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| **EUROPEAN UNION AGENCY FOR RAILWAYS - Railway Systems Unit** | | | |
|  | | | |
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**EUROPEAN UNION AGENCY FOR RAILWAYS**

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# Scope

This document defines the testing process performed to evaluate the compliance of the train composition, train running and error messages exchanged between the Czech Infrastructure Manager Company SŽDC (Správa Železniční Dopravní Cesty) and Railway Undertakings against the SŽDC Compost data catalogue XSD which is based on the TAF TSI data catalogue XSD is 5.3.1. (https://www.era.europa.eu/node/641/6).

The difference between aforementioned SŽDC Compost XSD and TAF TSI data catalogue XSD is 5.3.1 can be summarized as follows. Two elements in the Compost XSD *TrainRunningData* have been changed, namely:

* element *ExceptionalGaugingInd*
  + XSD Compost type boolean
  + XSD TAF 5.3.1 type InfoIndex, enumeration 10,20,30
* element *DangerousGoodsIndicator*
  + XSD Compost type boolean
  + XSD TAF 5.3.1 name DangerousGoodsIndication, type DanGoodsType .

Based on the differences between the Compost and the TAF 5.3.1 XSDs indicated above it was clear from the very beginning of the testing that hard compliance of to the SŽDC messages to TAF 5.3.1 XSD can be demonstrated with the restriction to above two element changes.

# System Design

The SŽDC provided ERA in October 2018 with a set of XML (and supporting XSD data catalogue version Compost) files containing TAF TSI Regulation’s Train Composition, Train Running and Error Messages[[1]](#footnote-1) in order to enable ERA to perform this evaluation:

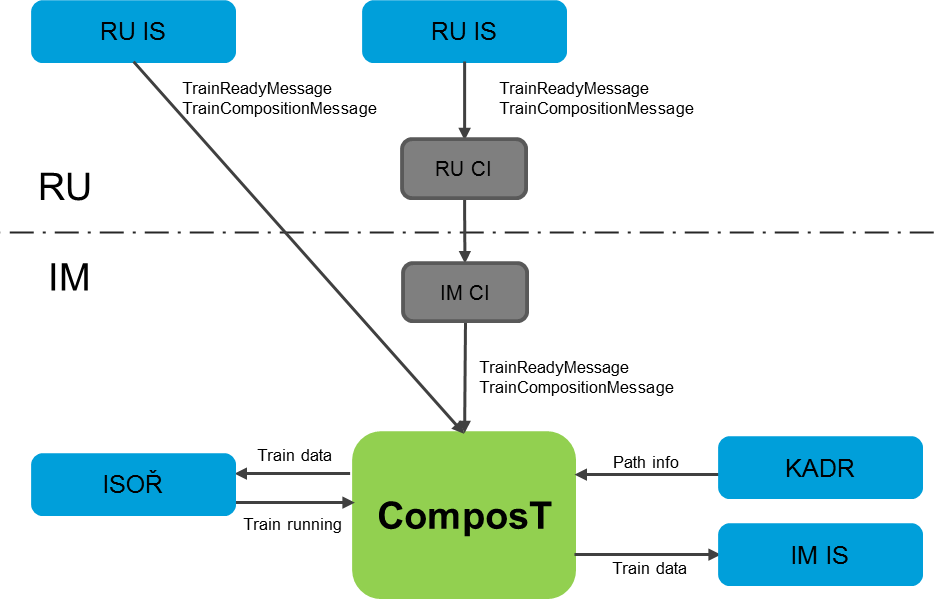
* 1\_TCM.xml TrainCompositionMessage
* 1\_TCM\_Confirmation.xml ReceiptConfirmationMessage on TCM
* 2\_TRM.xml TrainReadyMessage
* 2\_TRM\_Confirmation.xml ReceiptConfirmationMessage on TRM
* 3\_ErrorMessage.xml ErrorMessage .

Essential functionality of COMPOST

* Interface to the KADR system - receiving and processing of train paths allocated by the infrastructure manager to railway undertakings
* Receiving of train composition messages and train ready messages from the IT systems of the railway undertaking in the format 5.3.1 TAF TSI
* Interface to SŽDC Operational Management System (ISOŘ)
* the transmission of train comosition messagess and train ready messages
* receiving train ride reports
* Providing train composition data to other SŽDC IT systems (e. g. EDD, GTN, GRADO – IT systems on station level; KAPO – IT system KAPO – IT systém for use of infrastructure fee etc)

Communication with other systems

* Web service
* Common interface



# Roles

The team of ERA in charge of the regulation TAF TSI has performed the tests and has documented the results of the test campaign. The SŽDC contributed at expert level to ERA in the case of some technical or business process related questions.

