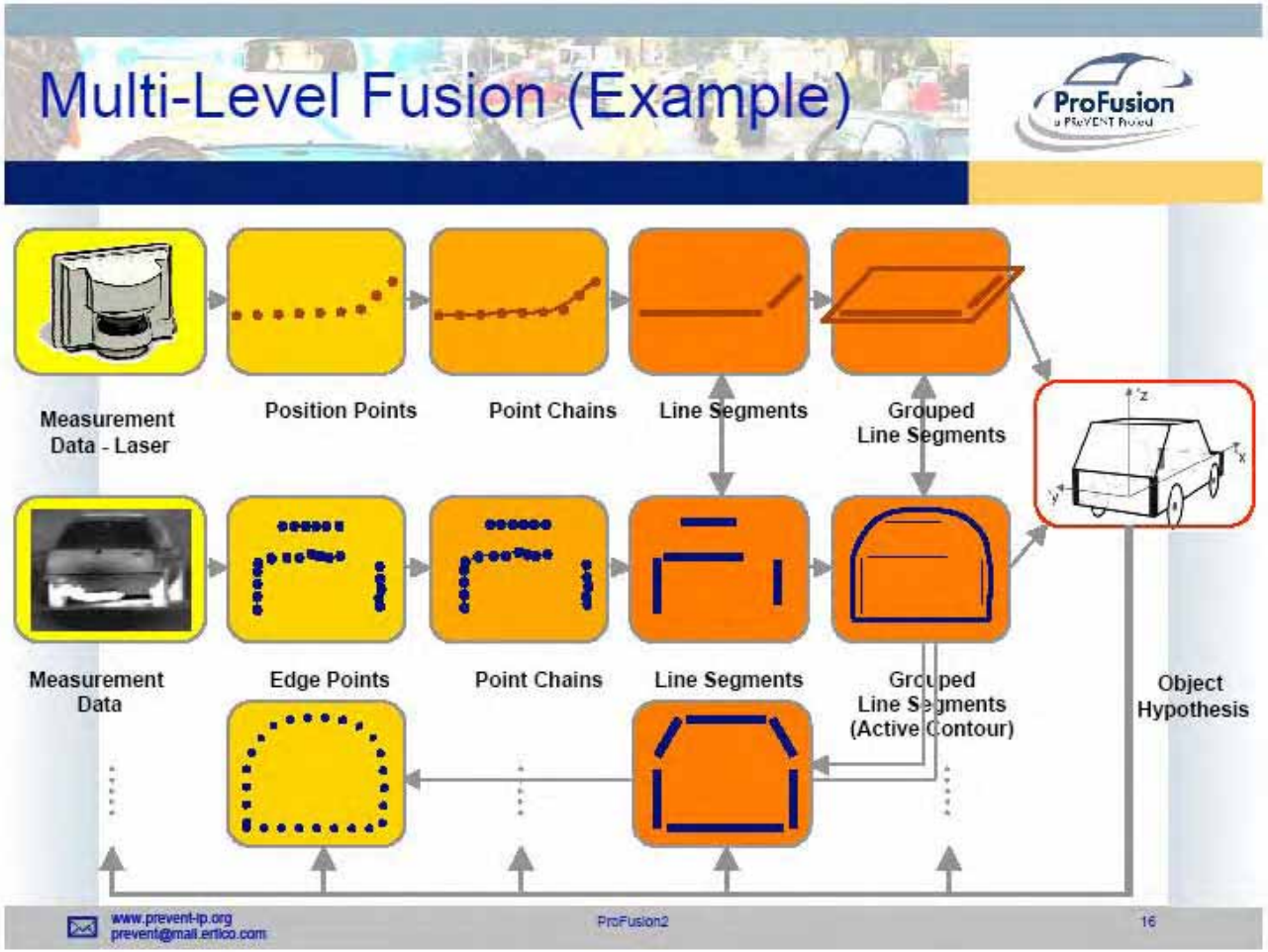

High Level Fusion (Example)
ProFusion
Measurement Data - Laser
Position Points
Point Chains
Line Segments
Grouped Line Segments
Object
Track-Level Scheme
Measurement Data
Edge Points
Point Chains
Line Segments
Grouped Line Segments (Active Contour)
Object
www.prevent-ip.org
prevent@mail.ertico.com
ProFusion2
13

