

This position paper aims at defining the applicability of the Future Internet technologies to the transport and mobility sector. On the one hand, the range of possible applications from the Future Internet should improve the information available to transport users and operators, to make them more aware of the implications of their use and operation of the transport system, and thus to support transport policy objectives. On the other hand, road traffic congestion and road fatalities have been identified as major challenges that Europe's transport system needs to overcome. As conventional approaches such as the development of new infrastructure have not provided the necessary results, innovative solutions based on the Future Internet are therefore clearly needed.

## Infomobility

The major focus of this topic will be based on innovative services and applications that constitute different media forms delivered over a wide variety of complementary access networks in a seamless and interactive way to a variety of end-user terminals and devices.

- Semantic content annotation. Integrated door-to-door real time information systems are a key tool in the development of long distance passenger intermodality. Such information well organised is needed to plan mode exchange. Therefore, metadata standards are required in order to access distributed databases in a simple way.
- Integrated door-to-door real time recommender systems in the development of short, medium and long distance passenger intermodality to plan mode exchange. Such parameters should take into account user preferences (cost restrictions, preferences, dates, CO2 emissions), ownerships (public, private) and information about transport carriers (means of transport, available routes)
- Tools for content creation and manipulation. Traffic information has deeply changed due to several factors such as the implementation of new sensors which provide precise information or the real time control and management centres. The boom of onboard and mobile systems on the vehicles, and mobile devices of the passengers provide lots of opportunities to create new services.

## Secure mobility

The major focus of this topic will be based on innovative technologies that constitute a new secure network to ensure the security and safety in transport environments

- Traffic Flow Management: The goal of the traffic flow management is to maintain efficient flow of road traffic avoiding traffic congestion or accident. The traffic flow management should be done in real time and acting on variable traffic signals.
- Automatic detection in real time of vehicles behaviour based on computer vision. Based on computer vision automatic detection and tracking of the vehicles to analyze the behaviour of these vehicles while on road. In case of detecting an anomaly automatic activation of alarms for human decisions
- Forecasting risk. Detection and analysis of the road to prevent and alert the drivers based on diverse technologies such as computer vision, artificial intelligence etc.

Vicomtech proposes the concept of a crossborder smart region as an interesting scenario for the assessment of the transport, mobility and logistics scenario. The scenario should include several means of transport (road, railway, ports, and bicycles) in order to analyse and benchmark current limitations of each of the individual modes as well as to build an integrated approach. Moreover, the crossborder location should provide an added value to test interoperability issues and analyse commuters' fluxes.

Vicomtech has already expertise in some of the proposed technologies that have been applied to real scenarios. This Position Paper briefly describes several examples that have been developed by Vicomtech and have already been evaluated in real scenarios.

- A new platform for the provision of information and multimedia contents in real time in multimodal integrated transport systems, in several platforms, and during the whole trip while changing transport modes.
- Algorithms to find the best itinerary to move from one place to another according to different criteria (time, money, transportation means ...) especially devoted to multimodal public transport systems.
- Image-based travel recommender system that allows the generation of personalized mobility tours during the planning stage.
- Intelligent, multi-lane, Free Flow electronic tolling system based on computer vision technologies, capable of integration with future satellite positioning systems to improve existing tolling systems.
- Technology platform to be used for a wide variety of 'Pay Per Use' applications based on GPS/Galileo and EGNOS positioning, emergent telecommunications technologies and information management.
- Electronic system that counts people based on optical image analysis allowing to detect an overcrowding in real time and to define action plans.
- Multimodal platform for issuing and controlling tickets on mobile phones, accessible by any user who has a mobile electronic device, facilitating the development of sustainable mobility that is more ecological and resistant to fraud.