# Test Cases

This section defines the link between the TAF TSI messages and the corresponding SŽDC IS Compost messages:

|  |  |
| --- | --- |
| **Message in TAF TSI** | **SŽDC IS Compost message** |
| Train Composition message | 1\_TCM.xml |
| Train Composition message confirmation | 1\_TCM\_Confirmation.xml |
| Train Running message | 2\_TRM.xml |
| Train Running message confirmation | 2\_TRM\_Confirmation.xml |
| Error message | 3\_ErrorMessage.xml |

# In order to perform data and mapping analyses ERA has used Altova XML Spy 2016 tool.

# 5 Results

# 5.1 Train Composition and Confirmation messages

# SŽDC IS Compost XML messages are hard compliant against the TAF TSI data catalogue 5.3.1 *with the restriction* to above two element changes *ExceptionalGaugingInd* and *DangerousGoodsIndicator* (see compliance explanation in chapter 1 above and mapping details in Annex 1).

# 

# 5.2 Train Running and Confirmation messages

# SŽDC IS Compost XML messages are hard compliant against the TAF TSI data catalogue 5.3.1 (see compliance explanation in chapter 1 above and mapping details in Annex 2).

# 5.3 Error message

# SŽDC IS Compost XML message is hard compliant against the TAF TSI data catalogue 5.3.1 (see compliance explanation in chapter 1 above and mapping details in Annex 3).

|  |  |
| --- | --- |
| Test results summary | |
| Test run on : | 26 October 2018 |
| Test result : | Passed |
| Test run by: | vargami |
| Test validated: | vargami |

# Conclusions

The tests performed by ERA based on agreement with SŽDC to validate the compliance of the Train Composition, Train Running and Error Messages from SŽDC’s Compost system delivered satisfactory results.

The SŽDC may therefore use the results of the assessment performed by ERA as a proof of the compliance (with above two element restrictions) of its own Train Composition, Train Running and Error Messages from above chapters 4 and 5 against the TAF TSI data catalogue 5.3.1.

# Additional recommendations

ERA recommends the company SŽDC to migrate in the future above messages to the official TAF Data Catalogue XSD version 2.2.2 in order to achieve TAF hard compliance accros its users’ community and to pave the way for the succesfull implementation of the TAF TSI Regulation.

# Annex 1 – SŽDC Train Composition and Confirmation Messages used for compliance testing

**1\_TCM.xml**

<?xml version="1.0" encoding="UTF-8"?>

<TrainCompositionMessage xmlns="http://provoz..." xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://provoz.szdc....\_v5.3.xsd">

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<WagonNumberOfAxles>6</WagonNumberOfAxles>

