

## OSJD activities towards the development of information technologies in 2023

*For the past years, OSJD has been focusing increasing attention on the implementation and development of modern information technologies in order to ensure a higher level of services and increase the competitiveness and efficiency of railways. Mario MATTA, specialist of the Permanent Working Group on Coding and Information Technologies (PWG CI), dwells in his article on the activities performed by OSJD in this area.*

Over the past years, OSJD has significantly intensified the activities in the field of coding, information technologies and digitalisation, which is also evidenced by the great interest of OSJD railways and affiliated enterprises in participating in the work of the PWG CI. This was witnessed evidently during the final meeting of the PWG CI held from 14 through 16 November 2023 at the OSJD Committee in a hybrid mode. The meeting was attended by a record number of delegations from OSJD railways: Azerbaijani Railways CJSC (AZD CJSC), Byelorussian Railway State Association (BC), Hungarian State Railways Co. (MAV Co.), “Kazakhstan Temir Zholy” National Company JSC (“KTZ NC” JSC), Latvian Railway SJSC (LDZ), Lietuvos geležinkeliai JSC (Lithuanian Railways JSC (LTG)), Russian Railways OJSC (RZD OJSC), Railways of the Slovak Republic (ŽSR), Cargo Slovakia Railway Enterprise JSC (ZSSK Cargo), Ukrainian Railways JSC (UZ), Estonian Railway JSC (EVR), as well as OSJD affiliated enterprise – PLASKE JSC and the OSJD Committee.

As part of the agenda, the progress in the implementation of the OSJD PWG CI Work Plan for 2023 was reviewed and the draft Report “On the OSJD PWG CI work progress for 2023” was agreed upon on the subjects “Coding and information technologies”, “Paperless technology for the transportation of goods in international

railway traffic”, “Carrying out international financial payments using paperless technology”, “Security of information resources and information and telecommunications infrastructure”.

The following draft documents were also reviewed and agreed upon: decision of CGD meeting XXXVIII, PWG CI Work Plan for 2024, PWG CI Work Programme for 2025 and subsequent years in the part “Coding and Information Technologies”.

Within the framework of subject No. 1 “**Coding and Information Technologies**”, two expert meetings were held in 2023 in a hybrid mode: from 6 till 7 March and from 10 till 11 October 2023, at which the work progress on individual subtopics was reviewed.

*“Creation of a Database of Railway Service Facilities of OSJD member countries (RSF DB)”*



*Final meeting of the PWG CI  
(14-16.11.2023, OSJD Committee, in a hybrid mode)*

Development and administration of the RSF DB: sources for financing the development process, choice of developer

For the meeting on 6-7 March, a proposal was received on the draft requirements for the RSF DB from the “KTZ NC” JSC, and for the meeting on 10-11 October, the proposals were received from BC, where it was noted that business processes are currently not defined with which the RSF DB will be used, and also only the OSJD Commission on Transport Policy and Development Strategy supported the proposal of the PWG CI experts to create a RSF DB.

At the initial stage BC proposed to fill the RSF DB with codes for stations, separate points, marshalling stations, stopping points, as well as border and transition points of railways, or to leave the railway enterprises the right to decide for themselves which of their objects are to be coded.

The technical platform where the RSF DB will be located shall provide the necessary and sufficient protection of resources from specific security threats. In order to exclude the entry of incorrect data or data not satisfying the required structure, it is proposed to install appropriate controls when filling in the RSF database.

BC has also proposed to consider two options for making additions and amendments into the RSF DB:

option 1: in the railway administrations of the OSJD member countries, responsible persons should be appointed for the assignment and management of codes;

option 2: the basis for making changes is to consider the Application of the railway administration of the OSJD member countries for the inclusion of changes in the RSF DB for a particular service facility to the responsible body authorised by the OSJD to maintain the RSF DB. In turn, the responsible specialist of the authorised body, within five working days, on the basis of a request from the railway administration of the OSJD member countries, assigns a code to the railway ser-



*Secretary of the OSJD Committee Attila Kiss addressing the final meeting of the PWG CI during its opening (14.11.2023, OSJD Committee)*

vice facility, makes changes to the RSF DB and sends a notification (notice) about the changes made to the railway administrations of the OSJD member countries RSF DB in accordance with the Application.

