

NATIONAL EXPERIENCE IN ITS, C-ITS AND SMART MOBILITY

Experts of national ITS associations from Austria, Czech Republic, Ireland and Slovenia present and discuss good practices from ITS deployment and operation on regional/national level:

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Organized by ITS&S in a co-operation with CEDA MAPS and REBUT.

INTELLIGENT MOBILITY AND TRANSPORT SYSTEMS

- **Intelligent mobility** embodies the need **to move** people and goods **without any barriers**, using methods and means corresponding to the possibilities and needs of the **21st century**. Barriers are not just missing infrastructure or it's insufficient capacity, but also missing **data, information** or the inability to **organize or manage** the transport system effectively using modern **trends, knowledge**, procedures and **technologies**.
- **Intelligent transport systems and services** are an important tool for intelligent mobility. With their help, the transport system can be planned, organized, managed and influenced to achieve the planned goals, e.g. **reduction of transport problems related to traffic**.

INTELLIGENT MOBILITY AND ITS IN THE CZECH REPUBLIC

National experience in
ITS, C-ITS and smart
mobility
Intertraffic Amsterdam
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WWW.SDT.CZ

WWW.TELEMATIKA.CZ



SOME FACTS ABOUT THE CZECH REPUBLIC

- 10.5M inhabitants, 14 regions, 1+14 governments
- ≈ 1.2M new cars ≈ 5000 buses ≈ 1300 trucks (2022)
- ≈ 20% inland pass. trans. is public transport (2020)
- National PT timetables available as open data
- -42° C (-44 ° F) CZ the lowest temperature ever
- ≈ 11 mil. SIMs with mobile services activated
- 3rd nation in space
- 12 UNESCO monuments
- Very good beer: Pilsner Urquell, Budweiser Budvar



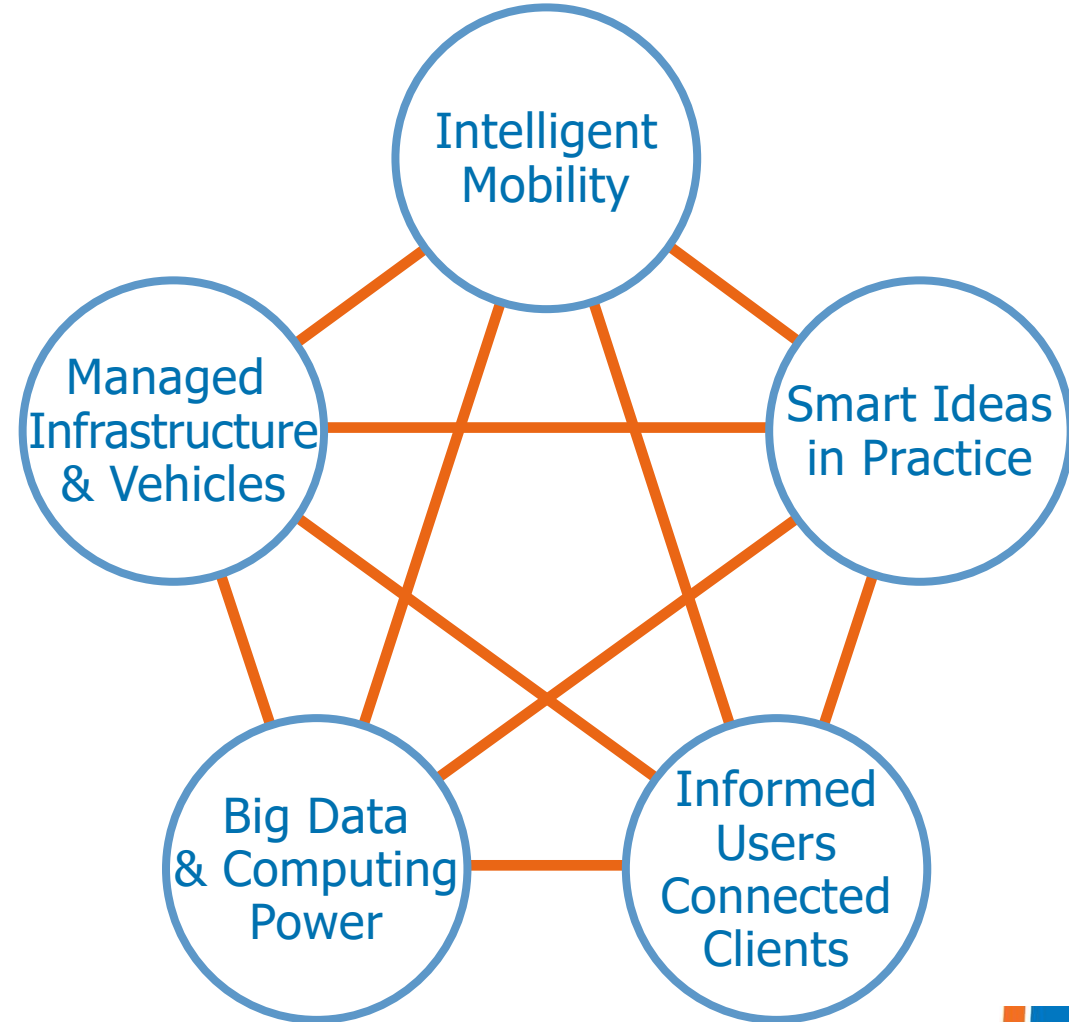
ITS&S CZECH REPUBLIC (SDT IN CZECH)

