



Audit Report

18/34

Implementation of intelligent transport systems (ITS) in the road infrastructure of the Czech Republic

The audit was included in the audit plan of the Supreme Audit Office (hereinafter the “SAO”) for 2018 under number 18/34. The audit was headed and the Audit Report drawn up by the SAO member Jan Kinšt.

The objective of the audit was to verify whether the Ministry of Transport managed and, together with the Road and Motorway Directorate of the Czech Republic, implemented selected road ITS in a way that led to cost-effective and efficient spending of funds to achieve the objectives according to the *Action Plan for the Development of Intelligent Transport Systems in the Czech Republic by 2020 (with an outlook to 2050)* and other strategic documents.

The SAO audited two entities indicated below between May and December 2018. The audited period was from 2012 to 2018; and were related, the preceding period were also included.

Audited entities:

Ministry of Transport (hereinafter the “MoT”),
Road and Motorway Directorate of the Czech Republic, Prague (hereinafter the “RMD”).

The **Board of the SAO** at its IV meeting, which took place on 25 March 2019, **approved** by Resolution no 9/IV/2019 **the Audit Report** in the following wording:

KEY FACTS

FUNDS* USED FOR ROAD ITS IN THE YEARS 2012-2014 AND 2015-2018

CZK 1.25 billion

2012-2014

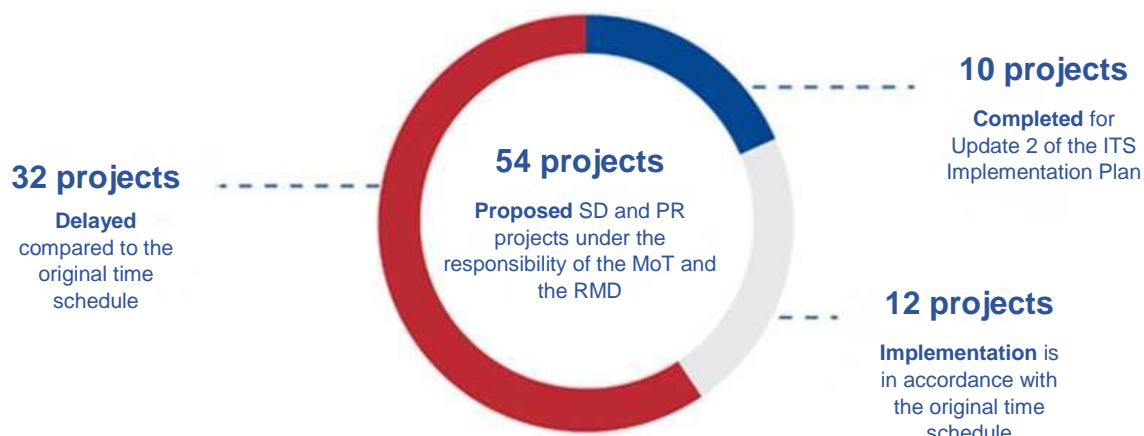
(before the adoption of the ITS Action Plan)

CZK 2.37 billion

2015-2018

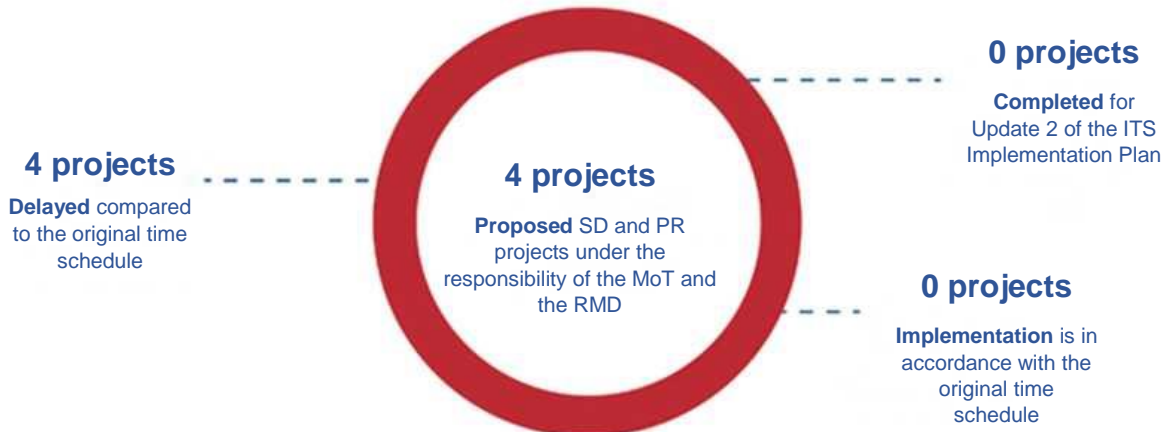
(during the period the ITS Action Plan was in force)

