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National implementation plan RINF CZ

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1 RINF - introduction

The leadership of National registry of infrastructure in Czech republic was charged to Rail Authority under the law of Railways § 49 article d), which was in the terminology of European Railway Agency (ERA) designated as National registry entity (NRE)

National registry of infrastructure RINF in Czech Republic is implemented by Railway Authority by RinfMap software designed by company OltisGroup a.s.

Data are obtained from the information systems (IS) managed by infrastructure railway managers, ensuring their modification into the form required by the Commission Implementing Decision 2014/880/EU TSI infrastructure directives and guidelines ERA - European Railway Agency for the RINF management.

Mapping module is used for parameters presentation of individual tracks, in which user can freely set the selection of displayed parameters and create reports from selected objects both on screen and into an Excel or PDF format.

Input data are mainly taken from the current Infrastructure Manager IS, but also from hand-held records and regulations.

Maintenance and operational support is provided by company OLTIS Slovakia s.r.o. which is the subsidiary of OLTIS Group a.s. company.

1 The assessment of establishment and management of register of infrastructure in European and national legislation.

By the Article 35 based on a Directive of the interoperability¹, each Member State has to ensure that the registry of infrastructure is published and data are updated.

In this index the main features of each sub-system or a part-system (e.g. Basic parameters) are published and their relationship with the characteristics set out in accordance with applicable TSI.

European Railway Agency has worked out detailed specifications of items for infrastructure registry.

Implementing decision establishes the basic requirements:

- a) registry of infrastructure is an electronic form and meets the requirements of the common specifications listed in the Annex of the Implementing Directives,
- b) registers of infrastructure of Member States are linked together and are also associated with the common user interface,
- c) the data in the infrastructure register are reliable and up to date.

¹ Directive 2008/57/EC of the European Parliament and of the Council of 17th of June 2008 on the interoperability of the rail system within the Community

It is necessary to prepare development of RINF National Implementation plan according to Commission Implementing Decision 2014/880/EU on 26th of November 2014 on the common specifications of the register of railway infrastructure Implementing Decision 2011/633/EU.

The purpose of infrastructure register is:

- provide the data about railway infrastructure on which the rail vehicle is to be used to rail vehicles manufactures for the purpose of designing the rail vehicles,
- provide the data about railway infrastructure to notified authorities or authorized legal entities for the purposes of assessing the compatibility of the subsystems with the railway infrastructure,
- provide the data about the railway infrastructure for the purposes of monitoring the development of the interoperability of railway network,
- provide the data about the railway infrastructure to Railway Undertaking for the purposes of verifying the compatibility of the planned train delivery service with railway infrastructure,
- provide the data about the railway infrastructure to Railway Undertaking for the purposes of selecting the suitable rail vehicles entered into the trains to ensure the train compatibility with the parameters of selected rail route and its limitations.

1.1 *Technical scope of infrastructure register.*

Technical data about the infrastructures listed in the register of infrastructure are applied to:

- a) structural subsystem of infrastructure,
- b) structural subsystem of energy,
- c) fixed equipments of structural subsystem control - security and alarm systems.

1.2 *Geographical scope of infrastructure register.*

The geographical scope of the register of infrastructure are the major and minor railway tracks in administration of infrastructure manager SŽDC and all the railway tracks and sidings privately owned and integrated into the network of SŽDC via the junction switches and actively used by the infrastructure register in private ownership.

The railway tracks overview is listed in the Annex: Network Statement SŽDC for Timetable 2015 - Annex "B"

2 Registration systems for recording the data about the railway infrastructure.

Current SŽDC and Czech Railway registration systems allow inserting following data into the Register of infrastructure:

- **Description of the network topology** taken from the KANGO system, Transportation points according to SR 70, and Track sections by M12,
- **GPS coordinates and altitudes** of transportation points relevant to publicly available map systems,
- **The list of tracks** from the KANGO systems and gradually updated - verified from the PŽSI register,
- **Platforms,**
- **Transportation destination, speed rates and track categories** from the KANGO system gradually replenished - verified from the PŽSI register with the transformation to marking according to TSI,
- **Track geometry** gradually added from the PŽSI registry, with the conversion to marking according to TSI,
- **Transition cross-section** of the track and trails,
- **Power supply** and power system features,
- Permitted **types of collectors and electrical loads** of power system on the track,
- **The types of security equipments** and their parameters (ETCS, GSM-R, ...),
- **The types of train on the track detection system** and restrictions,
- **Braking ratios,**
- **Crossings,**
- **Tunnels,**
- **Stations equipment** - yet in preparation because of undelivered data from Czech Railways.

