



Technical Convergence at the Urban Intersection

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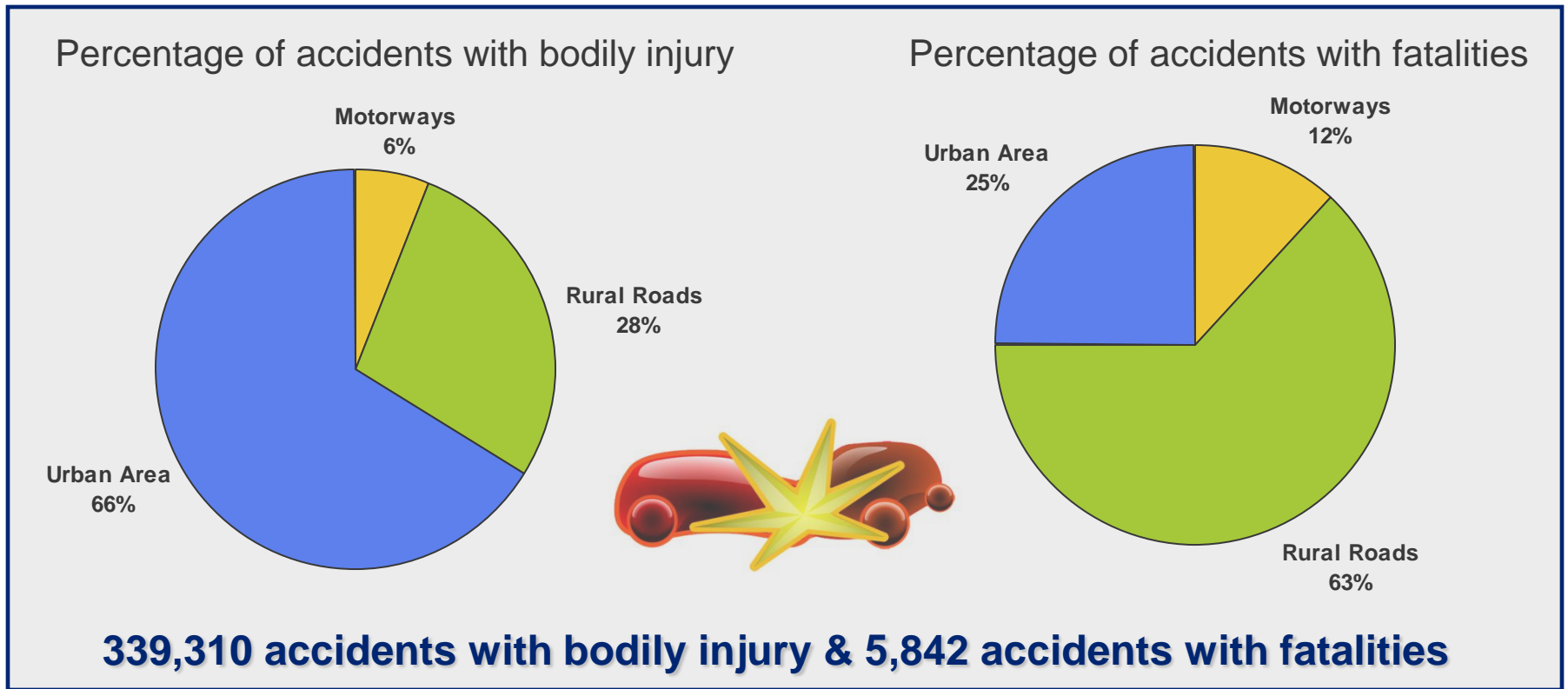
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AGENDA

- Motivation
- Safety Applications at Urban Intersections
- Concept of the SAFESPOT IRIS Application
- Virtual Test Environment
- Real Test Environment
- Main Results

MOTIVATION TO LOOK AT THE INTERSECTIONS



The urban intersection is an important field of work to save lives and money!

