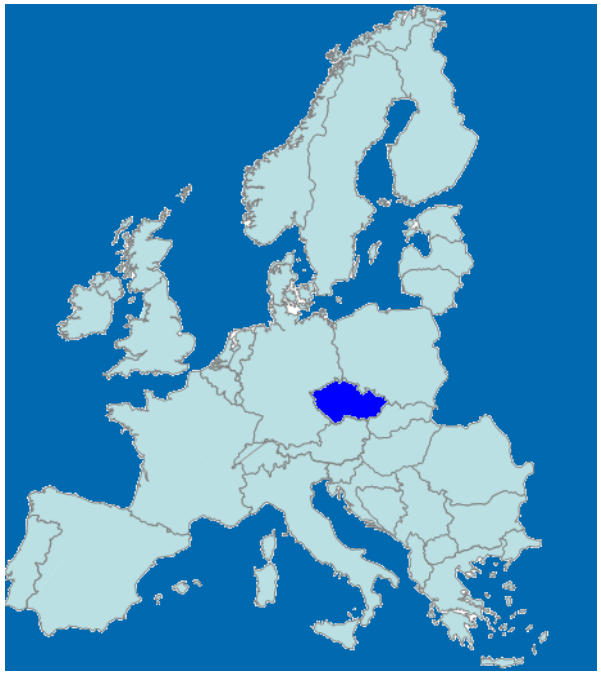
Process of RU communication at SŽDC network compliant with TAF TSI



Miloš Futera

Railway Digitalisation Fair and Conference - 2017

Budapest 18.10.2017

Správa železniční dopravní cesty

Content

- SŽDC – introduction
- IT systems for RU at SŽDC
- Basic process flows – train life cycle
- RU-IM (TAF/TAP) communication at SŽDC
- KADR – news
- Open data - intentions

Správa železniční dopravní cesty

SŽDC – brief info

- SŽDC, state organisation - Správa železniční dopravní cesty
- Infrastructure manager in Czech Republic on railway tracks in state ownership
- Established 1.1.2003

- Main SŽDC functions:
  - operation of the railway infrastructure and its operability,
  - maintenance and repair of the railway infrastructure,
  - development and modernization of the railway infrastructure,
  - allocation of capacity on SŽDC infrastructure to its customers,

- Staff: ca 18 000
- Rail network: 9468 track km
- Number of RUs: 100 (17 with data exchange)

IT systems for RU at SŽDC – (simplified)

- ComposT - train composition, train ready - to be WIMO

- APORT – download of of electronic TT
- DOMIN – database of infra restrictions
- ETD - source of electronic TT for loc driver
- GRAPP - train movement display in map
- ISOŘ – traffic management
- KADR - ad hoc request, path allocation
- KAPO – use of infrastructure fee
- MIMOZA – special consingment
- REVOZ - vehicle register - to be RSRD

- KANGO - yearly TT process,
- KANGO KMEN - description of infrastructrure

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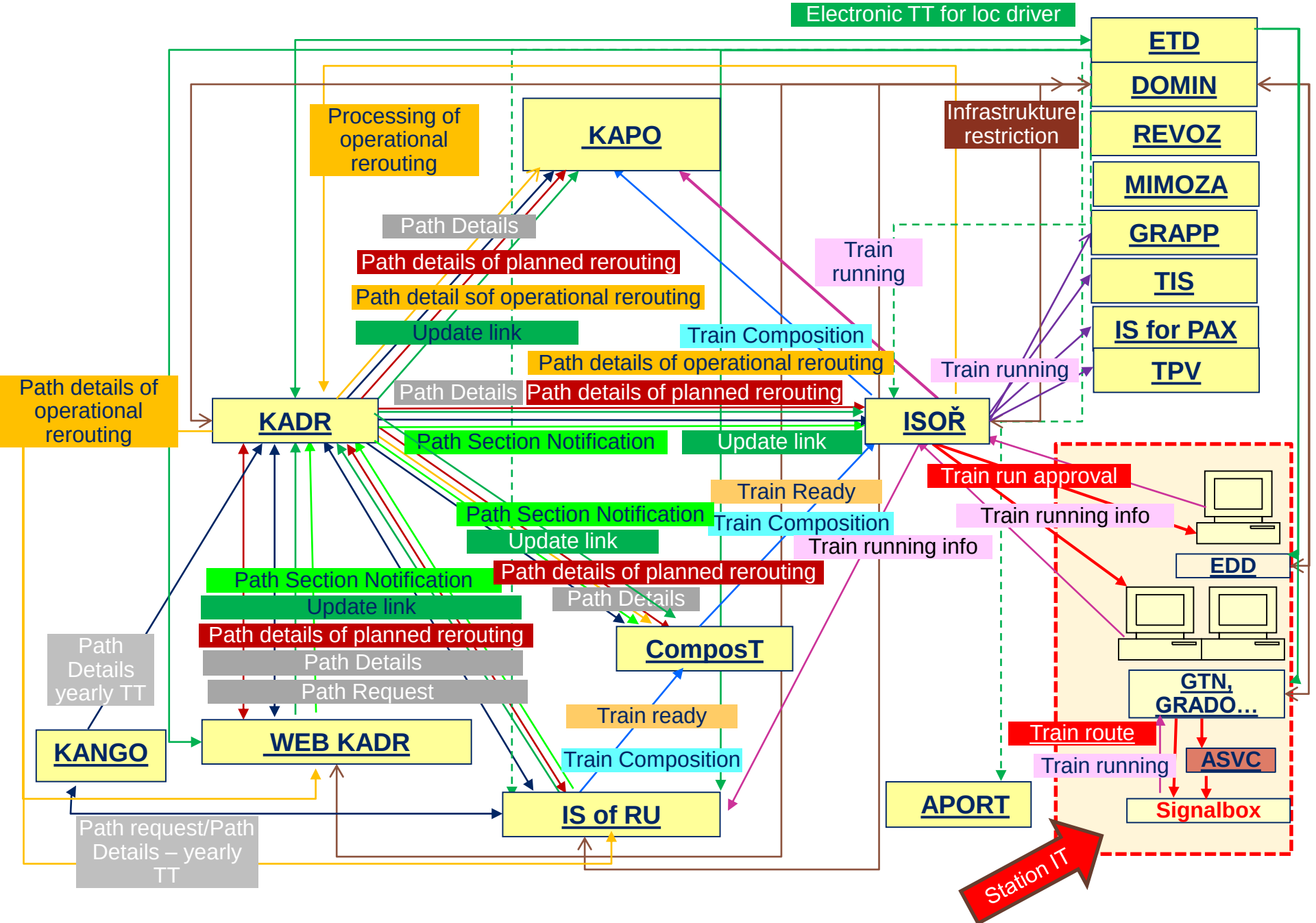
- RNE PCS - ´Path coordination system – owned by
- RNE TIS – Train information system – owned by R