- National ITS association, member of ITS Nationals
- Founded in 2000 as ITS&S Czech Republic
- 80 Czech and Slovak companies & institutions on board
- Partnership with ERTICO, the Czech Chamber of Commerce, and the Association of Small and Medium-sized Enterprises and Crafts of the Czech Republic
- www.sdt.cz , www.telematika.cz



SAFER BETTER LIFES AND CLEANER ENVIRONMENT

- Czech ITS sector representation
- Development of domestic ITS competence
- Professional advocacy in ITS
- Discussion partner to ministries
- ITS projects development and coordination
- Supporting customers in ITS strategies, implementation and operation



BILATERAL COOPERATION IN ITS

ITS&S is interested in developing mutually beneficial and balanced cooperation in the field of intelligent transport systems:

- Know-how transfer, best practices exchange (both ways)
- Mutual enrichment of a product portfolio

Great potential for mutual projects is in the following areas:

- Telematics in road transport, public transport
- Urban mobility extending the concept of Smart Cities
- Projects tied to automation in transportation and intelligent mobility using the latest technology trends

List of relevant terms:

- Traffic management, security, tolling, electronic fare management, safety, travel information services, C-ITS, CCAM, GNSS, automation, roads, railways, individuals, mass public, freight transport, multimodality, intermodality, transport authorities, travellers, drivers



ITS IN THE CZ – EXAMPLES OF GOOD PRACTISE

- National **Traffic Information Centre**
- **FCD** (Floating Car Data) – source of free traffic information available to everyone
- **C-ITS** deployment on roads in the CZ
- **Urban Traffic Management** – example from city of Brno
- National **Timetable Information System** and Journey Planners
- Electronic Information and **Fare Management** in Public Transport



NATIONAL TRAFFIC INFORMATION CENTRE

- Operated by the Road and Motorway Directorate, acc. to Czech legislation, covers **every road**
- **Collects** traffic safety/travel-related information from various public sources (mandatory) and private sources (voluntary), **validates** and **provides information for free** via a web portal, call centre, and as data stream via **API**.
- Availability: 365/24/7, all **RDS-TCM** segments
- Information available: **road surface conditions, weather warnings, road closures, real-time traffic information, accidents and incidents**
- **Many private and public stakeholders** subscribe to the information **for free**



C-ITS DEPLOYMENT IN CZECH CITIES

- Largest deployment in **Brno** – more than 80 intersections & all public transport vehicles equipped with C-ITS and growing
- **Multiple cities equipped over the past 2 years:** Plzeň (Pilsen), Karlovy Vary (Carlsbad), Hradec Králové, Mladá Boleslav
- Used primarily for **Public Transport & Emergency vehicle priority** + signal phase and timing information
- Significant interest among **emergency services** operators (fire brigade, ambulance, police)