Coordination of the creation of the RSF DB with OSJD commissions (inviting representatives to a meeting or receiving relevant conclusions from them)

At meetings of:

- the OSJD Commission on Transport Policy and Development Strategy on 7-10 November 2022, the participants considered the request for the creation of the RSF DB and, following the discussion of this issue, the majority of participants at the Commission meeting supported this proposal of the PWG CI experts;
- the OSJD Commission on Transport Law on SMGS Issues on 15-18 November 2022, the participants, in accordance with the request of the PWG CI expert meeting, took note of the material on this issue;
- the OSJD Commission on Passenger Traffic on 25-27 October 2022, the Chairman of the Commission informed about the decisions of the PWG CI regarding the creation of the RSF DB of the OSJD member countries and proposed to discuss the feasibility of creating such a Database for service facilities of the passenger complex.

The participants of the meeting on 6-7 March 2023 addressed the PWG CI specialist with the request:

- to organise the preparation of additional information for the OSJD Commission on Transport Policy and Development Strategy;
- to address once again the OSJD Commission on Freight Traffic;
- to address the OSJD Commission on Infrastructure and Rolling Stock with a request to include and consider the issue of the feasibility of creating the RSF DB on the agenda of the next meeting.

PWG CI experts addressed the chairs of the I, II, III and IV OSJD commissions with a request to include the issue of creating a Database of Railway Service Facilities of OSJD member countries (RSF DB) (items 1.1. and 1.2.), including the definition of business blocks in which it is intended to use information from the RSF DB, in the agenda of the next meetings of the OSJD commissions, and the results of the discussions would then be sent to the PWG CI specialist.

At the final meeting of the PWG CI, the participants were informed that:

- at the final meeting of the OSJD Commission on Freight Traffic (10-13 October 2023), information was presented on the ongoing work to create the RSF DB, which the meeting participants took note of;
- at the final meeting of the OSJD Commission on Infrastructure and Rolling Stock (7-9 November 2023), information was also provided on the ongoing work to create the RSF DB. During the discussion of this issue, the majority of participants supported the possibility of creating the RSF DB. The delegation of the Ukrainian Railways JSC at this stage refrained from creating such a database.

*Determination of the circle of users (railway companies, carriers, observers, affiliated enterprises and other transportation participants)*

At the meeting on 11-12 October 2022, during the discussion, the participants came to the conclusion that it would be advisable to postpone the discussion of this issue until positions are received from the I, II, III and IV OSJD commissions. During the discussion on this issue, the meeting participants interested in creating the RSF DB concluded that the circle of users should consist of railway companies, carriers, observers, affiliated enterprises and other transportation participants. These users must have appropriate levels (roles) of access to the RSF DB in accordance with the tasks they solve (data entry, data viewing).

An opinion was expressed on the advisability of creating a Leaflet that would contain provisions on the structure, regulations for maintaining and levels (roles) of access to the RSF DB and that it would be advisable for all railways of the OSJD member countries to fill the database for the full functioning of the RSF DB. The draft Leaflet containing provisions on the structure, maintenance regulations and levels (roles) of access to the RSF DB was presented by the “KTZ NC” JSC to the final meeting of the PWG CI. Comments and proposals on the project will be considered in 2024.



*Consideration of the agenda items of the PWG CI final meeting (14-16.11.2023, OSJD Committee, in a hybrid mode)*



### ***Updating of the joint OSJD/UIC Leaflet O 920-13 “Unified coding and data structure required in international freight traffic”***

The RZD OJSC presented a comparative analysis of the codes of the joint OSJD/UIC Leaflet O 920-13 (Part III, Annex 3 and Part III, Annex 6) and OSJD Leaflet O+R 944 (data element 4441), which was posted on the OSJD extranet. In 2024, the leading duty holder, ZSSK Cargo, will prepare proposals for updating the joint OSJD/UIC Leaflet O 920-13, taking into account the comparative analysis of the codes of OSJD/UIC Leaflet O 920-13 and OSJD Leaflet O+R 944, presented by the RZD OJSC.

The final meeting agreed on the inclusion of this topic in the draft PWG CI Work Plan for 2024.

### ***Updating of the OSJD/UIC Regulations on the administration of companies codes***

At the meeting in October 2022, the participants considered further work on this topic appropriate and agreed on the inclusion of this subject in the draft PWG CI Work Plan for 2024, provided that the OSJD cooperation with the UIC and ERA organisations is resumed.