The data are the property of the organizations that provided them, i.e. SŽDC and Czech Railways. In the year 2015 the data are gradually verified, reviewed and refined before their publication into ERA according to timetable and track priority specified by the ERA Application guide.

3 The infrastructure data in the management of SŽDC

Basic characteristics of the railway network (as of 31th December 2012)	
Total length of rail lines (km)	9 459
single-track (km)	7 534
double-track and multi-track (km)	1 925
Electrified lines (km)	3 216
AC 25 000 V / 50 Hz (km)	1 382
DC 3 000 V (1 500 V) (km)	1 819
AC 15 000 V / 16 ² / ₃ Hz (km)	14
Narrow gauge rail lines (km)	23
Total construction length of rails (km)	15 493
speed max (km)	
up to 80 km/h (km)	7 098
between 81 and 120 km/h (km)	1 821
between 121 and 159 km/h (km)	181
160 km/h or more (km)	360
Number of switches	21 753
Bridges:	
Number of bridges	6 784
Total length of bridges (m)	152 198
Tunnels:	
Number of tunnels	163
Total length of tunnels (m)	45 762
Number of level crossings)	8 041
Signaling Control System - Length of rail lines equipped with	
automatic block (km)	3 003
automatic signalbox (km)	1 581
relay semi-automatic block (km)	984
signalbox semi-automatic block (km)	361
Length of rail lines equipped with	
train safety device (km)	1 554
remote-controlled stations (km)	945
Number of stations equipped with signalling equipment	
electronic	244
hybrid	34
relay	425
electro-mechanical (mechanical)	638
Remote controlled (km)	217

3.1 EU corridors

SZDC is a member of the following Rail Freight Corridors:

3.1.1 Corridor RFC 5 "Baltic - Adriatic"

The term of putting the corridor into operation is 10th of November 2015. Operators of the corridor are preparing a European Economic Interest Grouping (EEIG) as a legal person. Corridor presentation on the web is being prepared on the website www.rfc5.eu.

3.1.2 Corridor RFC7 "Orient/East-Med"

The corridor has been put into operation on 10th of November 2013. The corridor One-stop shop (C-OSS) was created within the Hungarian capacity allocator, the VPE company. The corridor office is also situated in Budapest within the MAV company. Official documents and additional information can be found on the website www.rfc7.eu.

3.1.3 Corridor RFC8 "North Sea - Baltic"

The term of putting the corridor into operation is 10th of November 2015. The Czech Republic and SZDC retain the position of observer for corridor RFC8, however it has support of other states for acquiring full membership in 2015. The Czech Republic and SZDC participate in meetings of the corridor bodies especially when their program concerns the Czech Republic or SZDC. Corridor presentation on the web can be found on the website www.rfc8.eu.

3.1.4 Corridor RFC9 "Rhine-Danube"

The Czech-Slovak section of the corridor (also "CS Corridor") has been put into operation on 10th of November 2013 on the route Praha - Horn Lidec - Zilina - Kosice - Cierna nad Tisou. The corridor One-stop shop (C-OSS) was created within the Czech Railway Infrastructure Manager SZDC on the grounds that it will alternate with its Slovak partner based on a rotation principle. No detached office has been created; the corridor consisting of two members for the time being only is managed in common by both organizations based on common agreement. Official documents and additional information can be found on the website www.rfc9.eu.

3.2 EU corridors in SZDC network



1. Data relating to infrastructures for freight corridors defined in the Annex to Regulation (EU) No 913/2010 of the European Parliament and of the Council (*) in the version in force on 1st of January 2013 shall be collected and inserted in the register of infrastructure not later than 9 months after the date of application **i.e. until 30th of September 2015**

2. Data relating to infrastructures placed in service after the entry into force of Directive 2008/57/EC and by the date of application of this Decision at the latest, other than the data referred to in paragraph 2, shall be collected and inserted in the national register of infrastructure not later than nine months after this date , **i.e. until 30th of September 2015**

3.3 The data about the infrastructure put into operation after March 16th 2012

The only new track is track from **station Sedlnice to Mošnov Airport**, the data will be uploaded into register in accordance with the relevant provisions of the Directive:

3. Other data relating to infrastructure placed in service after the entry into force of Directive 2008/57/ES and by date of application, but not later than the date of application of this decision, shall be collected and inserted in the national registry of infrastructure not later than **9 months** after this date: , **i.e. until 30th of September 2015**