ITS IMPLEMENTATION PLAN AND ITS UPDATES



SD AND PR PROJECT BENEFITS NOT EVALUATED, PERFORMANCE INDICATORS NOT SET

Including projects involving the implementation of weights for high-speed check-weighing



Number of weights for high-speed check-weighing in operation

2015		2018	
RMD	REGIONS	RMD	REGIONS
0	1	0	5

Number of weights planned until the completion of the inspection at D1

0

Number of km driven by trucks with trailers over 10 tonnes on D1 in 2016

26.3 million km

* Funds spent by the SFDI and the RMD and funds drawn by other entities for items related to road ITS (excluding funds spent on road ITS under road construction) until the end of August 2018.

Source: documentation submitted during the MoT and RMD audits, SFDI budgets for 2012-2018, national traffic census 2016 (publicly available at: <https://www.rsd.ct/wps/portal/web/Silnice-a-dalnice/Scitani-dopravy>).

I. Summary and Evaluation

- 1.1. The SAO audited the funds spent by the MoT in order to meet the objectives of the *Action Plan for the Development of Intelligent Transport Systems in the Czech Republic by 2020 (with an outlook to 2050)* (hereinafter the “ITS Action Plan”) in the field of intelligent road transport systems (hereinafter “road ITS”). The main objective of the ITS Action Plan is to continuously improve the safety and flow of traffic, to coordinate, synchronise and optimise passenger transport and consignment movements across the network of individual modes of transport, and to further reduce the environmental impact of transport.
- 1.2. The objective of the audit was to verify whether the MoT managed and, together with the MD, implemented selected road ITS in a way that led to efficient and effective spending of funds to achieve the objectives according to the *Action Plan for the Development of Intelligent Transport Systems in the Czech Republic by 2020 (with an outlook to 2050)* and other strategic documents. The MoT is responsible for the state transport policy and, within the scope of its competence, for its implementation. The RMD is responsible for most road ITS projects and cross-sectional projects¹ implemented under the *Implementation Plan for the Action Plan for the Development of Intelligent Transport Systems (ITS) in the Czech Republic by 2020* (hereinafter the “ITS Implementation Plan”).
- 1.3. **The SAO notes that the possibility to monitor, manage and transparently assess the economy, efficiency and effectiveness of road ITS built under the ITS Action Plan is significantly reduced for the MoT and the RMD as well as for other evaluators. The objectives of the ITS Action Plan were set by the MoT very generally; the “SMART”² evaluation indicators were not set at all until the end of the audit. The possibility of evaluating the economy, efficiency and effectiveness of the implementation of individual ITS projects by the MoT and the RMD is also limited by the availability of information. The ITS Action Plan and related documents do not create any precondition for project management. As part of meeting the objectives of the ITS Action Plan, it is envisaged to spend approximately CZK 9 billion on road ITS projects and related projects. The ITS in the road network managed by the RMD selected for audit fulfil the purpose for which they were established, with the exception of high-speed weights, the construction of which is delayed and which had not been built by the end of the audit.**
- 1.4. **This overall assessment is based on the following main audit findings:**
- a) **The MoT did not set the ITS Action Plan so that it could objectively monitor the progress of meeting its objectives over time, assess whether its implementation was progressing in the defined direction, define direct corrective measures, and**

¹ In addition to road ITS projects (defined as “SD projects” in the ITS Implementation Plan), the SAO also focused on cross-sectional projects (defined as “PR projects” in the ITS Implementation Plan) that focus on data acquisition/traffic information provision and follow up on road ITS projects. In total, there are 54 SD and PR projects listed in the ITS Implementation Plan and its updates.