### ***Migration of joint OSJD/UIC leaflets O 920, O 920-1, O 920-2, O 920-13, O 920-14 into international railway solutions (IRS)***

In accordance with the official letter from the UIC dated 4 May 2022, cooperation with OSJD was suspended, and further work on migration of joint OSJD/UIC leaflets into international railway solutions (IRS) was suspended until the resumption of cooperation between the organisations. The participants of the final meeting of the PWG CI took note of the information and agreed on the inclusion of this topic in the draft PWG CI Work Plan for 2024, provided that cooperation between the organisations is resumed.

### ***Cooperation with UIC in 2023***

In 2023, the 75<sup>th</sup> meeting of the OSJD/UIC Joint Group “Coding and Information Technology” did not take place, and the UIC representatives did not take part in the meetings of PWG CI experts on subject No. 1 “Coding and Information Technology” in 2023.

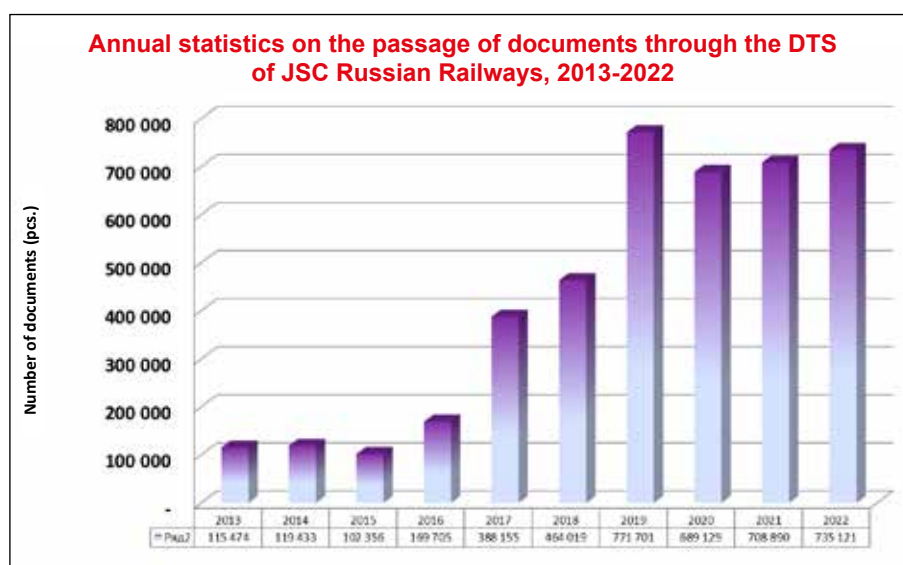
The participants of the final meeting of the PWG CI agreed on the inclusion of this topic in the draft Work Plan of the PWG CI for 2024.

Subject No. 2 “**Paperless technology for the carriage of goods in international railway traffic**” was discussed in 2023 at two expert meetings.

### ***Information support for freight transportation in international railway traffic (EDI) and transportation using electronic transport documents (E-CONSIGNMENT NOTE)***

At the final meeting (15-17 November 2022), BC presented the meeting participants with the information material “Technology for the exchange of electronic shipping documents in a scanned form for international freight railway traffic between BC and LTG”, which was taken into account.

The final meeting of the PWG CI agreed on the publication of this information



***Information from the RZD OJSC’s presentation on the annual statistics of the documents flows passing through the RZD OJSC DTS for 2013-2022***

in the draft “Report on the results of PWG CI work for 2023” and the inclusion of the topic in the draft PWG CI Work Plan for 2024.

### ***Updating technical specifications for IFTMIN electronic messages***

The RZD OJSC presented a proposal to expand the Technical Specification of the IFTMIN electronic message for the CIM/SMGS consignment note and the forwarding railway memorandum bill/accompanying

document in order to transmit data on the name of the railway station in the LOC/ZRP, LOC/5 segments (in the SMGS→CIM direction), LOC/8, LOC/7, LOC/41, LOC/42, LOC/13, LOC/Z05, LOC/Z08 in various languages and indications in data element 5479 of the LOC segment of the language code in which the information in the invoice is filled in.

In October 2023, the RZD OJSC carried out works to update the IFTMIN technical specifications, taking into account the comment received from the BC about the need to supplement Leaflet O+R 943 with examples indicating the transmission in the IFTMIN electronic message of the mass of cargo in kilograms, expressed as an integer with clarification of grams after decimal separator.