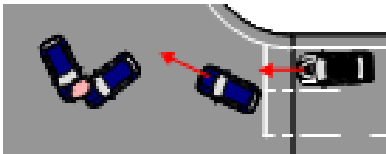
SAFETY APPLICATIONS AT INTERSECTIONS



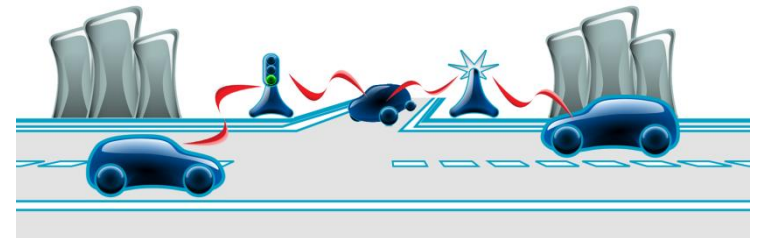
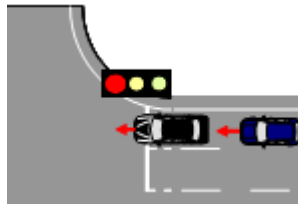
Cooperative Systems For Road Safety

Intelligent Cooperative Intersection Safety

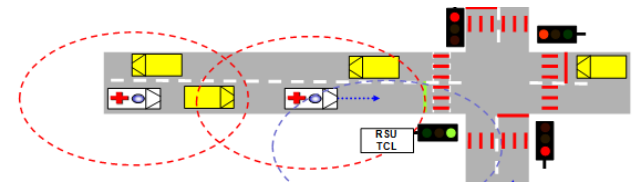
Other vehicle brakes hard due to red light



