ETC-based ITS Applications.

Implementing value-adding ITS applications on basis of Kapsch ETC systems.
UNECE Meeting Ankara; March 2012
Facing the problem

- **Current situation in the EU Transport sector:**

  - Transport growth for the period 2000 – 2020:
    - Freight transport + 50%
    - Passenger transport + 35% ≡ 1.5% p.a.
    - Private cars + 36%
    - Environmental cost is estimated 1.1% of GDP
    - Road congestion cost estimated 1% of GDP

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Road Fatalities in the European Union

- About 40,000 people are killed in road traffic accidents every year
- About 1,700,000 injuries every year on the roads in the EU
- The direct and indirect costs are estimated at 160bn EUR
- Target of 50% reduction by 2010 to be achieved only in 2017
- Slowest progress in Central and Eastern European Countries
 Growing demand for ITS

- **Intelligent use of existing capacity and infrastructure:**
  - to create a secure and safe transport system by gathering and sharing real-time information
  - to reduce the number and severity of accidents
  - to plan and build safer vehicles and roads
  - to reduce congestion
  - to improve traffic fluidity
  - to improve traffic management as well as demand management
  - to increase comfort for road users
  - to promote co-modality
ETC-based Telematics

Trend:

- Re-use of existing tolling infrastructure as basis for other traffic telematics solutions
- Electronic toll systems will become the “backbone” for a broad spectrum of traffic telematics solutions
- Increasing penetration rate of ITS solutions over the next 5 to 15 years

Main drivers:

- Cost reduction (re-use of ETC infrastructure)
- Better data (traffic management & planning)
- Increased safety & security
- Better service for road users (acceptance for toll)
- Additional revenues (concessionaires, EETS service providers)
ETC-based ITS: Fields of Application

Electronic Toll Collection System

Traffic Information, Management & Planning
- Cost reduction and better data through capturing traffic data from the toll system

Safety & Security
- Improved safety and security through better traffic enforcement and observation

End-user Mobility Services
- Better service for the driver through value added services (>> increasing acceptance for toll!)

Industry Solutions
- Additional revenues through utilizing the ETC infrastructure for implementing industry solutions
Kapsch Telematics Platform with possible applications

Traffic Management Center
- Traffic Data Capturing (Enforcement Station)
- Traffic Monitoring (Toll data-based)

Traffic Planning Tools
- Traffic Analysis
  - Traffic Statistics
  - Traffic Flow Analysis

Safety
- Speed Monitoring (Section Control)
- Hazardous Goods Transport Tracking

Security
- Automated Number Plate Recognition
- Data Mining

OBU End-User Services
- OBU-based Access Services
- OBU-based Payment Services

Industry Solutions (e.g. Logistics)
- Vehicle Tracking (Fleet Management)
- Pay-as-you-drive (Car Insurance)

Industry Applications (e.g. Logistics)
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  - Traffic Statistics
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Kapsch Telematics Platform
- DSRC Data
- GPS Data
- Video Data
- Sensor Data

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Traffic Data Capturing with Enforcement Stations

Features:
- Capturing of traffic data for all vehicles using the laser scanners of the ES
- Optional extension of ES

Fields of application:
- Short-term data: Traffic management/monitoring
- Long-term data: Traffic statistics

Interface to KTP
- Possible forwarding of data to external systems like traffic management centers

Benefit
- Cost effective generation of traffic data
Reference Project: Road network wide traffic data capturing ASFINAG

- Extension of 102 enforcement stations with an application allowing to capture traffic data using the laser scanners of the station
- Implementation of 160+ tolling stations with 3rd-party traffic sensors
- Transfer of the data to the traffic management center VMIS in Inzersdorf (TLS-based)
Reference Project: Traffic monitoring on CZ highways

- Calculation of travel times and level of service based on toll data for all sections of the tolled road network in CZ
- Capturing of short-term and long-term traffic data using the laser scanner of the enforcement stations
- Provisioning of the data to the national traffic management center in Ostrava via XML web services
Automated Number Plate Recognition

**Features:**
- ANPR checks of all vehicles passing an enforcement station
- Work places for handling alarm messages (dispatching of police forces)

**Fields of application:**
- Search for stolen vehicles
- Search for other suspicious vehicles

**Benefits:**
- Improved security
- Tracking & monitoring of special transports
- Managing incidents
Reference Project: Mobile ANPR for the Austrian Police

- SecureSOAP
- GPRS
- X.509

BM.I Offline-database
BM.I Online-database
OBU-based Access & Payment

Features:
- Utilization of Onboard Units as access keys and means for cashless payment

Fields of application:
- Parking facilities
- Factory gates
- Petrol stations
- Drive through

Benefits:
- Improved convenience for the driver
- Possibility to increase the OBU penetration rate (decreasing costs in case of manual tolling plazas)
Fleet Monitoring

Features:
- Real-time tracking of vehicles
- Reporting (e.g. log book)
- Dispatching functions (e.g. arrival time calculation)

Fields of application:
- Management of fleets

Benefits:
- Overview about vehicle location and route progress
- Improved service by alerting customers if a driver will be late for a scheduled stop
- Reduced mileage by tracking out-of-route miles and unauthorized vehicle use
Reference Project: Fleet tracking Czech Postal Service (Trial)

- Country wide real-time tracking of 3500 postal service vehicles in CZ
- Dispatchers can monitor the fleet using a web front end in real time (the actual position of all active vehicles is being displayed in a digital map)
- A log book feature allows daily vehicle reports (start/stop trip location & time, trip distance & time, breaks etc.)
ETC-based ITS applications …

… allows to improve traffic information, management and planning

… allows to improve traffic enforcement and observation

… allows to offer value adding mobility services

… allows to offer commercial applications

- Less congestion
- Better road network (long-term)

- Increasing traffic safety
- Increasing public security

- Better services for the driver

- Additional source of income for the toll system operator
The missing link

- ITS needs an integrated approach (still a lack of harmonized policies)
- Institutionalize dialog between the Public and the Private Sector
- Public awareness and education are essential
- Political will and leadership are needed
- Interoperability continues to be an issue – guarantee harmonization and open standards
- Law enforcement is fundamental
- Data Privacy issues have to be taken into account
Think of Traffic as an Opportunity.

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