At the final meeting of the PWG CI, the leading duty holder, RZD OJSC, informed the participants that no comments or proposals had been received from the concerned railways and affiliated OSJD enterprises, and presented a consolidated draft of technical specifications for IFTMIN electronic messages.

### ***Updating OSJD Leaflet O+R 943***

The leading duty holder for OSJD Leaflet O+R 943, the RZD OJSC, prepared working material on the draft updated Leaflet and informed about the state of affairs in updat-



***PWG CI expert meeting on the subjects “Coding and information technologies” and “OSJD Website” (10-11.10.2023, OSJD Committee)***

ing Leaflet O+R 943, taking into account the changes that arose during the revision of the Technical Specification of the IFTMIN electronic message for the consignment note CIM/SMGS and the forwarding railway memorandum bill/accompanying document regarding the addition of segments: LOC/ZRP of group 1, LOC/5 (in the direction SMGS→CIM), LOC/8, LOC/7, LOC/41, LOC/42, LOC/13, LOC/Z05, LOC/Z08 of group 9, indicating in data element 5479 the language code in which the information in the consignment note is filled in and presented a consolidated draft of the updated Leaflet, taking into account the changes that were made during the addition of segments with examples explaining the transmission in the IFTMIN electronic message of the values of cargo weight in kilograms, expressed as an integer with clarification of grams after the decimal separator. The draft of this OSJD Leaflet was agreed upon and submitted for approval by CGD meeting XXXVIII as the XVII edition.

### ***Updating OSJD Leaflet O+R 944***

In accordance with the PWG CI Work Plan for 2023, the leading duty holder for OSJD Leaflet O+R 944 – the RZD OJSC – prepared a consolidated draft of the updated Leaflet and informed about its supplementing with data element 5479 “Interconnection Code” in order to

indicate the language code in the LOC segments, on which the information in the consignment note is filled in, as well as the serial number of the line/section of transportation according to the shipment route. The final meeting of the PWG CI agreed on the draft of this Leaflet and submitted it for approval by CGD meeting XXXVIII as the XVI edition.

***Development of a draft concept for application of XML or JSON formats using Web services to describe the structures of electronic documents and electronic messages***

The RZD OJSC informed about the outcomes of works on reviewing the received data set for SMGS and CIM/SMGS consignment notes, using UN/CEFACT standards, in order to discuss comments with UN/CEFACT experts and participants in the OSJD PWG CI meeting. The experts came to the conclusion that it is advisable to continue work related to supplementing the data set of the Multimodal Transport Reference Data Model (MMT RDM) within SMGS and CIM/SMGS consignment notes for the development of technical specifications for electronic messages in the XML format based on this model and the creation of a new OSJD Leaflet within the framework of the work of the PWG CI on this subject. The UN/CEFACT Chairman proposed holding regular meetings between UN/CEFACT and OSJD PWG CI specialists to discuss, jointly edit and make additions to the MMT RDM.

The RZD OJSC expressed its readiness to take on the role of a leading duty holder in the development of technical specifications in cooperation with the experts from UN/CEFACT and UNECE and informed about the results of the process of developing a draft technical specification and a diagram (graphic structure) of an electronic message with SMGS consignment note data in the XML standard format CEFACT based on the current dataset of the Multimodal Transport Reference Data Model and the corresponding XSD schema published on the UN Website.

The RZD OJSC prepared its proposals for adjusting the data set for the SMGS consign-

ment note in the XML format in order to supplement the Multimodal Transport Reference Data Model (MMT RDM), and UN/CEFACT experts prepared an updated XSD schema taking into account a number of proposals for supplementing the data set for the SMGS consignment note in the XML format.

The PWG CI experts and UN/CEFACT specialists discussed open issues and agreed to continue their work on creating an up-to-date MMT RDM data set in order for PWG CI participants to prepare a technical specification for an electronic message with SMGS consignment note data in the XML format of the CEFACT standard.

During the discussion, the Ukrainian Railways JSC expressed its opinion on the advisability of resuming work on the preparation of the draft document “The concept of using XML or JSON formats using Web services to describe the structures of electronic documents and electronic messages”.

The Ukrainian Railways JSC considers it appropriate to carry out joint work with the experts from UNECE and UN/CEFACT in the area of “Coding and Information Technology” (including on expanding the Multimodal Transport Reference Data Model (MMT RDM) in terms of the railway transport segment based on OSJD leaflets and on the development of the technical specification of an electronic message in XML/JSON format for the SMGS railway consignment note and accompanying documents based on the Multimodal Transport Reference Data Model (MMT RDM), conclude a memorandum/cooperation agreement.