Accident at intersections

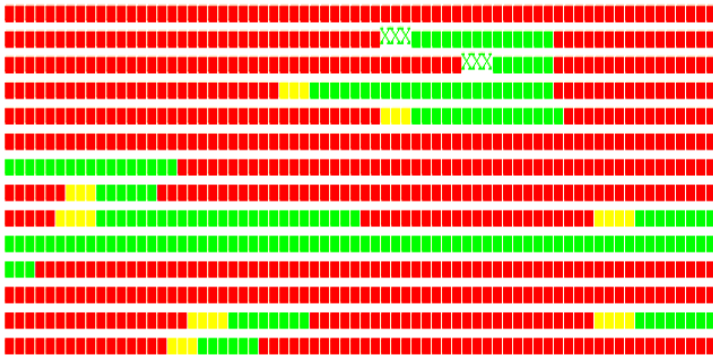


Safety Margin for Assistance and Emergency Vehicles



CONCEPT OF THE SAFESPOT IRIS APPLICATION

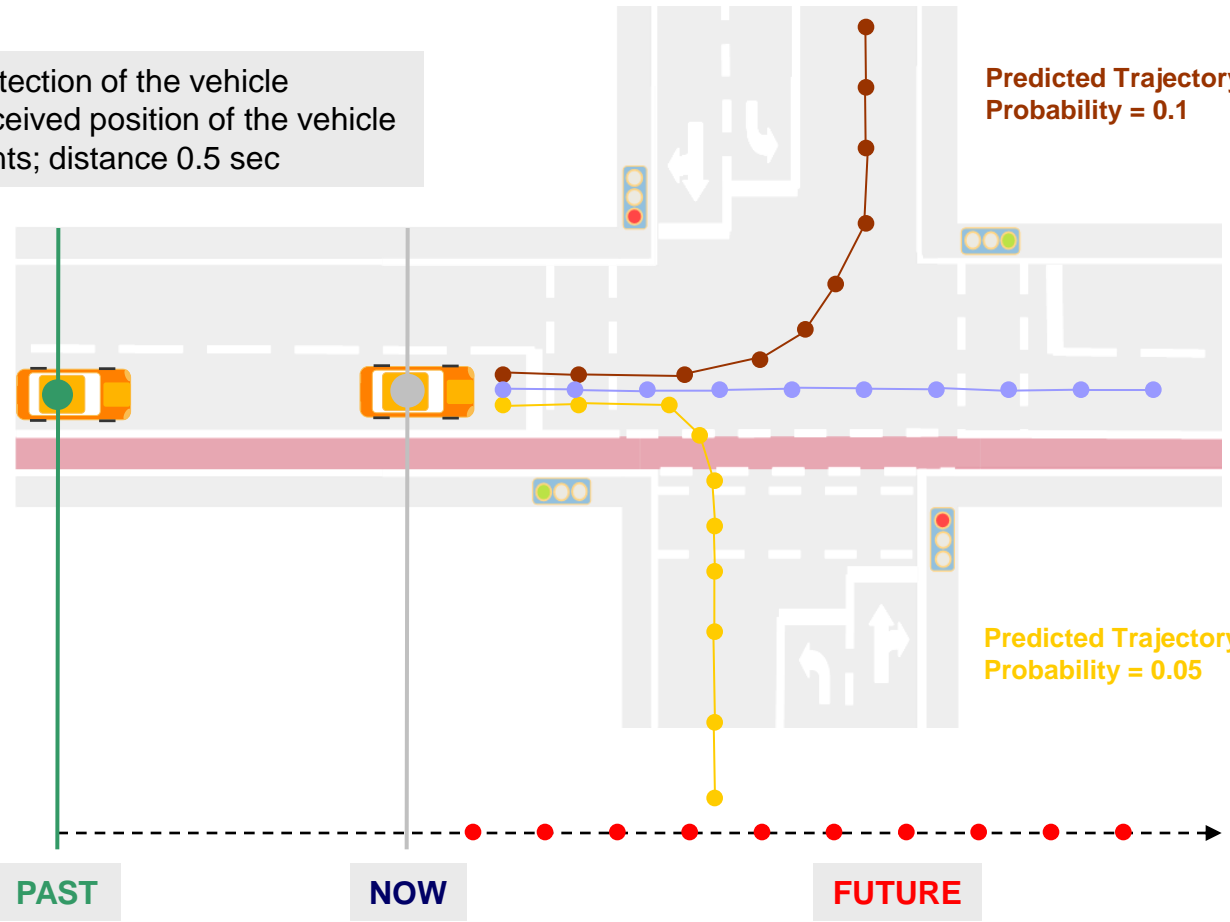
- Data exchange with the existing roadside equipment at the intersection; the **urban traffic lights controller**.
- Agreed interface to the traffic light controller among different suppliers of infrastructure equipment and projects such as CVIS serves as a valuable input for future standardization activities.



- Urban applications require **very fast co-operation** of the SAFESPOT sub-systems and components of both **vehicle and infrastructure side**.
- **Accurate Positioning** of the vehicles.
- **Additional information** on the vehicles such as speed, heading, usage of the indicator.
- **Data fusion** and **map matching** up to lane level detail.
- Detection of **vulnerable road users**.