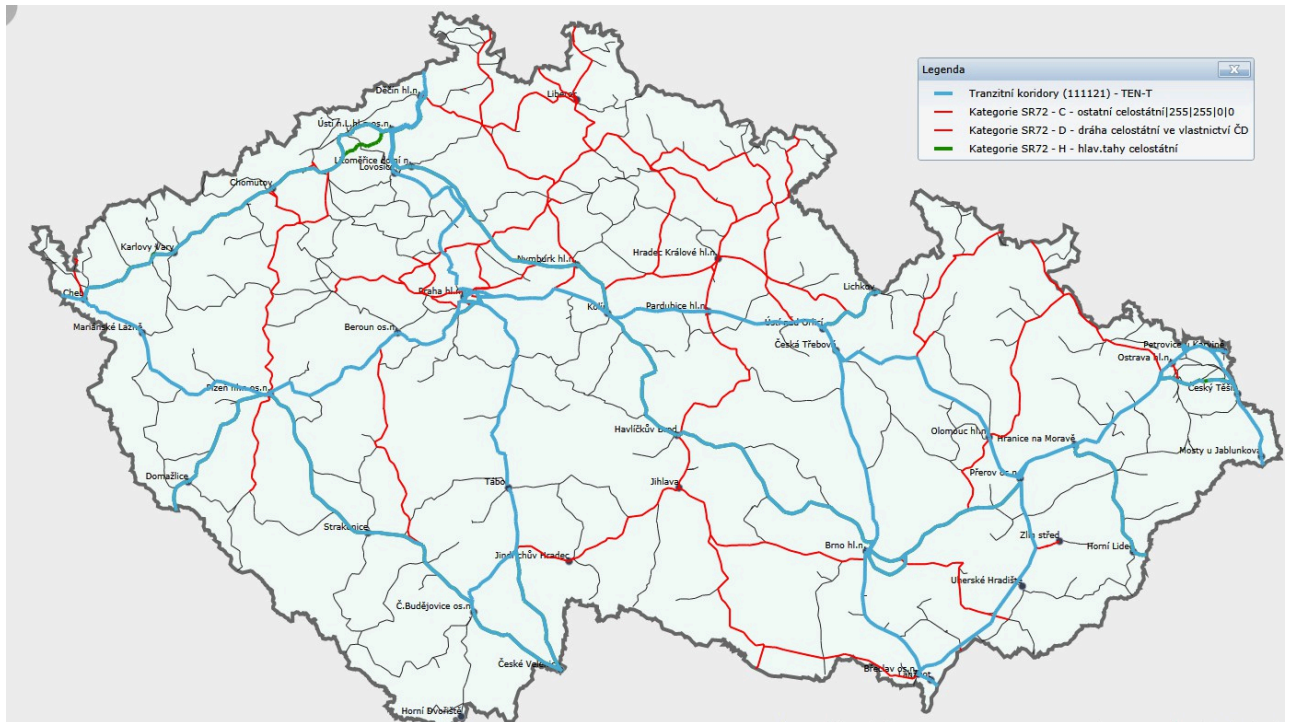
3.4 Main tracks, TEN-T corridors



4. Data relating to infrastructures placed in service before the entry into force of Directive 2008/57/EC, other than the data referred to in paragraph 2, shall be collected and inserted in the register of infrastructure in accordance with the national implementation plan referred to in Article 6(1) by 16th of March 2017 at the latest ,

The data processing for TEN-T corridors within the National implementation plan preparing *until 31st of May 2016*