For electronic exchange of data and documents, the Parties to the Electronic Data Interchange (EDI) Agreement may use other data exchange formats.

The Ukrainian Railways JSC noted that for the electronic exchange of data and documents, participants in the transportation of goods in international railway traffic can agree on the use of an electronic message developed by one of the transportation participants or a third party (regardless of the standards).

Activities in the draft PWG CI Work Plan for 2024 include the creation by the RZD OJSC of technical specifications in the XML format;

EVR, in turn, will analyse the developed draft technical specifications, determining the features of displaying data elements in the JSON format.

At the final meeting of the PWG CI, the RZD OJSC proposed to begin developing a draft of a new Leaflet regulating the use of technical specifications for electronic messages in the XML or JSON formats based on the Multimodal Transport Reference Data Model MMT RDM UN/CEFACT, and took the initiative to take on the role of the leading duty holder.

The final meeting of the PWG CI approved the results of the experts' work and agreed on the inclusion of topics in the draft PWG CI Work Plan for 2024.

On subject No. 3 **“Carrying out international financial settlements using paperless technology”**, two expert meetings were held in video conferencing mode in 2023: on 9-10 March and on 12-13 October.

***Provision by the railways concerned in working on the subject of proposals for organising financial settlements based on electronic documents, COACSU electronic messages, and other aspects of this subject***

UN/CEFACT has created a special group that deals with financial accounting. UN/CEFACT supports two types of UN/EDIFACT messages in this area: COACSU (Commercial account summary message) and CHACCO (Chart of accounts message), as well as a reference data model, including financial accounting for trade. During the discussion of this issue at the expert meeting, it was agreed that the PWG CI specialist would forward to UN/CEFACT the technical specifications of the COACSU electronic message in the UN/EDIFACT standard with a request to inform about the availability of a similar data set in the reference data model.

The UN/CEFACT group, which focuses on standards for data exchange for auditing and financial accounting, is in the process of developing a reference data model in this area. The experts from OSJD member countries who are concerned in these works can take part in the work of the joint UN/CEFACT and OSJD

group, having previously submitted an application to participate in this group. Professionals interested in the work of the UN/CEFACT group on digitalisation of financial documents may contact Ms. Anita Patel, chairperson of UN/CEFACT on digitalisation of financial documents (anipatel@nperspective.ca) and Ms. Kamola Khusnitdinova, secretary of UN/CEFACT (kamola.khusnutdinova@un.org).

The Ukrainian Railways JSC has informed that when organising financial settlements based on electronic documents, it will use electronic messages in the XML format.

The participants in the PWG CI final meeting took note of the information and agreed on the inclusion of this subject in the draft PWG CI Work Plan for 2024.

On subject No. 4 **“Security of information resources and information and telecommunications infrastructure”**, an expert meeting was held on 5-6 September 2023 in a hybrid format, and at the final meeting of the PWG CI it was agreed upon to carry out works and include the subject and works in the draft Work Plan of the PWG CI for 2024.

***Development and generalisation of experience in the use of electronic digital signature and TTP technologies to ensure the legal significance of electronic document management in the implementation of bilateral and multilateral cross-border railway traffic***

During the expert meeting, the participants heard information from the BC leading duty holder, presented on the results of the transfer of freight transportation in bilateral traffic to electronic transportation documents, as well as on the organisation of the implementation of multilateral interaction schemes.

Representatives of RZD OJSC in their presentation informed the meeting participants about the projects carried out in 2022-2023. activities to organise and support various, including new, areas of cross-border electronic interaction on the basis of legally significant electronic transportation documents when carrying out international freight transportation.

***Analysis and development of projects for the use of TTP technology to implement the task of using accompanying, customs and other technological documents in international traffic, ensuring cross-border interaction of government organisations and enterprises related to the international railway traffic***

The leading duty holder, BC, prepared the information on the results of the use of TTP technology to implement the task of using electronic accompanying, customs and other technological documents in international traffic, ensuring cross-border interaction of government organisations and enterprises related to the implementation of international railway transportation in international traffic.

In addition to this information, representatives of the RZD OSJC informed the meeting participants about projects using TTP technology.