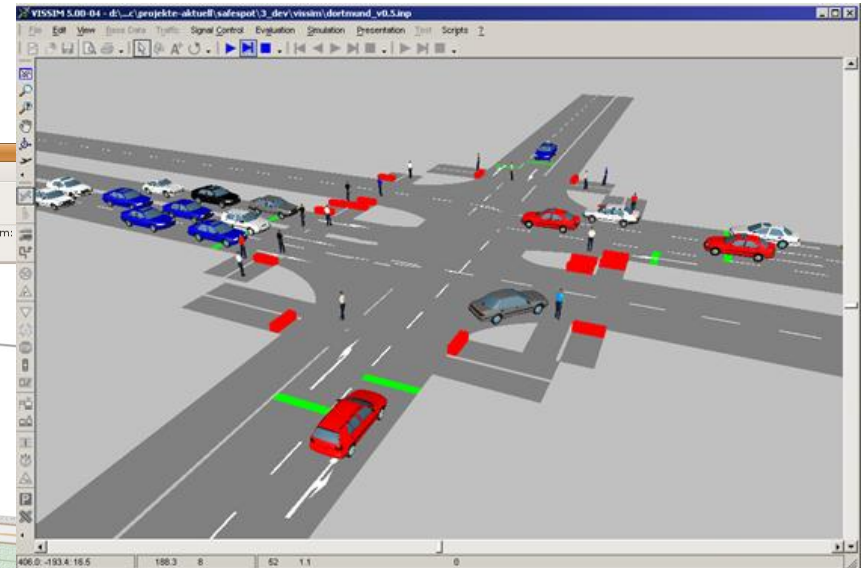
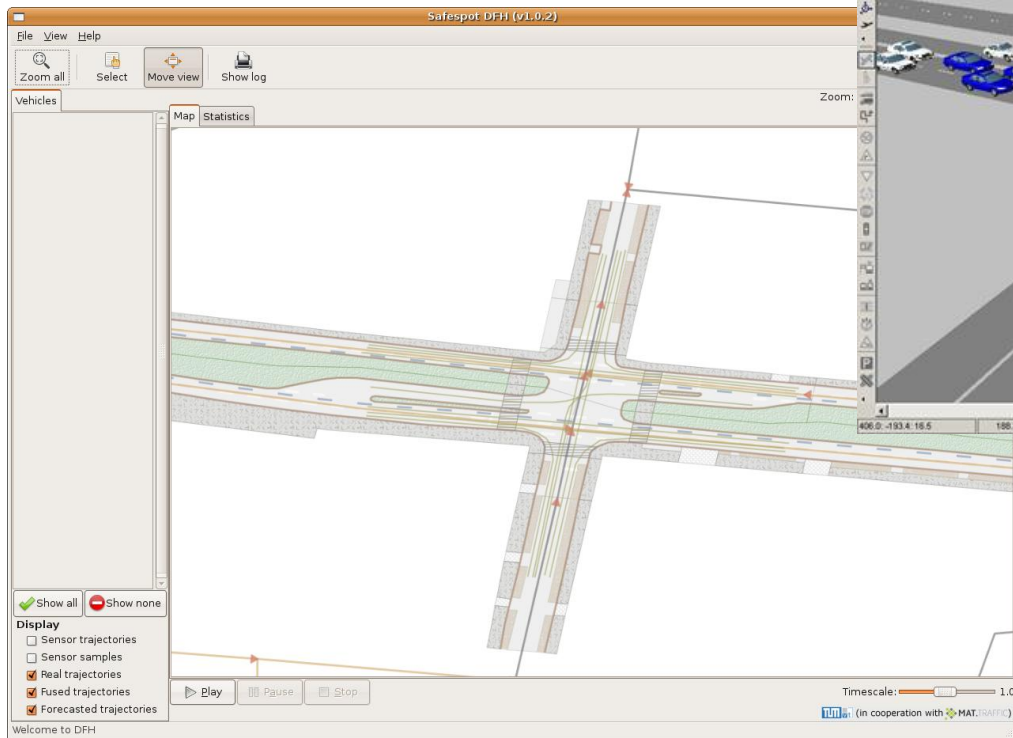
CONCEPT OF THE SAFESPOT IRIS APPLICATION

PAST first detection of the vehicle
NOW last received position of the vehicle
FUTURE 10 points; distance 0.5 sec



