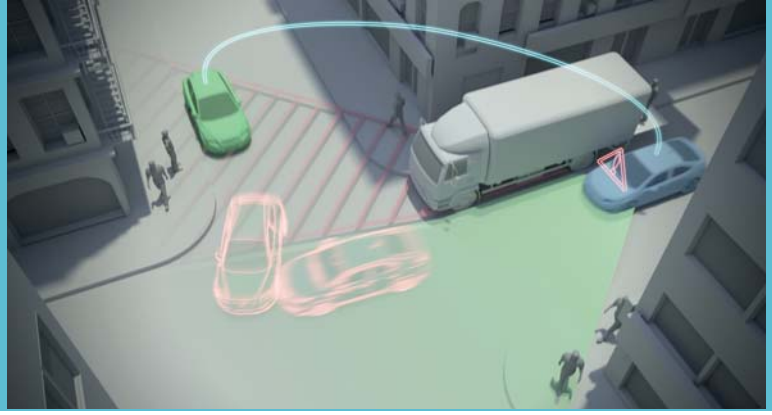

SAFER SUCCESS STORY: Vehicular communication research

"Chalmers, with their deep knowledge of communication technologies and worldwide research network, contributes with excellence towards Volvo Cars' research and development of connected safety systems."

Mikael Nilsson, Technical Expert
Volvo Car Corporation

- **Visibility and impact on the international academic community**
- **Academic excellence through publications and invited talks**
- **Establishing critical mass of researchers in vehicular communication**

The aim is to build world-class academic competence in key areas of vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communications. The SAFER project Physical Layer Techniques for Vehicle-to-Vehicle Communications served as a critical springboard in this, and has allowed prof. Erik Ström and his co-workers to establish Chalmers as a leader in vehicular communication research. The purpose is to gain fundamental knowledge of vehicular radio channels and to devise novel design and analysis methods for the physical layer of a V2V communication system. This knowledge is vital for enabling real-time, reliable, scalable, low-delay V2V communications, which needed for challenging traffic safety applications. The knowledge is used to increase the competitiveness of the SAFER partners and the academic status of Chalmers.

Benefit to the project partners and impact on society:

- Established Chalmers as an internationally attractive partner for research on vehicular communications as evidenced by, e.g., invitations to join EU projects such as METIS (FP7) and HIGHTS (H2020) and prof. Erik Ström's appointment as Co-Chair of the Topical Working Group on Vehicular Environment in the EU COST action IC1004 Cooperative Radio Communications for Green Smart Environments.
- Established Chalmers as an academic leader in the field of vehicular communications, indicated by, e.g., prof. Erik Ström's appointment as guest editor for the prestigious journal Proceedings of the IEEE special issue on Vehicular Communication, external examiner of Ph.D. theses in Germany, Austria, France, and South Africa, and invited speaker at national and international scientific conferences

The approach:

Generic research problems were identified through interaction with the SAFER partners and the international academic community. Problems suitable for a PhD student were defined and Wanlu Sun was recruited after a very competitive selection process. Her work has proven to be of excellent quality and has led to many highly regarded publications. International recognition of Chalmers as a leader in vehicular communication was established by engaging in the academic community by, e.g., co-chairing a COST Action (European Cooperation in Science and Technology) working group and taking initiatives for special sessions at conferences and special journal issues. Industrial relevance was ensured by interaction with SAFER partners. More funding was acquired and the number of Ph.D. students and senior researchers engaged in vehicular communications has increased. This positive spiral was kick-started by the SAFER project Physical Layer Techniques for Vehicle-to-Vehicle Communications.

Results as a direct consequence of the SAFER project:

- 1 Lic. Eng.
- 5 conference and 1 journal papers in prestigious journals
- Service to academic community
- Numerous invited talks at national and international events

SAFER
VEHICLE AND TRAFFIC SAFETY CENTRE AT CHALMERS

Funding: 1,9 MSEK SAFER internal (cash and inkind)
Partners: AB Volvo, Chalmers, SP
Funder: SAFER
Period: 2007-2013

Oct 2015