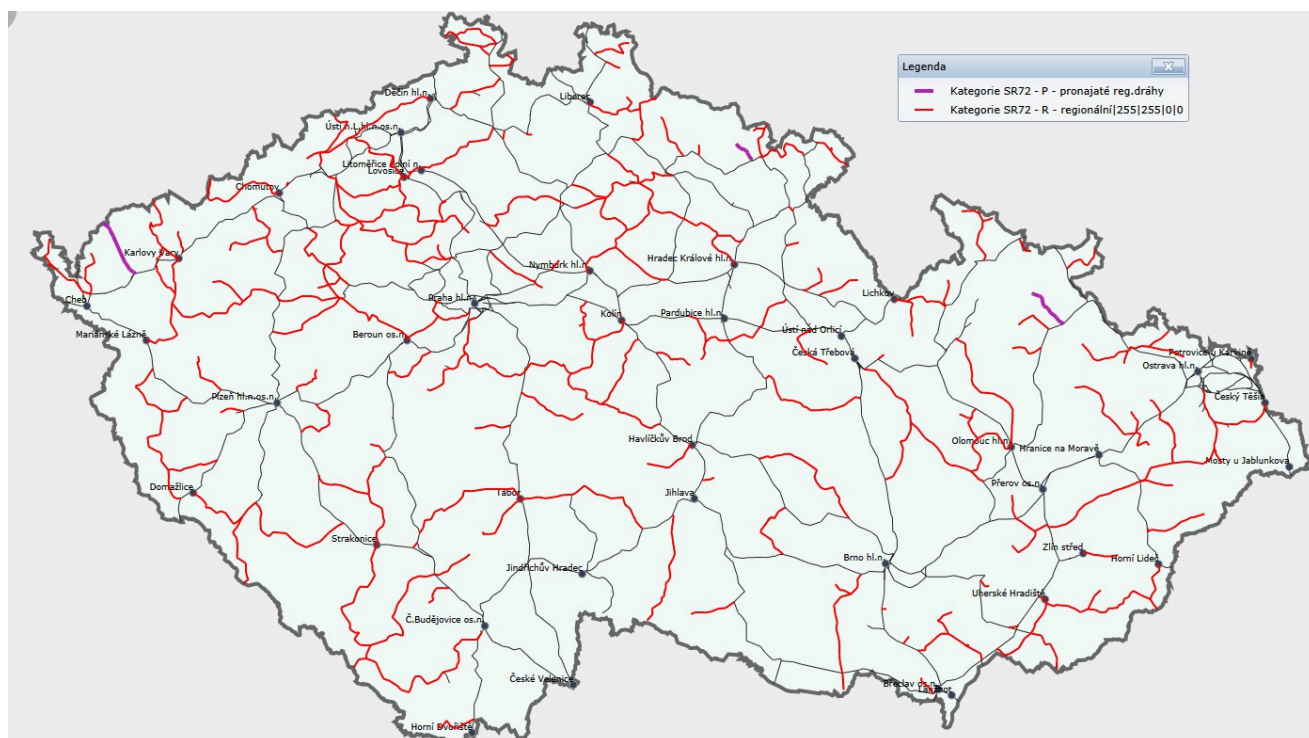
3.5 Main tracks – national



The main track data will be uploaded to the registry according to relevant provision of the Directive:

*5. Data relating to infrastructures placed in service before the entry into force of Directive 2008/57/EC, other than the data referred to in paragraph 2, shall be collected and inserted in the register of infrastructure in accordance with the national implementation plan referred to in Article 6(1) **by 16th of March 2017** at the latest .*

3.6 Regional tracks



6. Data relating to network not covered by TSIs shall be collected and inserted in the register of infrastructure in accordance with the national implementation plan referred to in Article 6(1) by 16th of March 2019 at the latest

As a part of implementation plan schedule we assume inserting the regional track data into the Registry until **30th of November 2018.**

4 Private tracks

4.1 Private regional railways



7. Data relating to private sidings placed in service before the entry into force of Directive 2008/57/EC shall be collected and inserted in the register of infrastructure in accordance with the national implementation plan referred to in Article 6(1) **by 16th of March 2019** at the latest

4.2 **Private sidings – sidetracks**

There are 1242 private sidings connected to SZDC tracks using sidetracks.
A detailed list is in Annex: “SŽDC Network Statement 2016 – Annex H“

By closer analysis of the text has been found:

1227 access points of private sidings

750 traffic (mainly railway stations) - to which are connected

279 owners of the sidings

*5. Data relating to private sidings placed in service before the entry into force of Directive 2008/57/EC shall be collected and inserted into the register of infrastructure in accordance with the national implementation plan referred to in an Article 6(1) **by 16th of March 2019** at the latest*

5 **The timetable for the implementation of the register of infrastructure - schedule proposal**

Num.	Name	Date
1.	EU Corridors	Until 30 th September 2015
2.	The data about the infrastructure put into service after the 16 th March 2012	Until 30 th September 2015
3.	Main tracks, TEN-T corridors	Until 31 st May 2016
4.	Main tracks - national	Until 16 th March 2017
5.	Regional tracks	Until 30 th November 2018
6.	Private regional railways	Until 16 th March 2019
7.	Private sidings - side tracks	Until 16 th March 2019

6 Technical and financial solution of national register of railway infrastructure

In order to ensure the function of National register of infrastructure NSA - Rail Authority concluded a contract for the software supply and for operational support and software maintenance services (SWÚ) RINF application with the company OLTS Group, a.s.