NATIONAL TIMETABLE INFORMATION SYSTEM (NTIS) MULTIMODAL JOURNEY PLANNER(S)

- **National Timetable Information System**, based on the law by the Czech Ministry of Transportation
- All public transport modes incl.
- Timetables available via API, open exchange data format, available for free to everyone, operated 365/24/7
- **IDOS - leading journey planner**, developed and operated by a Czech-owned company, one of the ten most visited web pages in the CZ
- IDOS main functions: multimodal, all public transport connections, cross border Czech-Slovak, real-time data on vehicles positions/delays, sales channel – SMS tickets, bus and railway tickets

The screenshot displays the IDOS.cz website interface. At the top, there is a navigation bar with the logo 'i IDOS.cz' and three icons: a person, a shopping cart, and a menu. Below the navigation bar are four main menu items: 'CONNECTION' (highlighted in orange), 'DEPARTURES', 'STATION TT', and 'Timetable Selection' (with a plus sign). The 'CONNECTION' menu item has a sub-menu 'All timetables'. Below the menu items are two input fields: 'FROM' and 'TO', each with a location pin icon and a search icon. Below the input fields are two date/time selectors: 'Today' and 'Now', each with left and right navigation arrows. To the right of these selectors are radio buttons for 'Departure' (selected) and 'Arrival'. Below the date/time selectors are two checkboxes: 'Direct connections only' and 'Advanced search'. Below the input fields and date/time selectors is a large orange 'SEARCH' button. Below the 'SEARCH' button is a section titled 'Already searched' with two columns of search results. Each result consists of a grid icon, a star icon, and a text label: 'Praha >> Brno', 'Brno >> Praha', 'Praha >> Plzeň', 'Plzeň >> Praha', 'Praha >> České Budějovice', and 'České Budějovice >> Praha'.

INFORMATION AND FARE MANAGEMENT IN PUBLIC TRANSPORT - I

- Public passenger transport is an important element of Czech mobility; ITS **plays a key role** in several directions, incl. vehicle fleet operation and information and fare management systems
- Chipcard is a traditional eTicketing medium, **4M cards emitted** so far per 10M residents
- **MIFARE and EMV** chipcards are broadly used by carriers operating in cities and regions, incl. Czech Railway Company
- **Mobile apps, 2D codes** and premium **SMS** are often used as another fare management channel
- Paper tickets are still available



INFORMATION AND FARE MANAGEMENT IN PUBLIC TRANSPORT - II

- Fare management philosophy is based either on **the free flow of passengers with „valid time tickets“** or on **the check-in check-out principle**. The ITS ticket **validators** are placed in all mass public transport vehicles.
- Fare settlement systems in backoffice may have sophisticated **clearing functions** (e.g. Priccapping)
- **Mini ticket vending machines** are also often designed to be placed in vehicles. In urban transport, the ticket machines usually accept bank cards only.