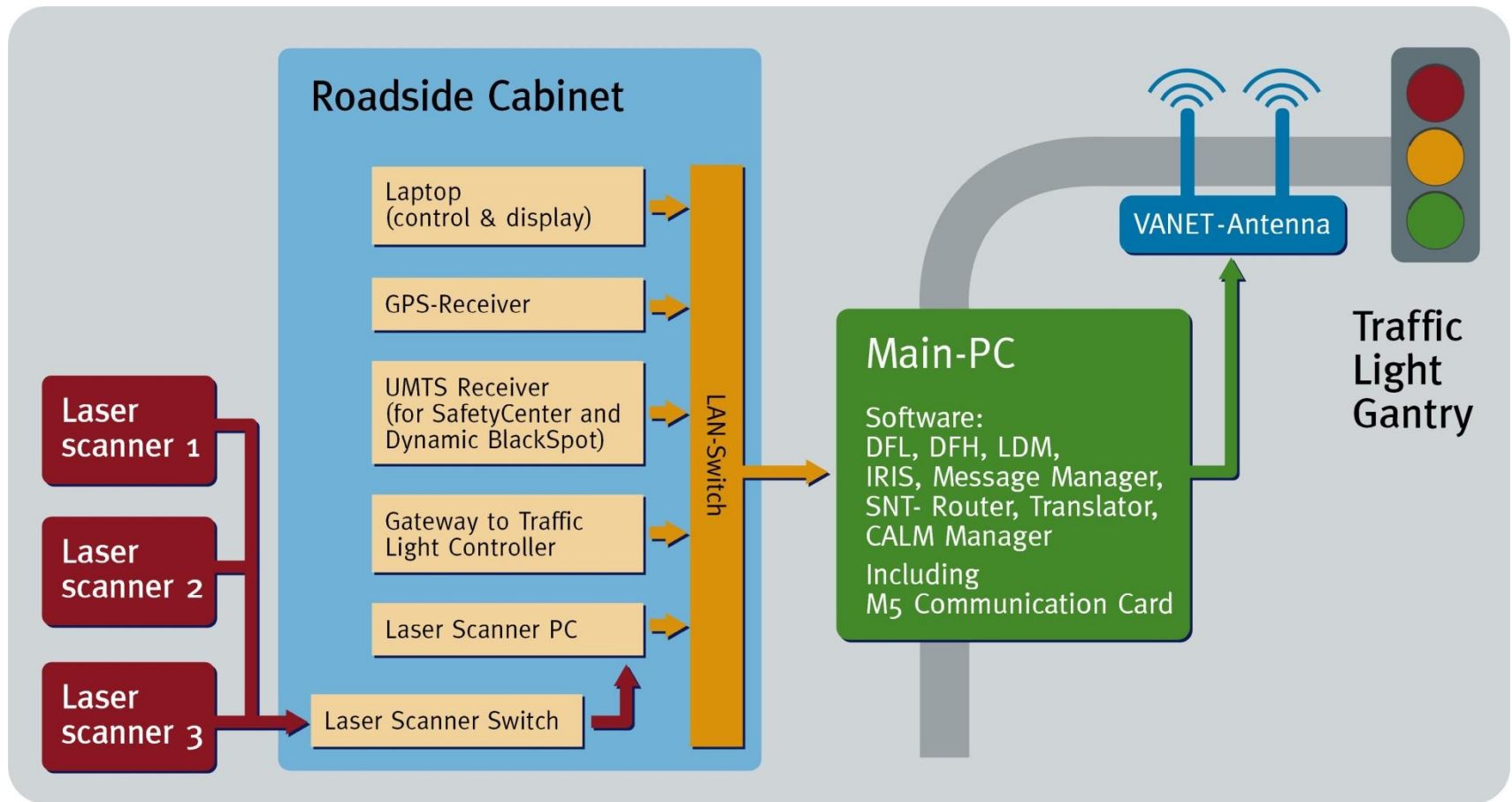
VIRTUAL TEST ENVIRONMENT

DFH – Data Fusion HMI

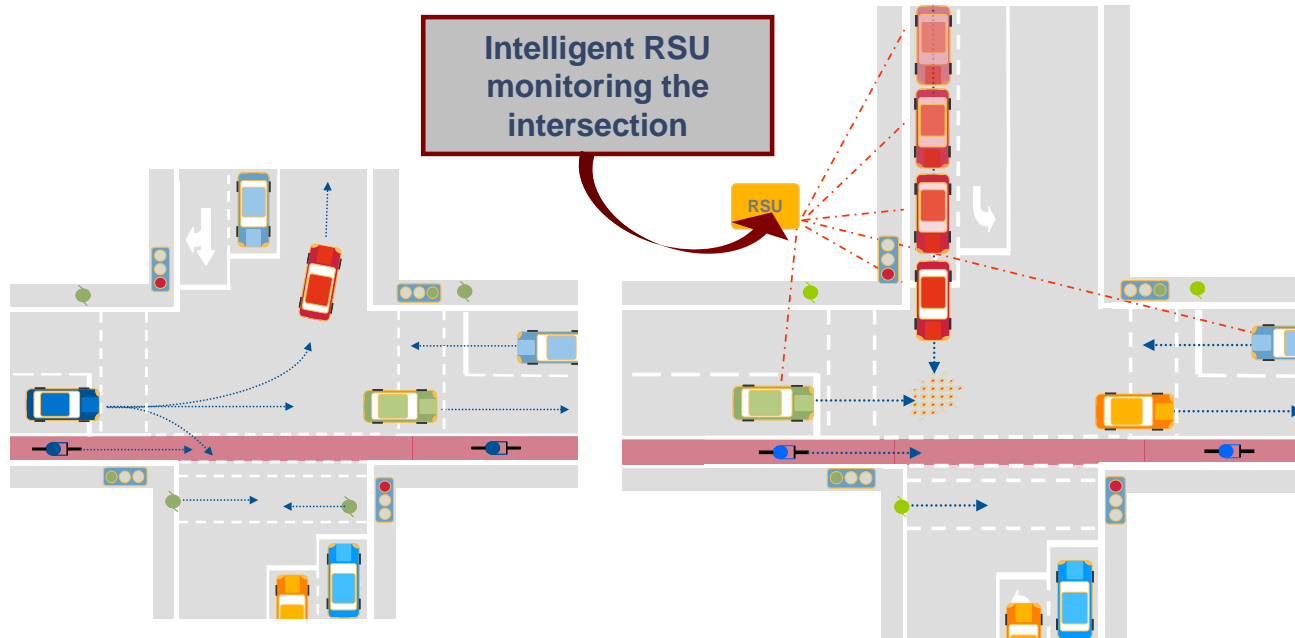


VISSIM

REAL TEST ENVIRONMENT



REAL TEST ENVIRONMENT

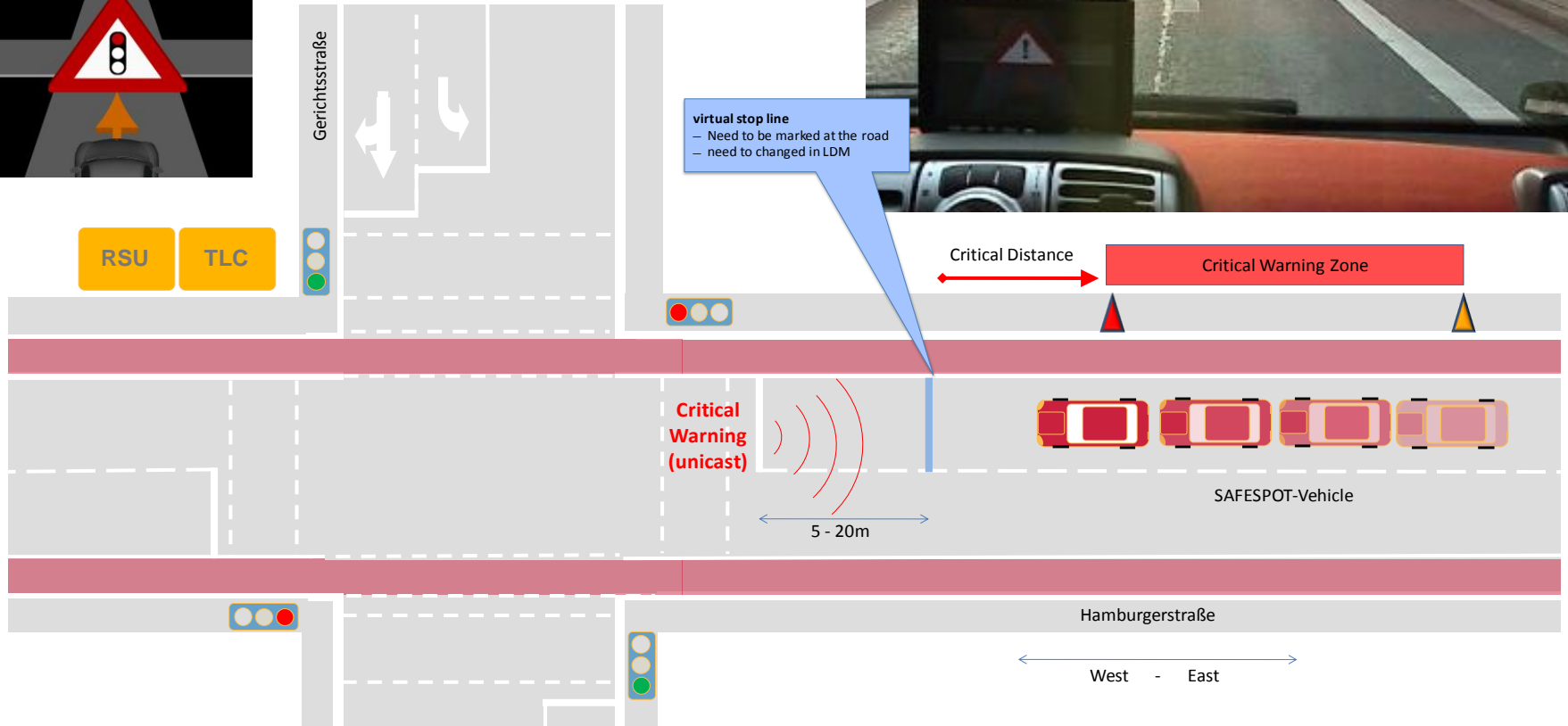


- Safe signalized intersection (red light violation) – two phases
- Safe signalized intersection (right turning)
- Safe signalized intersection (left turning)

