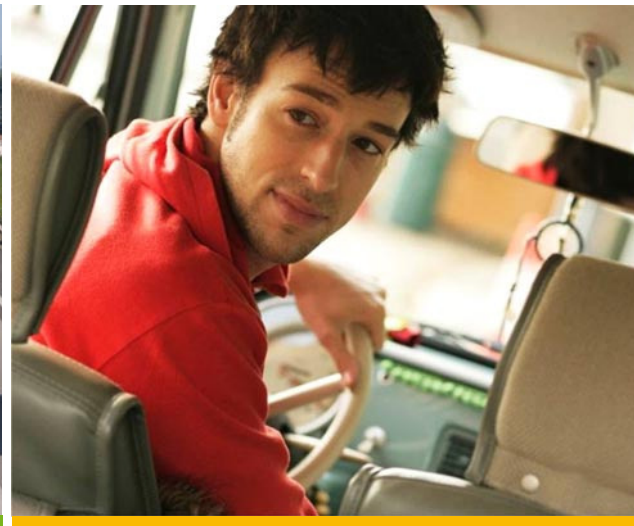


Traffic Management



Active Safety



Cooperative Cars



Sabine Sories
Ericsson GmbH

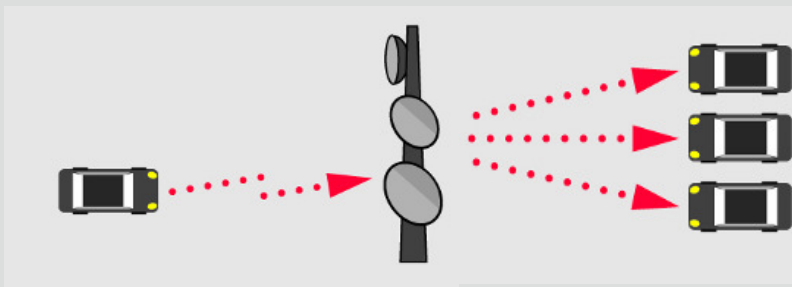
Simulation and Performance



Research Questions



- Can application performance requirements be met with UMTS?
 - How do CoCar protocols perform with different UMTS configurations?
 - What Vehicle-to-Vehicle delays are possible?
 - Is the network capacity sufficient to support thousands of cars?
- Example: Cellular Hazard Warning (CHW)
 - Demanding application, in focus of the performance study
 - Low transmission delay required
 - High system capacity necessary for message distribution

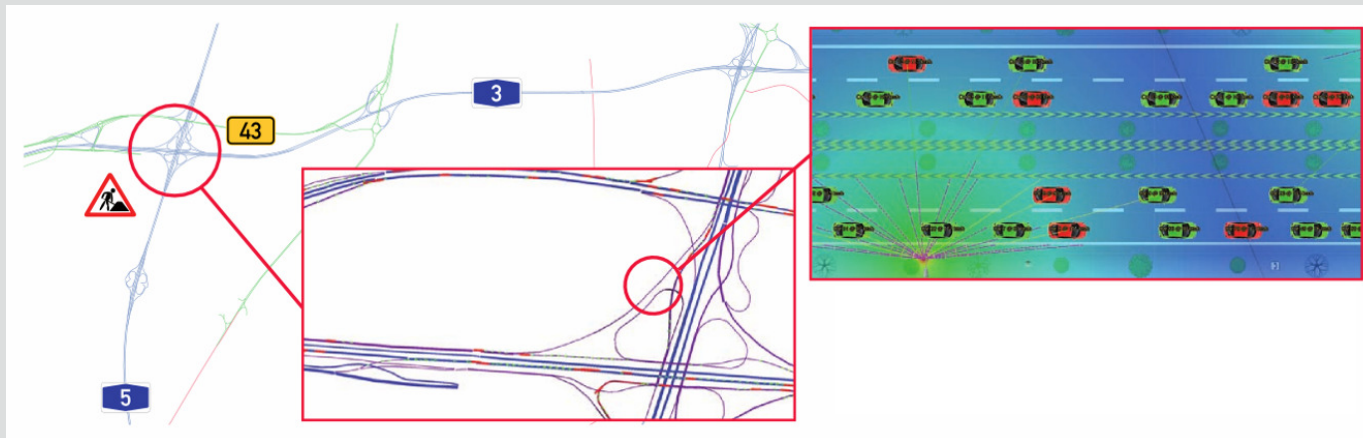




CoCar Performance Study Overview



- Simulation study with joint UMTS network and road traffic simulator
 - UMTS Vehicle-to-Vehicle communication performance
 - Interrelation between road traffic and communication
- Cellular broadcast concept proposal and performance analysis for UMTS
- Server performance evaluation
 - Information fusion
 - Message processing performance