INTELLIGENT MOBILITY AND ITS IN THE CZECH REPUBLIC

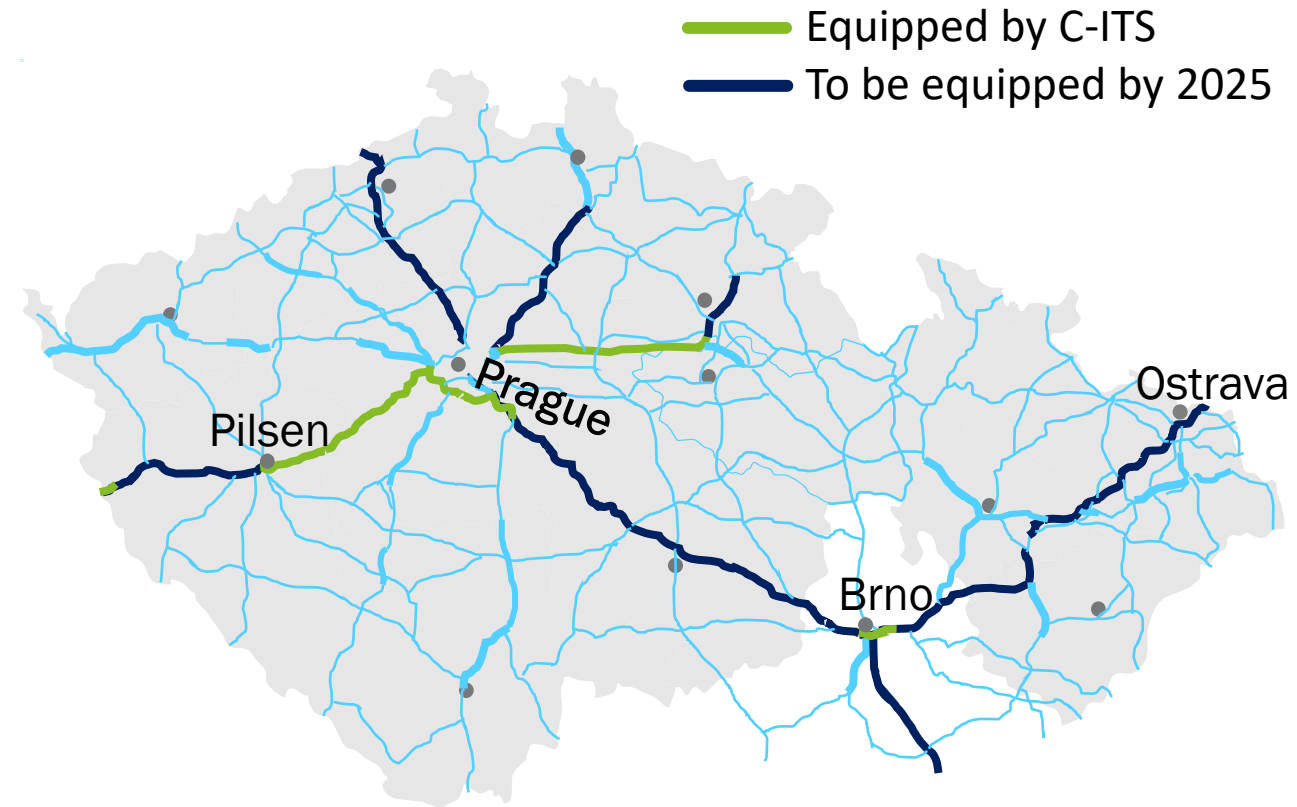
THANK YOU!
LOOKING FORWARD TO OUR CO-OPERATION



