ICT for Transport Workshop Group Discussions

**Group 1: Autonomous driving demonstration at KTH**

*Group discussion leaders: Jonas Mårtensson (Automatic control, KTH) and Petter Ögren (CVAP - Computer Vision and Active Perception Lab, KTH)*

There are many research groups at KTH, which study different aspects of autonomous driving. The Integrated Transport Research Lab (ITRL) has initiated a series of meetings in order to develop a joint strategy for research within autonomous and connected vehicles at KTH. KTH is also one of the partners in a planned application to Vinnova for a Strategic Innovation Program within automated transport systems.

ITRL is hosting the KTH Research Concept Vehicle (RCV), which is a rolling research and demonstration laboratory for vehicle research. Some initial steps towards autonomous driving of the RCV were taken last summer with student internships and during the fall within the project courses in vehicle dynamics and automatic control. In January 2015 we will start up four to five master thesis projects all aiming towards a demonstration of autonomous driving in the summer.

The discussion at the workshop will focus on the possibility to develop a more advanced demonstration of autonomous driving with the RCV. We would like to know the interest from different research groups at KTH and of the other invited partners to participate in such a project.

Reasonable outcomes of the discussions are:
1. Possible demonstration scenarios
2. List of potential contributors/contributions to the demonstrator
3. Ideas for funding of such a demonstrator

**Group 2: ICT for traffic control and planning**

*Group discussion leaders: Erik Jenelius (Traffic and logistics, KTH), James Gross (Communication Theory, KTH) and Mario Romero (HPCViz - High Performance Computing and Visualization, KTH)*

The groundbreaking evolution of Information and Communication Technologies (ICT) and related fields has come to a point that will soon allow the sensing, storage, transmission, and processing of large amounts of information to monitor, predict, and subsequently control the state of transportation systems potentially in autonomous or semiautonomous manner. For example, real-time sensing and information transmission of the traffic conditions enables novel ways of identifying and resolving traffic congestions on roads or identifying and resolving shortages in the public transportation systems at real-time. Signal Processing, Data Analysis, Wireless Communication and Control techniques promise in general significant savings due to demand-optimized transport capacity provisioning, minimization of congestion and more efficient and sustainable resource usage. However, these techniques also come with significant challenges that need to be resolved jointly by researchers from the ICT domain as well as researchers from the transport domain. These challenges relate to sensing, transmission, and processing/prediction techniques, control and management strategies, modeling of traffic and its behavior, modeling of human interaction in traffic systems, modeling of transport facilities as well as novel application domains. The goal of this working group is to discuss these issues and identify potential cooperation areas on these topics, both within KTH as well as with external partners (such as companies, and authorities). It is crucial to recognize that the full potential of these approaches will only be reached if different areas and identities work together.