

Czech Republic. A successful toll road network.



always one step ahead

1300 KM of Free-Flow Tolling.

On 1st January 2007 the Czech Republic's nationwide electronic toll collection system "MYTO CZ" started commercial operation after being set up from scratch by Kapsch in a record time of only nine months. Since then Kapsch operates and continues to develop the system. The contract was signed for 10 years.

A fair, flexible system.

The Czech Republic's nationwide system was implemented using DSRC as standardized by CEN TC278 to support interoperability in Europe and to safeguard the technology investment, both critical aspects of national policy. The compulsory use of a cost-effective and easy-to-use OBU – the Premid unit – gives frequent and occasional users the same access to the system, avoiding any systematic discrimination. As the toll varies with the number of axles and emissions class of a vehicle, the vehicle class declaration has to ensure the fees are correct. Evidence of anomalies is recorded accurately in a secure and legally admissible form, deterring systematic fraud.



The Czech Government also needed to safeguard and maximize return on its investment by ensuring that the system could be adapted to support future developments in transport policy without compromising existing functionality. This might include, for example, extending the road network, adding vehicle classes, and supporting road safety and other telematic functions. Already the system has been augmented to extend its role as a traffic management and traffic planning tool, demonstrating the soundness of an approach based on investing in a solid, revenue-generating system.

System overview.

The Czech toll network is an open system, which enables tolling of moving vehicles in unimpeded driving conditions. This multi-lane free-flow system uses microwave antennas mounted on gantries above the highway which communicate with OBUs installed on the windscreen of passing trucks. Changing lanes while passing beneath the gantries does not influence the tolling transaction. The tolling process is fully automatic and requires no intervention on the part of the driver. Behind the scenes, a major IT facility deals with transactional, financial and billing data. It is supported by an extensive communications infrastructure.



For traffic management and traffic planning purposes accurate real-time as well as historical traffic data are generated on basis of the electronic toll system. For this the Kapsch Telematics Platform is being used allowing the Czech road authority to capture travel times, level-of-service, traffic statistics as well as traffic flow analysis data for the entire tolled road network in a cost efficient manner and feed that data via open XML interfaces to the Czech national traffic management center. There the data are being used for controlling traffic and to plan traffic infrastructure in line with demand. By implementing and testing Kapsch Area, a satellite positioning technology (GNSS) in combination with the existing microwave DSRC technology, the road authority is moving towards a hybrid system concept providing even more flexibility. Using the two technologies together in an integrated manner will allow the Czech road authority to accommodate changing transport policy needs in the Czech Republic when expanding the tolling system to secondary level roads with limited capacity for roadside infrastructure. The system is being tested by up to 10.000 users and the matching results are higher than 99%.



On-board unit

Scope of supply.

Kapsch's turnkey solution for this project covered the system concept and design, planning, construction work, site acquisition, installation of infrastructure (including critical communication and IT components), development, manufacture and delivery of DSRC roadside and in-vehicle devices, all roadside related software applications, data security, point-of-sale equipment, the entire enforcement system with stationary and mobile devices and a central system, the central billing system and the Customer Relationship Management (CRM) system.

Around 60% of the implementation utilized local Czech companies. This approach was very important, ensuring that there was a strong added value element in the country.

A sound investment.

Total toll revenues equaled total capital expenditure after only 6 months of operation. This excellent indicator is amplified by the fact that the system was built using the contractor method, which means that the general contractor bears the initial costs related to the construction and the risks like in a PPP project. The state reimburses the general contractor for such costs gradually within a horizon of 30 months after the launch of the system. Thus, in the first year of system operation, the state has only paid 25 % of the total acquisition cost. The toll revenues are enabling the Czech government to improve its core highway network. The tolling system is proving to be an effective traffic management tool for transit traffic, with traffic continuing to grow in line with, but not substantially beyond, national economic growth. Utilizing DSRC as the backbone of the system has enabled the Czech Republic to rely on a mature, proven solution with high accuracy and availability, to create a fast and solid return on investment. This technology can handle increasing numbers of road users and provides flexibility by supporting various charging schemes (time, distance, place) and payment methods (pre-pay, post pay). Based on the DSRC data, traffic data can be derived cost efficiently further improving the business case of the toll system.

Kapsch Group

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