***Updating OSJD Leaflet R 941-4 “Typical technical specifications of cross-border cooperation between public key infrastructures used by railways operated by member countries of the OSJD” in terms of taking into account new and clarifying practically implemented schemes of cross-border bilateral and multilateral information cooperation***

During the expert meeting on 5-6 September 2023, information from the RZD OJSC was taken into account on the results of monitoring changes in practically implemented schemes of cross-border bilateral and multilateral information cooperation.

In the reporting period, it was established that these changes do not go beyond the technologies presented in OSJD Leaflet R 941-4 “Typical technical specifications of cross-border cooperation between public key infrastructures used by railways operated by OSJD member countries”, which is why it was not updated.

It was considered expedient to continue works on the further development of OSJD Leaflet R 941-4 in terms of including new schemes for cross-border information cooperation in the event of their approval by the railway administra-

tions of the OSJD member countries and clarifying practically implemented schemes, including multilateral cooperation schemes.

***Operation and maintenance of the Specification Bank Portal on cross-border interaction schemes, including maintenance the English version. Updating the technological and software solutions contained on the Portal in case new cross-border interaction schemes are put into permanent operation, as well as the placement of regulatory and administrative documents and technical information (standards, specifications) related to electronic signature technology and TTP that have entered into force***

During the expert meeting on 5-6 September 2023, the leading duty holder, RZD OJSC, informed the meeting participants about the work being carried out in 2022-2023 to support the Specification Bank Portal on cross-border interaction schemes, including its English version.

***Monitoring and analysis of the projects in the field of cross-border electronic interaction carried out in the European Union and countries of the Asia-Pacific region. Preparation of recommendations for taking into account new regulatory and technical documents when carrying out cross-border transportation based on electronic signature technology and TTP, including their placement on the Specification Bank Portal on cross-border interaction schemes***

During the expert meeting on 5-6 September 2023, the leading duty holder, RZD OJSC, presented to the PWG CI experts a report on the monitoring and analysis of projects in the field of cross-border electronic interaction carried out in the European Union and the countries of the Asia-Pacific region.

***Updating leaflets O+R 941 “Security of shared information resources and information and telecommunication infrastructure” and R 941-2 “Organisational and legal measures to ensure information security in railway trans-***



*port”, taking into account the practice and accumulated experience of using the technology of paired TTP in international railway cross-border traffic*

During the expert meeting on 5-6 September 2023, the leading duty holder, BC, informed the participants that the updating of OSJD leaflets O+R 941 “Security of shared information resources and information and telecommunication infrastructure” and R 941-2 “Organisational and legal measures to ensure information security in railway transport” was not carried out due to the lack of necessity.

***Study and analysis of new information technologies to create a trusted space for electronic interaction in railway transport, including issues of cross-border validation using TTP technology***

The leading duty holder, RZD OJSC, presented information on the development of the latest information technologies aimed at creating a trusted space for interaction between participants in electronic interaction.

The final meeting of the PWG CI approved the proposal of the Ukrainian Railways JSC to develop other methods of transmitting legally significant electronic documents in cross-border traffic.

**Subject No. 5 “Information support for freight and passenger traffic. Technical specifications for interoperability (TAF TSI and TAP TSI)”**

***Preparation and holding of the Workshop on the implementation of technical specifications for interoperability in freight and passenger international railway traffic (TAF TSI and TAP TSI)***



***PWG CI expert meeting on the subjects “Coding and information technologies” and “OSJD Website” (06-07.03.2023, OSJD Committee, in a hybrid mode)***

The Workshop on the implementation of technical specifications for interoperability in international freight and passenger railway traffic (TAF TSI and TAP TSI) did not take place in 2023, and with the resumption of cooperation with the UIC, the Workshop in 2024 is scheduled for May 28 in the videoconferencing mode.

On subject No. 6 “**OSJD Website**”, two expert meetings were held in a hybrid format in 2023: on 6-7 March and 11-12 October.

### ***OSJD Website***

During the expert meetings, the participants were informed about the progress of work on maintaining the OSJD Website and took note of the report prepared by the management company Inex LLC on the ongoing work on maintenance and technical support of the OSJD Website for January-September 2023.

The minutes and materials of the final meeting are posted on the internal portal of the OSJD Website in the extranet of the PWG on Coding and Information Technology. The document-subject search identifier is ID = 1857, file search through the “Ready documents” entry. ■