<AirBrakeType>3</AirBrakeType>

<BrakingPowerVariationDevice>8</BrakingPowerVariationDevice>

<AirBrakeSpecialCharacteristic>2</AirBrakeSpecialCharacteristic>

<HandBrakeType>1</HandBrakeType>

<HandBrakeBrakedWeight>23</HandBrakeBrakedWeight>

<WagonWeightEmpty>27160</WagonWeightEmpty>

</WagonTechData>

</WagonData>

<WagonData>

<WagonNumberFreight>98765432109</WagonNumberFreight>

<WagonTrainPosition>17</WagonTrainPosition>

<WagonOperationalData>

<BrakeType>P</BrakeType>

<BrakeWeight>76</BrakeWeight>

<WagonMaxSpeed>100</WagonMaxSpeed>

<ExceptionalGaugingIdent>

<IM\_Partner>54</IM\_Partner>

<ExceptionalGaugingCode>CD RCC CZ MZ 3016-18</ExceptionalGaugingCode>

</ExceptionalGaugingIdent>

<TotalLoadWeight>48529</TotalLoadWeight>

</WagonOperationalData>

<WagonTechData>

<WagonLength>2639</WagonLength>

<WagonNumberOfAxles>6</WagonNumberOfAxles>

<AirBrakeType>3</AirBrakeType>

<BrakingPowerVariationDevice>8</BrakingPowerVariationDevice>

<AirBrakeSpecialCharacteristic>2</AirBrakeSpecialCharacteristic>

<HandBrakeType>1</HandBrakeType>

<HandBrakeBrakedWeight>23</HandBrakeBrakedWeight>

<WagonWeightEmpty>27190</WagonWeightEmpty>

</WagonTechData>

</WagonData>

<WagonData>

<WagonNumberFreight>98765432109</WagonNumberFreight>

<WagonTrainPosition>18</WagonTrainPosition>

<WagonOperationalData>

<BrakeType>P</BrakeType>

<BrakeWeight>83</BrakeWeight>

<WagonMaxSpeed>100</WagonMaxSpeed>

<ExceptionalGaugingIdent>

<IM\_Partner>54</IM\_Partner>

<ExceptionalGaugingCode>CD RCC CZ MZ 3016-18</ExceptionalGaugingCode>

</ExceptionalGaugingIdent>

<TotalLoadWeight>55741</TotalLoadWeight>

</WagonOperationalData>

<WagonTechData>

<WagonLength>2639</WagonLength>

<WagonNumberOfAxles>6</WagonNumberOfAxles>

<AirBrakeType>3</AirBrakeType>

<BrakingPowerVariationDevice>8</BrakingPowerVariationDevice>

<AirBrakeSpecialCharacteristic>2</AirBrakeSpecialCharacteristic>

<HandBrakeType>1</HandBrakeType>

<HandBrakeBrakedWeight>23</HandBrakeBrakedWeight>

<WagonWeightEmpty>27190</WagonWeightEmpty>

</WagonTechData>

</WagonData>

<WagonData>

<WagonNumberFreight>98765432109</WagonNumberFreight>

<WagonTrainPosition>19</WagonTrainPosition>

<WagonOperationalData>

<BrakeType>P</BrakeType>

<BrakeWeight>67</BrakeWeight>

<WagonMaxSpeed>100</WagonMaxSpeed>

<TotalLoadWeight>40186</TotalLoadWeight>

</WagonOperationalData>

<WagonTechData>

<WagonLength>2639</WagonLength>

<WagonNumberOfAxles>6</WagonNumberOfAxles>

<AirBrakeType>3</AirBrakeType>

<BrakingPowerVariationDevice>8</BrakingPowerVariationDevice>

<AirBrakeSpecialCharacteristic>2</AirBrakeSpecialCharacteristic>

<HandBrakeType>1</HandBrakeType>

<HandBrakeBrakedWeight>23</HandBrakeBrakedWeight>

<WagonWeightEmpty>27170</WagonWeightEmpty>

</WagonTechData>

</WagonData>

<WagonData>

<WagonNumberFreight>98765432109</WagonNumberFreight>

<WagonTrainPosition>20</WagonTrainPosition>

<WagonOperationalData>

<BrakeType>P</BrakeType>

<BrakeWeight>77</BrakeWeight>

<WagonMaxSpeed>100</WagonMaxSpeed>

<TotalLoadWeight>49974</TotalLoadWeight>

</WagonOperationalData>

<WagonTechData>

<WagonLength>2639</WagonLength>

<WagonNumberOfAxles>6</WagonNumberOfAxles>

<AirBrakeType>3</AirBrakeType>

<BrakingPowerVariationDevice>8</BrakingPowerVariationDevice>

<AirBrakeSpecialCharacteristic>2</AirBrakeSpecialCharacteristic>

<HandBrakeType>1</HandBrakeType>

<HandBrakeBrakedWeight>23</HandBrakeBrakedWeight>

<WagonWeightEmpty>27030</WagonWeightEmpty>

</WagonTechData>

</WagonData>

</TrainCompositionJourneySection>

</TrainCompositionMessage>

**1\_TCM\_Confirmation.xml**

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<ns1:ReceiptConfirmationMessage xmlns:ns1="http://provoz.szdc...v53" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://provoz.szdc...v5.3.xsd">

<ns1:MessageHeader>

<ns1:MessageReference>

<ns1:MessageType>2007</ns1:MessageType>

<ns1:MessageTypeVersion>5.3</ns1:MessageTypeVersion>

<ns1:MessageIdentifier>987654</ns1:MessageIdentifier>

<ns1:MessageDateTime>2018-09-28T13:57:35.000+02:00</ns1:MessageDateTime>

</ns1:MessageReference>

<ns1:Sender>5554</ns1:Sender>

<ns1:Recipient>5681</ns1:Recipient>

</ns1:MessageHeader>

<ns1:RelatedReference>

<ns1:RelatedType>3003</ns1:RelatedType>

<ns1:RelatedIdentifier>0c480ac7-54d3-44a6-9ff1-e15e407a52d1</ns1:RelatedIdentifier>

<ns1:RelatedMessageDateTime>2018-09-28T13:57:33.000+02:00</ns1:RelatedMessageDateTime>

</ns1:RelatedReference>

</ns1:ReceiptConfirmationMessage>

# Annex 2 – SŽDC Train Running and Confirmation Messages used for compliance testing

**2\_TRM.xml**

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<ns1:TrainReadyMessage xmlns:ns1="http://provoz...v53" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://provoz.szdc.cz/...3.xsd">