ROMAN SRP, R.SRP@SDT.CZ, WWW.SDT.CZ, WWW.TELEMATIKA.CZ

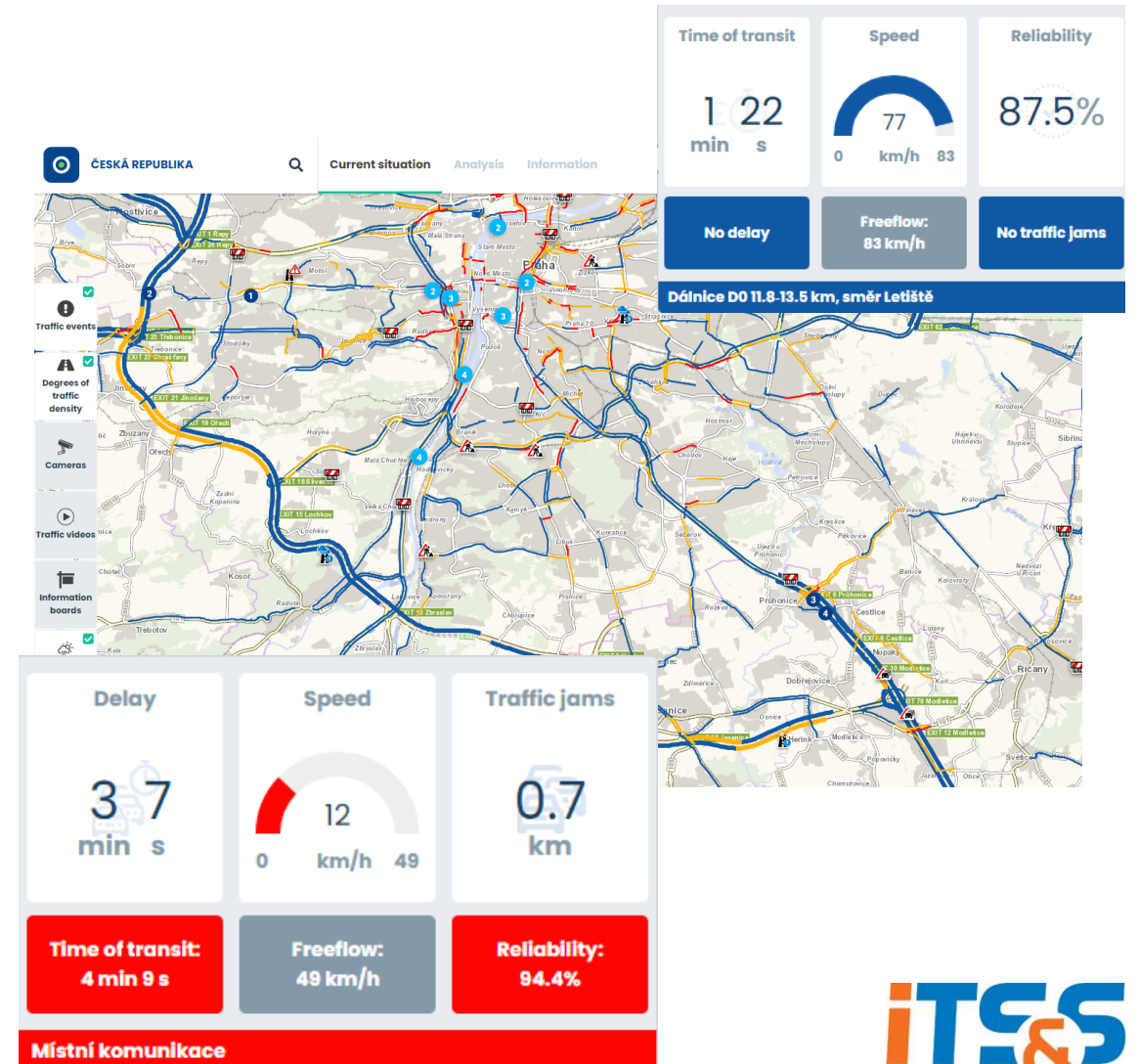
C-ITS DEPLOYMENT ON MOTORWAYS IN THE CZ

- Deployed & operated by Road&Motorway Directorate
- **252km, 108** Roadside stations, C-ITS (ITS-G5)
- Additional **615km** to be deployed in 2024/2025
- **280** mobile trailers and maintenance vehicles equipped with C-ITS OBU (additional 450 in 2024/2025)
- Hybrid deployments of **DSRC/ITS-G5 & LTE/5G** according to C-ROADS (**pan-European interoperability specification**)
- **Traffic data** distribution & **probe vehicle data** collection
- **Production phase** - Data Exchange, PKI, negotiating with VW and other OEMs & service providers



TRAFFIC INFO BASED ON FCD (FLOATING CAR DATA)

- Real-time traffic information available for each **RDS-TMC** road segment, generated automatically based on **FCD** data (Floating Car Data)
- Available 365/24/7 since 2019, based on anonymous vehicle data from in-build OBUs
- In total, 150 000 unique vehicles per year,
- Info/RSD-TMC segment: **actual speed of traffic flow, travel time, delay, level of service**
- Information frequency update = 1 min.
- ≈ 50% of all real-time traffic data is available at National Traffic Information Centre



URBAN TRAFFIC MANAGEMENT – EXAMPLE OF BRNO CITY

- **Regional capital**, 400K habit., 230.2 km², TMC ≈ 150 traffic lights, PT TMC: ≈ 300 trams, ≈ 140 trolleybuses, ≈ 300 busses, C-ITS penetration - 100%
- Various ITS are implemented in Brno, for example, **dynamic management** of traffic lights at controlled intersections (including **preference** for public transport and emergency services using C-ITS), **strategic detectors** and camera monitoring systems, **remotely controlled tunnels** and traffic management centre.
- The centre of the **C-ITS** is the back-office (BO), built in 2018. The BO displays the current state of units on infrastructure (RSU) and also the vehicles (OBU).