Profusion 2 - 5



Profusion 2 - 6

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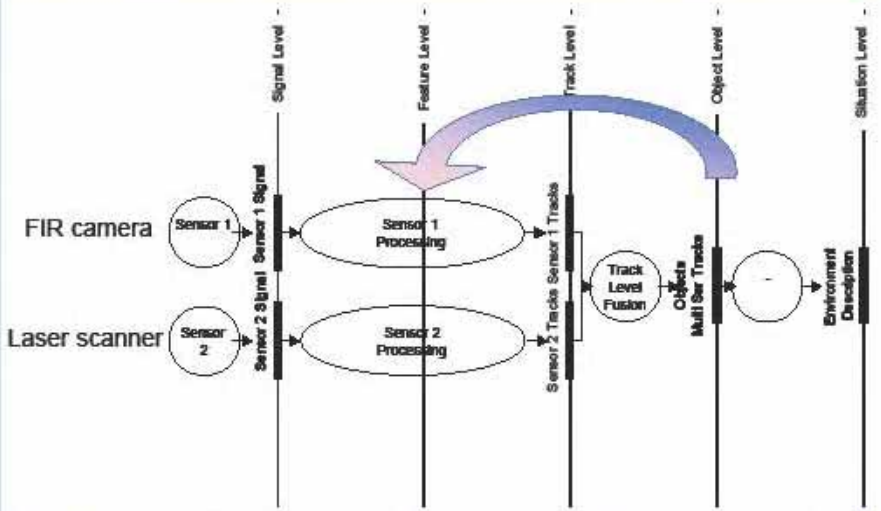
Fusion Feedback

ProFusion
a PReVENT Project



Building upon a classical Track Level Fusion scheme, Fusion Feedback allows a given sensor to focus detection where another sensor suspects an obstacle

Profusion 2 - 7

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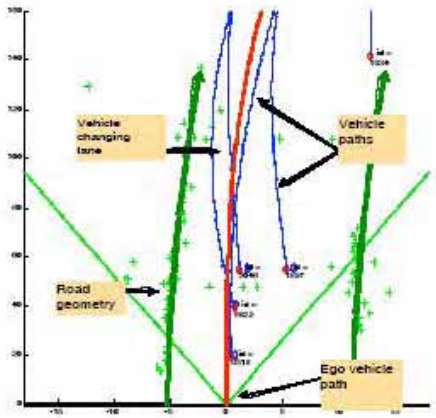
Situation Refinement

ProFusion
a PReVENT Project

- Path prediction support
- Identification of the relationships between the ego vehicle and the environment (situation analysis)
- Classification of vehicle maneuvers



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ProFusion2
20

Urban Challenge

City Driving

- Obey traffic laws
- Safe entry into traffic flow
- Safe passage through busy intersections
- Safe following or passage of moving vehicles
- Safe passage of a stopped vehicle
- Drive an alternate route when the primary route is blocked
- Safe U-turn