² Acronym expressing the characteristics: Specific + Measurable + Achievable + Relevant + Time-Bound.

assess, at the end of its effectiveness, whether the set objectives or global objective in relation to the money spent had been achieved. The main reason for this is that the objective setting is not in accordance with the SMART principles. The objectives of the ITS Action Plan are not specific and measurable, as the MoT has not set indicators to measure their fulfilment at any level of the objective hierarchy. The MoT has not set a basic time schedule for the implementation of the ITS Action Plan, i.e. deadlines for meeting individual objectives, key milestones etc. The basic time schedule for meeting the objectives of the ITS Action Plan has not been elaborated internally by the RMD either, with the exception of the area related to the development of the National Traffic Information Centre (hereinafter the “NTIC”)³. The MoT has not yet used the data obtained from abroad or from its own established organisation (the Transport Research Centre or “TRC”⁴) to implement the monitoring of ITS benefits. (See para. 4.3-4.9)

- b) **As part of the fulfilment of the ITS Action Plan, the MoT and the RMD did not carry out performance evaluations of road ITS implemented through SD and PR projects under the ITS Implementation Plan,** even in basic areas such as benefits in increasing road safety, reducing congestion⁵ or reducing road traffic violations. In 2018, i.e. approximately in the middle of the period of effectiveness of the ITS Action Plan, the MoT carried out an evaluation of the fulfilment of the objectives of the ITS Action Plan based on the task assigned by a Government Resolution. The evaluation of the fulfilment of objectives by the MoT was carried out only on a general level by subjective evaluation of objectives, not objectively on the basis of suitable performance indicators. (See para. 4.7-4.13)
- c) **The MoT did not assess the appropriateness of including SD and PR project proposals in the ITS Implementation Plan in a transparent manner.** The MoT did not set criteria for assessing the appropriateness of including individual road ITS project proposals in the ITS Implementation Plan. The evaluation of the capabilities of specific project proposals to meet the objectives of the ITS Action Plan was based only on the knowledge and experience of the MoT staff. (See para. 4.16-4.19)
- d) **The RMD did not have an overview of the total amount of money spent on road ITS until the end of the audit, as it did not monitor the money spent on the implementation of road ITS as part of road constructions separately.** Therefore, during the period under review, the RMD did not provide the MoT with accurate and complete data on the total funds spent on ITS within the framework of road constructions. Neither the MoT nor the RMD had a general overview of non-investment funds for individual types of road ITS that would have to be spent in connection with the implementation of the ITS Action Plan for their operation

³ The NTIC is the main operational site that provides the collection, processing, evaluation, verification and authorisation of traffic information and traffic data, provided through USTI (Uniform System of Traffic Information), 24 hours per day, 7 days per week.

⁴ A research institution set up by the MoT in 2006.

⁵ Congestion is a specialised term for traffic jam.

and maintenance. This significantly reduces the ability of the MoT and the RMD to plan the drawing of funds from the budget of the State Fund for Transport Infrastructure (hereinafter the “SFTI”) in the medium term and for the needs of their own long-term planning of investment and non-investment projects. For these reasons, neither the RMD nor the MoT could evaluate the effectiveness and efficiency of spending money on the construction of individual road ITS. (See para. 4.22-4.24)

- e) **The MoT did not manage the implementation of high-speed check-weighing scales⁶** at a strategic level although this is a tool for road safety and against road damage caused by overloaded vehicles. Until the completion of the audit, the RMD did not put into operation any weight for high-speed check-weighing in the Czech motorway network despite the fact that it had been possible since 2010 by law and certified devices had been available in the market since 2011. (See para. 4.29-4.32)
- f) **The RMD proceeded in an effective manner when building and using the SOS announcement system.** The functionality of SOS announcements was verified by the RMD as part of regular inspections during maintenance. The RMD did not monitor or evaluate the money spent on building SOS announcement systems because it did not monitor the total money spent on operation and maintenance of the individual types of road ITS. (See para. 4.35-4.37)
- g) **The SAO assessed the NTIC’s activities** as the main operational site of the *Uniform System of Traffic Information for the Czech Republic* (hereinafter “USTI”)⁷ in the transmission of traffic information **as expedient and effective.** (See para. 4.40-4.43)
- h) **There is no authority at national level to ensure the coordination of individual closures of the transport network between the individual institutions operating the road network.** In 2016, the RMD launched the *Geoportal of the Road and Motorway Network of the Czech Republic* (hereinafter the “Geoportal”), which includes, inter alia, the *Scheduled Closures* map application. It was intended to contain pre-scheduled closures and to serve as a tool for coordinating closures between the individual institutions operating the road network. However, data entry into the Geoportal is voluntary on the part of regions, and the SAO found that one region had not been entering scheduled closures in the Geoportal at all and two regions had been entering only very low numbers. The Geoportal, i.e.