Rail Authority has charged the Project Manager who has long-term experiences with the solution of Information system of Infrastructure, to supply the data in cooperation with SŽDC Infrastructure manager and also authorized him to represent NSA in “RINF-Network” working group in ERA.

6.1 About OLTIS Group, a. s

Company OLTIS Group, a.s. is a modern and dynamically developing software company specializing in the development of software applications, IT systems, and system maintenance and operation specific to the field of transport, logistics and infrastructure.

The company is characterized in the following activities and structure of related companies:

INFORMATION SYSTEM FOR TRANSPORT AND LOGISTICS

- development of complex and flexible software solutions
- a number of tailored IT components
- wide range of transport functions
- stable quality of products and long-term success
- a number of prestigious awards granted by our customers
- participation in European railway research Shift²Rail as one of the founders

SPECIALIZED SOFTWARE COMPANIES

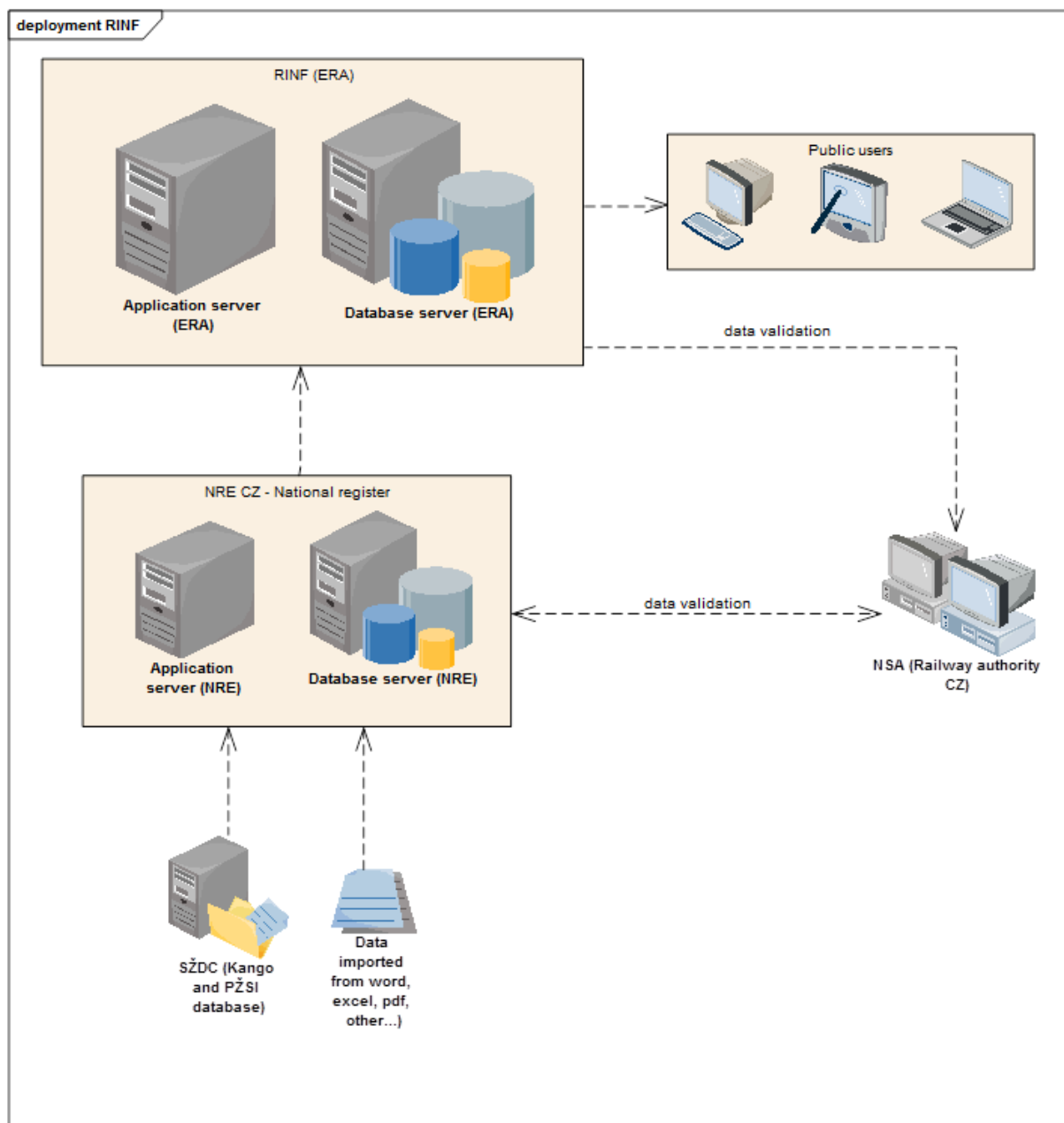
- Czech private group of specialized software companies
- close and effective cooperation since 1993
- the main development facilities in Czech republic
- subsidiaries in Slovak republic, Poland and Hungary
- representatives in Germany, Ukraine, Belarus and Russia
- a total of 340 employees, most of them with university and high school education/degree