<ns1:MessageHeader>

<ns1:MessageReference>

<ns1:MessageType>3006</ns1:MessageType>

<ns1:MessageTypeVersion>5.3</ns1:MessageTypeVersion>

<ns1:MessageIdentifier>12345</ns1:MessageIdentifier>

<ns1:MessageDateTime>2018-09-28T17:48:12.000+02:00</ns1:MessageDateTime>

</ns1:MessageReference>

<ns1:Sender>8781</ns1:Sender>

<ns1:Recipient>8454</ns1:Recipient>

</ns1:MessageHeader>

<ns1:MessageStatus>1</ns1:MessageStatus>

<ns1:TransportOperationalIdentifiers>

<ns1:ObjectType>TR</ns1:ObjectType>

<ns1:Company>7681</ns1:Company>

<ns1:Core>…723-</ns1:Core>

<ns1:Variant>00</ns1:Variant>

<ns1:TimetableYear>2011</ns1:TimetableYear>

<ns1:StartDate>2011-09-28+02:00</ns1:StartDate>

</ns1:TransportOperationalIdentifiers>

<ns1:OperationalTrainNumberIdentifier>

<ns1:OperationalTrainNumber>012345</ns1:OperationalTrainNumber>

</ns1:OperationalTrainNumberIdentifier>

<ns1:TrainContactDetails>+420 123 987654, GSMR</ns1:TrainContactDetails>

<ns1:TrainLocation>

<ns1:CountryCodeISO>CZ</ns1:CountryCodeISO>

<ns1:LocationPrimaryCode>398765</ns1:LocationPrimaryCode>

</ns1:TrainLocation>

<ns1:TrainReadyTime>2011-09-28T17:52:00.000+02:00</ns1:TrainReadyTime>

</ns1:TrainReadyMessage>

**2\_TRM\_Confirmation.xml**

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<ns1:ReceiptConfirmationMessage xmlns:ns1="http://provoz.../v53" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://provoz... compost\_v5.3.xsd">

<ns1:MessageHeader>

<ns1:MessageReference>

<ns1:MessageType>2007</ns1:MessageType>

<ns1:MessageTypeVersion>5.3</ns1:MessageTypeVersion>

<ns1:MessageIdentifier>123456</ns1:MessageIdentifier>

<ns1:MessageDateTime>2018-09-28T17:48:12.000+02:00</ns1:MessageDateTime>

</ns1:MessageReference>

<ns1:Sender>1181</ns1:Sender>

<ns1:Recipient>1080</ns1:Recipient>

</ns1:MessageHeader>

<ns1:RelatedReference>

<ns1:RelatedType>3006</ns1:RelatedType>

<ns1:RelatedIdentifier>98765</ns1:RelatedIdentifier>

<ns1:RelatedMessageDateTime>2018-09-28T17:48:12.000+02:00</ns1:RelatedMessageDateTime>

</ns1:RelatedReference>

</ns1:ReceiptConfirmationMessage>

# Annex 3 – SŽDC Error Message used for compliance testing

**3\_ErrorMessage.xml**

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>

<ns1:ErrorMessage xmlns:ns1="http://provoz...v53" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://provoz.szdc...v5.3.xsd">

<ns1:MessageHeader>

<ns1:MessageReference>

<ns1:MessageType>9000</ns1:MessageType>

<ns1:MessageTypeVersion>5.3</ns1:MessageTypeVersion>

<ns1:MessageIdentifier>987654</ns1:MessageIdentifier>

<ns1:MessageDateTime>2018-09-28T06:40:25.000+02:00</ns1:MessageDateTime>

</ns1:MessageReference>

<ns1:Sender>1171</ns1:Sender>

<ns1:Recipient>1087</ns1:Recipient>

</ns1:MessageHeader>

<ns1:MessageStatus>1</ns1:MessageStatus>

<ns1:AdministrativeContactInformation>

<ns1:Name>XXX</ns1:Name>

</ns1:AdministrativeContactInformation>

<ns1:ErrorCauseReference>

<ns1:MessageReference>

<ns1:MessageType>3006</ns1:MessageType>

<ns1:MessageTypeVersion>5.3</ns1:MessageTypeVersion>

<ns1:MessageIdentifier>12345</ns1:MessageIdentifier>

<ns1:MessageDateTime>2018-09-28T06:40:22.000+02:00</ns1:MessageDateTime>

</ns1:MessageReference>

<ns1:TagReference>TrainReadyMessage</ns1:TagReference>

</ns1:ErrorCauseReference>

<ns1:TypeOfError>1</ns1:TypeOfError>

<ns1:Severity>2</ns1:Severity>

<ns1:ErrorCode>8000</ns1:ErrorCode>

<ns1:FreeTextField>- TrainReadyMessage|V uvedené stanici již existuje událost Připravenost vlaku k odjezdu</ns1:FreeTextField>

</ns1:ErrorMessage>

1. See : <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014R1305&from=EN> – chapters 4.2.3.2 and 4.2.4.2 [↑](#footnote-ref-1)