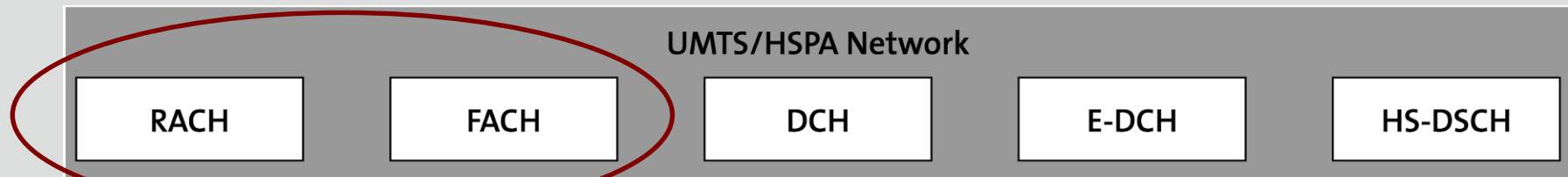
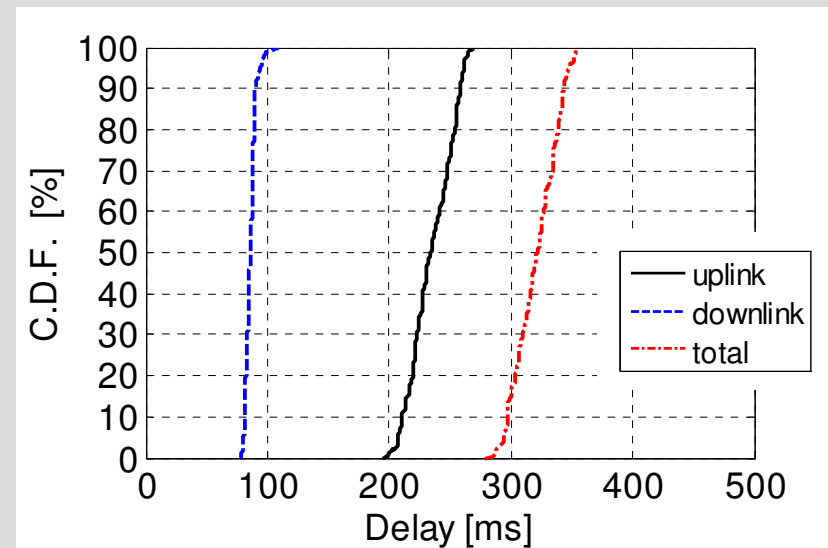




CHW Performance in UMTS



- Optimized FTAP protocol allows fast data transmission using common channels
- Transmission delay under 500 ms
- Resource-efficient transmission
- High system capacity

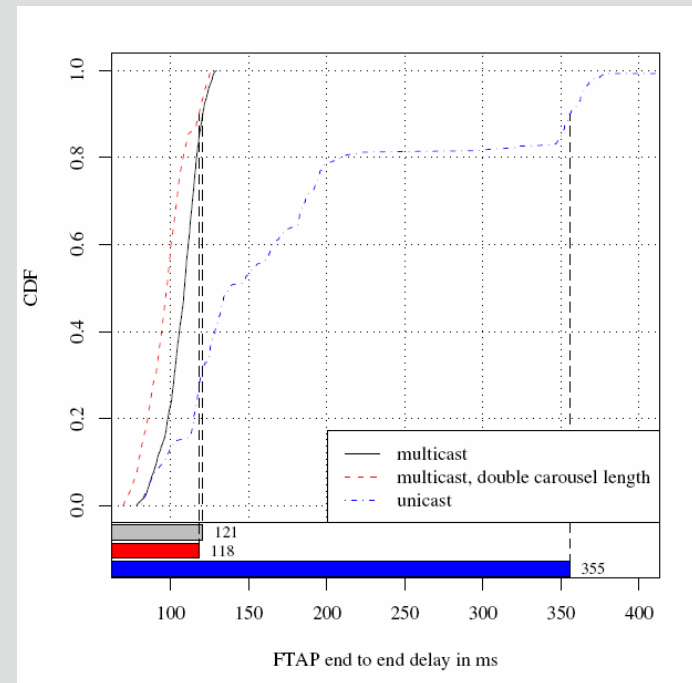
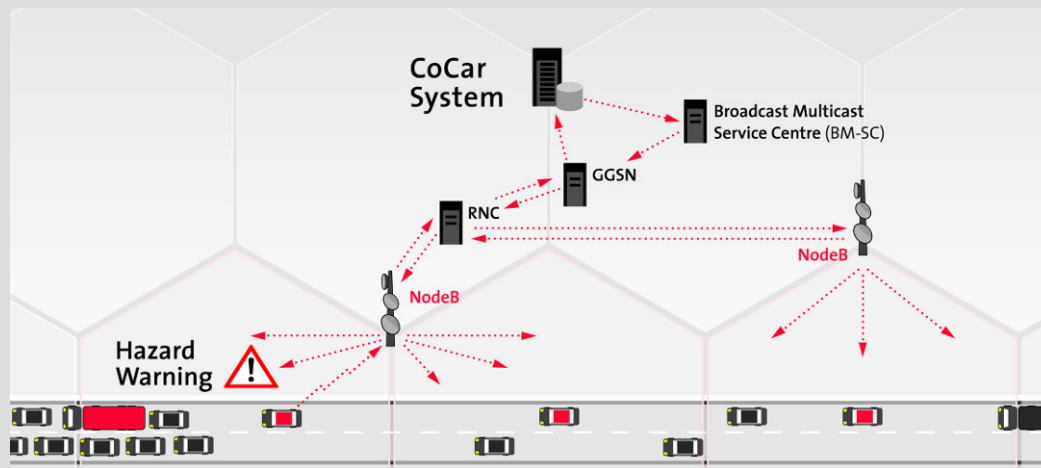




Cellular Broadcast Performance



- Use of cellular broadcast for CoCar applications
 - Multimedia Broadcast Multicast Service (MBMS)
 - Network parameters for different scenarios evaluated
- Reduces network load for high user densities
- End-user experience unchanged





Conclusion and Outlook



- Technical feasibility has been proven
 - Safety-relevant applications like CHW can be realized using today's UMTS networks
 - Vehicle-to-vehicle delay under 500 ms
 - Capacity sufficient for service introduction
 - Cellular broadcast efficient for full deployment scenario
- Cellular network evolution continues
 - First LTE launches in 2010
 - Terminals remain backwards compatible