

# **SINTEF ICT Position Paper**

## **Transport usage area in the FI-PPP initiative**

SINTEF has been responsible for the development of the ARKTRANS, the multimodal (common specifications for all transport modes) framework for the transport sector. ARKTRANS has been used in and refined by many European projects (e.g. D2D, Freightwise, MarNIS, EFFORTS, e-Freight, SMARTFREIGHT, L4Life). ARKTRANS specifies the generic roles of the stakeholders, functions, processes and information exchange via service interfaces.

SINTEF has access to the Test Site Norway infrastructure with instrumented roads and vehicles in Trondheim. This is the largest deployment of CALM and CVIS technology, and the Test Site is already used by the CVIS and SMARTFREIGHT projects, and is also suggested used in the MOOVE proposal.

SINTEF also has a broad network of contacts that may be relevant for proposals, including researchers, transport sector authorities, stakeholders and ITS industry.

Related to the FI-PPP initiative SINTEF has input on:

### **1. Use cases and scenarios for large-scale experimentation with the Future Internet platform**

Based on experience from the D2D, Freightwise, e-Freight, EURIDICE and L4Life projects, which address intermodal transport chains for freight transport, we see the need for use cases/scenarios related to

- Better utilisation of real-time information, e.g. track and trace of dangerous goods and for transport monitoring, better transport planning and transparency for goods owners and others
- Intelligent cargo, e.g. how the cargo can be included into the information flow to improve efficiency and decision support depending on the context
- Better integration with traffic management so that commercial vehicles can be prioritized

The CVIS and SMARTFREIGHT projects address cooperative systems, i.e. V2V and V2I communication. Relevant use cases/scenarios are:

- Urban traffic management with measures towards individual vehicles dependent of the profile of the vehicle (e.g. environmental profile, size, type of goods onboard, etc.)
- How to utilize the transportation infrastructure by means of V2X communication
- How to make transport more safe e.g. dangerous goods in tunnels and city centres by means of monitoring and measures towards the vehicles

The national MultiRIT projects, which established service interfaces based upon the ARKTRANS framework, addressed travel information services and use cases/scenarios.

Relevant use cases/scenarios are:

- Support the establishment of new and improved travel information services through services for acquisition of traffic and travel information, real time information included

- Pre-tip and on-trip support to travellers by means of new and improved travel information services and access to real-time information

## **2. Innovative Internet functionality and technologies important for the use cases and scenarios**

Based on experiences from projects like D2D, Freightwise, e-Freight, EURIDICE and L4Life there is a need for technology that enables more efficient freight transport such as

- RFID tags combined with sensors
- Sensor networks enabling better monitoring of goods units
- Intelligent agents on the cargo with functionality like context awareness, decision support, etc.
- Services that support better information exchange and transparency in the transport chains

Based on experiences from projects like CVIS and SMARTFREIGHT, which addresses V2X communication, there is a need for improved communication technology

- IPv6 deployment for addressable objects and devices (including freight)
- End-to-end QoS support
- Mobility (including network mobility)
- Seamless handover across technologies, domains and organizations according to the client preferences
- Power efficient transmission for small devices

Based on experiences from projects like CVIS and SMARTFREIGHT, which addresses V2X communication, there is a need for software platforms for transport application

- Distributed service management - deployment and provisioning of software and remote service operations
- Facilities for an efficient application run-time environment
- Facilities for reliable positioning through cooperative systems

## **3. Functionalities expected from the Future Internet core technology platform**

Here there is an overlap with section 2 Innovative Internet functionality and technologies important for the use cases and scenarios.

## **4. Experimentation environment for broad large scale testing of the platform**

Test Site Norway in Trondheim in real traffic conditions

- Roadside communication equipment: CALM M5, DSRC and 3G coverage
- Instrumented vehicles
- CVIS software implemented

- Combinations with ongoing trials (e.g. MOOVE FOT)

## **5. The potential role of SINTEF in the FI-PPP**

The SINTEF Group is the largest independent research organization in Scandinavia. Every year, SINTEF supports the development of 2000 or so Norwegian and overseas companies via our research and development activity. SINTEF has approximately 2000 employees, 1300 of which are located in Trondheim and 450 in Oslo. We have offices in Bergen, Stavanger and Ålesund, in addition to offices in Houston, Texas (USA), Skopje (the former Yugoslav Republic of Macedonia), Rio de Janeiro (Brasil) and a laboratory in Hirtshals (Denmark). SINTEF's head office is in Trondheim.

SINTEF ICT can take a role in the transport activities with in FI PPP:

- SINTEF has broad and holistic knowledge on the requirements of the stakeholders in the transport sector and of transport applications. Thus, SINTEF can be responsible for specifications of requirements, frameworks and services.
- Related to Test Site Norway, SINTEF can also be a coordinator of trial activities, including cooperation with local authorities, industry and university.
- SINTEF can also initiate industry and stakeholder involvement

### **Contact information:**

Marit Natvig, phone: +47 73597073 / +47 90756749, email: [marit.natvig@sintef.no](mailto:marit.natvig@sintef.no)

Tor Kjetil Moseng, phone +47 73592986 /+47 91821061, email: [tor.kjetil.moseng@sintef.no](mailto:tor.kjetil.moseng@sintef.no)