6.2 The architecture of National register of railway infrastructure

The software for the management of National register of infrastructure (RINF) receives the data mainly from the information systems of railway infrastructure - SŽDC, ensures their adjustment into proper format required by Implementing Decision 2014/880/EU, TSI directives of infrastructure and ERA guidelines for RINF management.

The solution is implemented as web application on Windows OS platform.

The following schematic diagram shows links between central European system and National register of infrastructure system.



6.2.1 Description of the application SW of National register of infrastructure

Application RinfMap is realized in 3-tier architecture on Microsoft servers with Oracle database and is available from Rail Authority intranet (internal network)

Application security copies and database are provided by Rail Authority IT department.

Application include:

a) **Database**

- Oracle SE is used as the role of database
- Server is situated in a separate HW department

b) **Application core**

- Provides communication between the databases and web part
- Is running as Windows service with the name: "AppPlatform - RINF core"
- For its proper functionality needs .NET Framework 4 and Oracle client

c) **Web part**

- Web page contains RinfMap Silverlight module
- Published as a web application
- To launch maps on client computer it requires Internet Explorer with enabled installation of Silverlight 4 and higher. (It installs automatically when application is launched for the first time)

6.3 Organizational support of the National register of infrastructure project

The implementation of National register of infrastructure is provided within the Rail Authority by Rail Authority authorized persons, through the preparation of tasks and documents for suppliers.

The operation of Register of infrastructure is provided by the Department of the Office of the Director of the Rail Authority, Department of Internal Administration on hardware and software placed at the Rail Authority workplace in Prague.

The input data for the initial filling of RINF are gathered by exports from Information systems of infrastructure manager SŽDC, from publicly available information within the Statement about the Railways and with the help of questionnaires on specific SŽDC, Czech Railways and sidings operator workplaces.

Possibility to add Interoperability certificates into the system will be available after the local legislative changes and in accordance with the relevant legislation of the Czech republic.

For the next regular annual update of RINF system, the SŽDC Infrastructure manager is planning to add required items into the own information systems.

To complement the data from private tracks and sidings - “private siding” in 2018 - 2019 appropriate legislative amendments and application development is needed - web forms for collecting the required data.

6.4 Financial guarantee of the National register of railway infrastructure project

Financial guarantee of the project from the allocated funds from the Ministry of Transport covers operational software support for National register of infrastructure and operating costs in the data center of Railway Authority, but it does not include the costs for data collection, from which a significant part is not currently available in railway operational and infrastructure systems.

6.5 List of reference documents

Ref.Document	Official release in EU journal	The last update	Version/ Notes	Abbreviation
[1] Commission implementing Decision 2011/633/EU of 15 September 2011 on the common specifications of the register of railway infrastructure	L 256, 1.10.2011	15.09.2011	repealed	
[2] Commission Decision 2012/757/EU of 14 November 2012 concerning the technical specification for interoperability relating to the 'operation and traffic management' subsystem of the rail system in the European Union and amending Decision 2007/756/EC	L 345	14.11.2012	Draft Decision amending 2012/757/EU was approved by RISC in November 2014	OPE TSI
[3] Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community	L 191, 18.7.2008			
[4] Commission Implementing Decision 2014/880/EU of 26 November 2014 on the common specifications of the register of railway infrastructure and repealing Implementing Decision 2011/633/EU	L 356 12.12.2014			RINF Decision
[5] Rinf – Application Guide of the Common specification of the register of Infrastructure	ERA - WEB	Guide Version 1.1 21/05/2015	ERA Document	
[6] RINF XML Data Validation Guide	ERA - WEB		ERA Document	
[7] SŽDC – Statement Network 2015	SŽDC - WEB	4.12.2013		
[8] SŽDC - Statement Network 2016	SŽDC - WEB	12.12.2014		
[9] The Railway Act No. 266/1994 Collection		Act number 180/2014 Coll..		