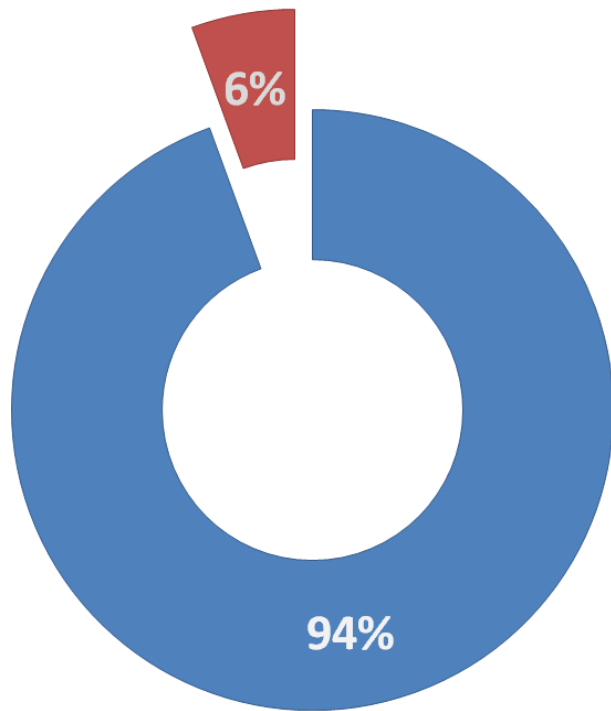
REAL TEST ENVIRONMENT



Use Case: Red Light Violation



RESULTS (I)



- Test runs carried out in August 2009 and February 2010 at the test site Dortmund, Germany
- 72 test runs altogether were realized
- In 94 % of all cases IRIS interpreted correctly the situation and generated the appropriate message.
- In 6 % IRIS failed because some shortcomings such as e.g. suddenly lost connection to the traffic light controller.

IRIS proved to be a technical suitable solution for making urban intersections a safer place.

RESULTS (II)

- Shared Test Sites with the CVIS project → interoperability could be proven
- Proof of the integration of different modules provided by different partners was a great profit



cooperative

Conference 2010

mobility