Great urban Challenge

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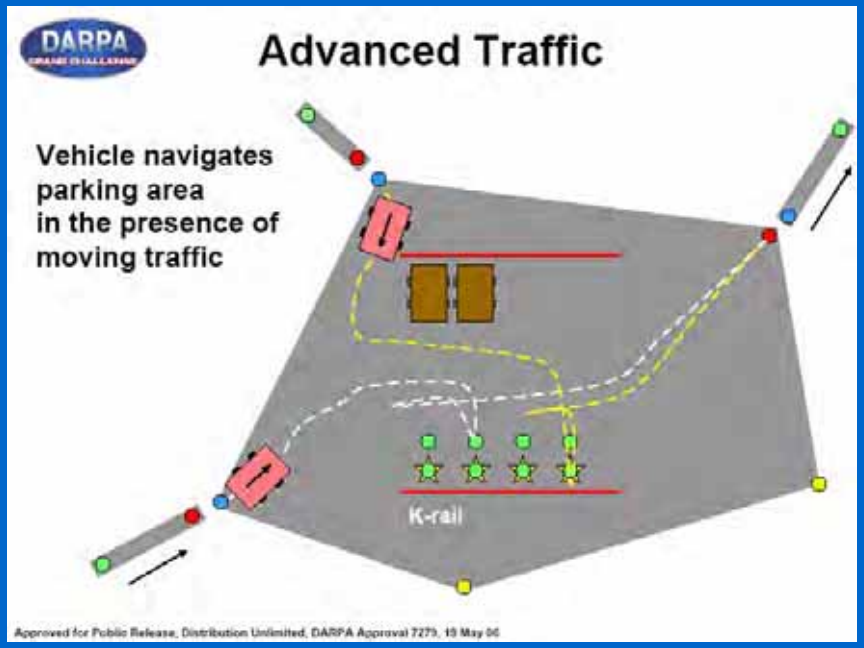
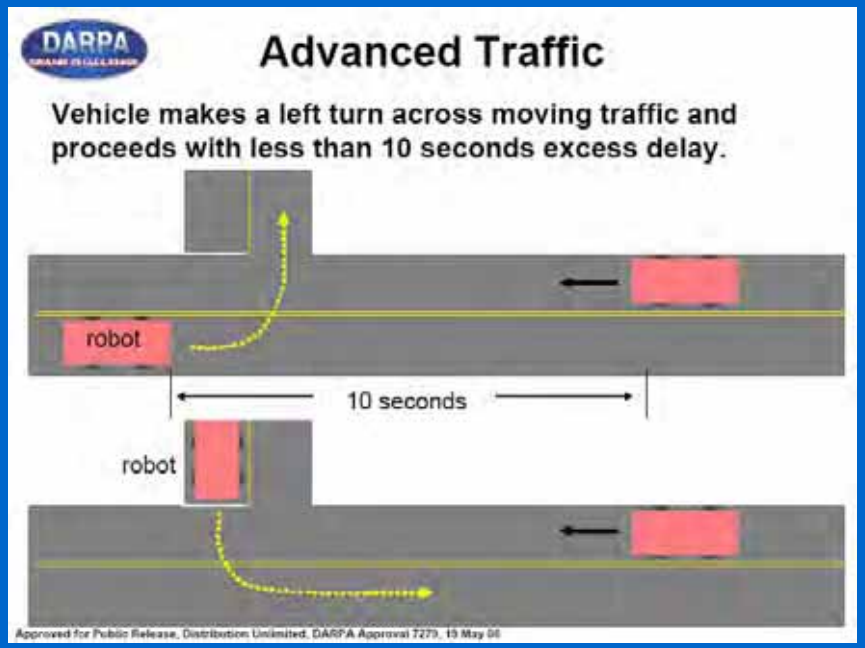
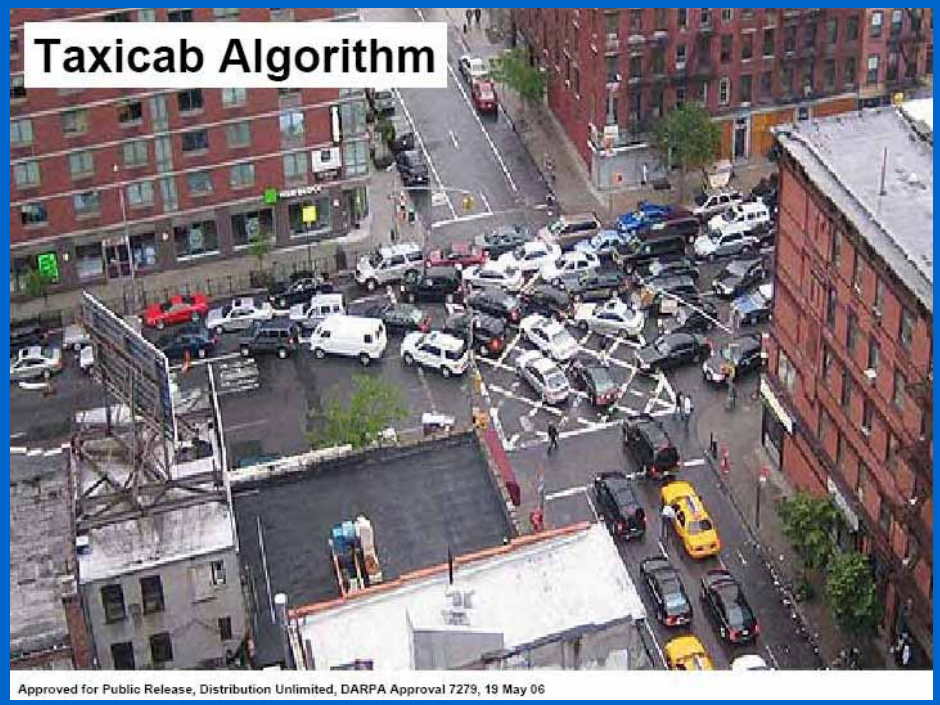
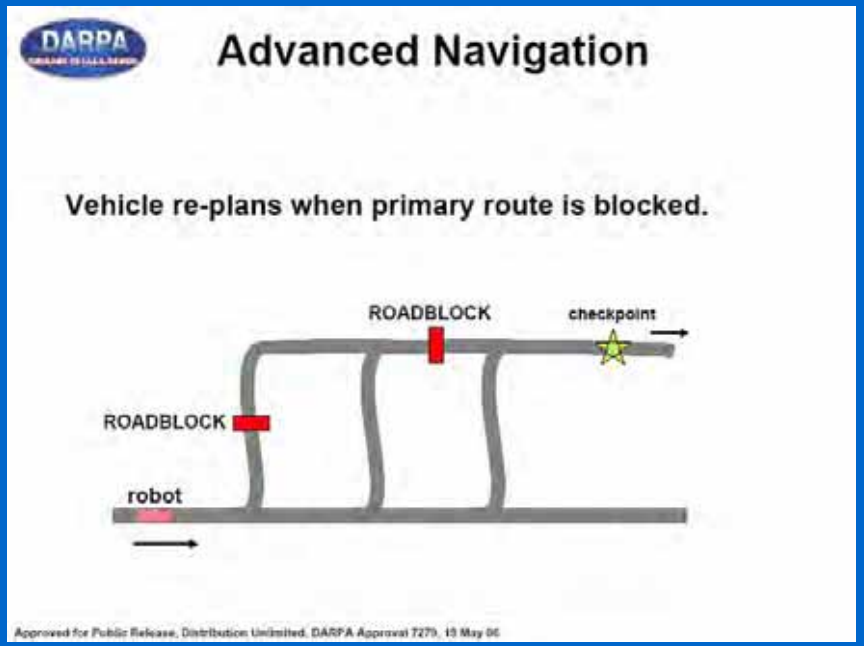