⁶ Sometimes the abbreviation WIM (Weigh-In-Motion) is used – these devices can be used either for pre-weighing, identifying overloaded trucks and then carrying out a second check-weighing to impose a fine, or under the high-speed check-weighing scheme, the result of which is already a valid document for the possible fine.

⁷ By Resolution of the Government of the Czech Republic no 590 of 18 May 2005 *on the project of the Uniform System of Traffic Information for the Czech Republic*, USTI was designed as an open modular system for the collection, processing, storage and subsequent sharing and provision of information intended for traffic and its participants in the form of a public service.

the application referred to above, has thus not yet been used as a fully effective tool for coordinating road closures. (See para. 4.46-4.47)

1.5. Following the above, the SAO recommends to the MoT:

- To set up and, in cooperation with the RMD, put into practice performance indicators to assess the benefits of road ITS deployment and operation for traffic flow and safety, using existing studies (the European Commission, TRC). To set default and target values of these indicators and anticipated milestones of meeting the target values.
- To perform periodic evaluations of the fulfilment of the objectives of the ITS Action Plan according to these performance indicators and set milestones, and to take corrective measures in case they are not being fulfilled as expected.
- In the ITS Action Plan for the coming period, to prioritise areas for road ITS implementation and to set up a transparent system of evaluation and selection of project proposals in the ITS Implementation Plan.
- To ensure that administrators of class II and class III roads enter all data on scheduled road closures in the Geoportal in order to improve the coordination of closures on main routes and bypasses; e.g. to submit a proposal for legislation to secure the obligation of administrators of class II and class III roads to enter data on scheduled road closures in the Geoportal.
- For the purposes of road ITS planning and development, in cooperation with the RMD, to set up a system for monitoring road ITS items within the budgets of constructed or reconstructed road structures and the costs associated with securing their life cycles.

II. Information on the Audited Area

2.1. ITS are sets of electronic means, technical equipment, software and other tools that enable the retrieval, collection, use and other processing of and access to road, traffic, travel, logistics and transport data to increase secure and coordinated road use and reduce the negative impact of road traffic on the environment⁸.

2.2. The year 2005, when the USTI/NTIC project was launched with the aim of creating a comprehensive system environment for the collection, processing, sharing, distribution and publication of traffic information and traffic data, can be seen as the beginning of the systematic building of ITS in the Czech Republic. The RMD is gradually building and developing ITS, which should serve, inter alia, to provide information to road users and administrators of motorways and class I roads, regulate traffic, and address traffic safety and fluency. Examples of road ITS are given in Figure 1.

⁸ Section 39a of Act no 13/1997 Coll., on Roads.

Figure 1: Road ITS



Source: RMD, publicly available at: <http://portal.dopravniinfo.cz/telematicke-aplikace/obecne-informace>.

- | | |
|---|--------------------------------------|
| 1 – Weights (for pre-weighing or high-speed check-weighing) | 7 – Variable traffic signs |
| 2 – Traffic detectors and counters | 8 – Linear traffic management portal |
| 3 – Weather station | 9 – Traffic information equipment |
| 4 – Toll gate | 10 – RDS-TMC – traffic news channel |
| 5 – SOS announcements | 11 – Ostrava NTIC/USTI |
| 6 – Camera system | |

Road ITS – European context

2.3. In 2008, the *Action Plan for the Deployment of Intelligent Transport Systems in Europe* was drawn up at the level of the European Union (hereinafter the “EU”). Its aim was to accelerate and coordinate the deployment of ITS in road transport, including interfaces with other modes of transport. In 2010, the Plan was followed by Directive 2010/40/EU⁹ (hereinafter the “ITS Directive”), which elaborated on the priority areas defined in the Plan. The ITS Directive generally requires the preparation of specifications for ITS with a view to achieving their coordinated implementation across the EU Member States. In the Czech Republic, the ITS Directive has been transposed primarily into Section 39a of Act no 13/1997 Coll., on Roads. The ITS Directive was followed by EU regulations on the technical specifications of ITS systems¹⁰.

⁹ Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport.

¹⁰ Regulation (EU) 305/2013, Regulation (EU) 885/2013, Regulation (EU) 886/2013, Regulation (EU) 2015/962 and Regulation (EU) 2017/1926.