Great urban Challenge

FH JOANNEUM





Stanford Stanley Laser Data

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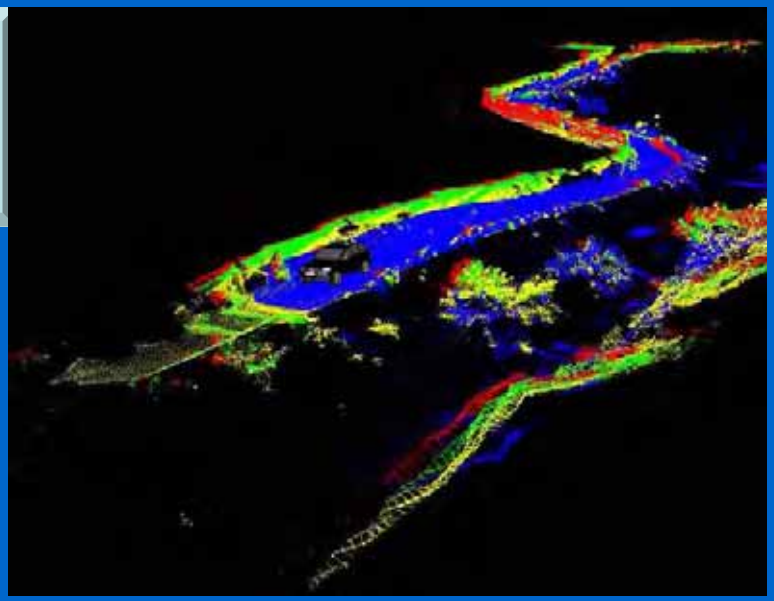

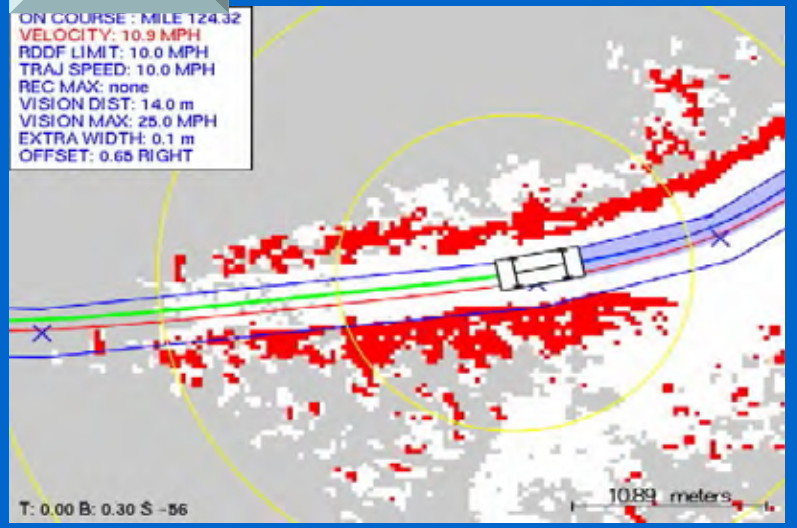

Pointers

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- http://www.austriamicrosystems.com/
- http://www.autosar.org/
- http://www.bmwgroup.com/
- http://researchinfo.bosch.com/
- http://www.flexray.com/
- http://www.darpa.mil/grandchallenge/index.asp
- http://www.ibeo-as.com/english/default.asp
- http://www.mostcooperation.com/
- http://www.prevent-ip.org/
- http://cs.stanford.edu/group/roadrunner//old/index.html