SŽDC IT Systems (simplified)



RU-IM (TAF/TAP) communication in CZ – brief introduction

- **Brief history of TSI implementation in CZ:**
  - **First intention - 2006**
  - **First implementation - 2008 – web application using TSI structure**
  - **First TAF TSI data communication – 2010**
- **Summary of reasons of (successful) implementation:**
  - **Implementation lead by IM (SŽDC) and coordinated with RUs**
  - **TSI TAF/TAP appeared in time of separation of RU and IM functions**
  - **IM and RU feel that TSI TAF/TAP is a as good opportunity to redesign processes within company and with partners**
  - **Both IM and some RUs were active on European level during preparation phase**
  - **Implementation supported by State (Ministry of Transport)**
  - **Historically high level of telematics application in CZ**
  - **Experienced and capable suppliers and developers**

RU-IM (TAF/TAP) communication at SŽDC

- **SŽDC uses for data communication TAF/TAP TSI common messagges in older version of TSI message catalogue with network specific parameters and selected sector messages.**
- **Migration to format 2.1.3 (formally 5.3.1) is in process**
- **Description of data interface is published at provoz.SŽDC.cz (login necessary).**
- **Communication via WS and CI.**

Implemented functions

- Path request
- Train preparation
- Train running

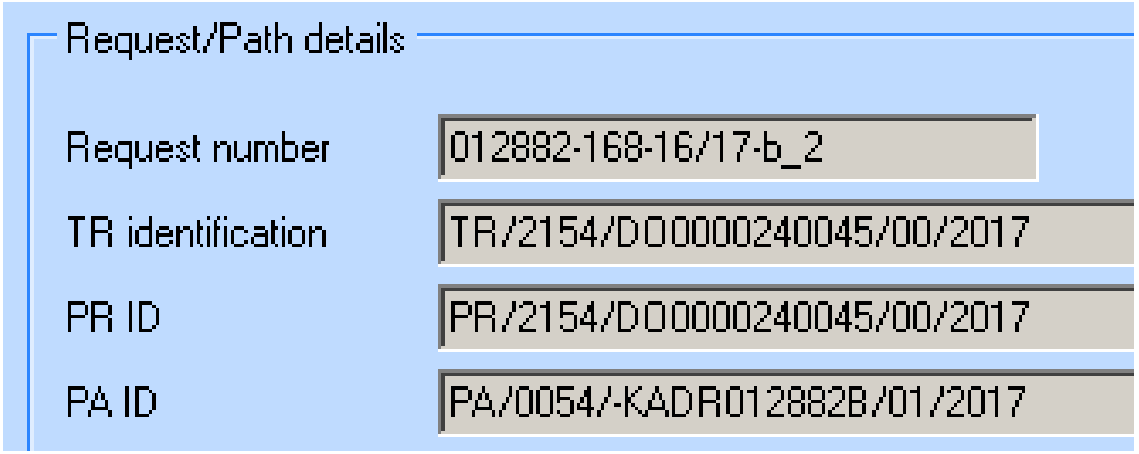
  +

- Train Identification
- Communications - CI
- Reference files – CRD
- Infrastructure restrictions

Správa železniční dopravní cesty

Train/Path/Request… identification

- TRain Transport ID + PAth ID + Path Request ID
- RU assigns TRID an PRID, SŽDC assigns PAIDs
- TRID and PAID used for planned and day objects
- PRID is not used on train preparation and Train runnning phase
- Embedded in applications, used in messages
- Well accepted by people
- Case Reference ID to be implemented 2018



RU-IM (TAF/TAP) communication in CZ – **ahead of us**

- **Process Path alteration a Path modification – finalization**
- **SŽDC application to CEF Call 2016:**

„Implementation of TSI TAF and TSI TAP in information systems of SZDC – stage 3“

- **Train running forecast**– sophisticated solution of forecast calculation and data communication with RUs and IMs
- **Service disruption** - complex solution of process
- **TSI communication among IMs** in CZ (TAF/TAP data communication among national (small) IMs and RUs.
- **Implementation of TSI TAP** (PRM, information to passengers…)
- **Finalization of RU functions** at SŽDC – RSRD, WIMO

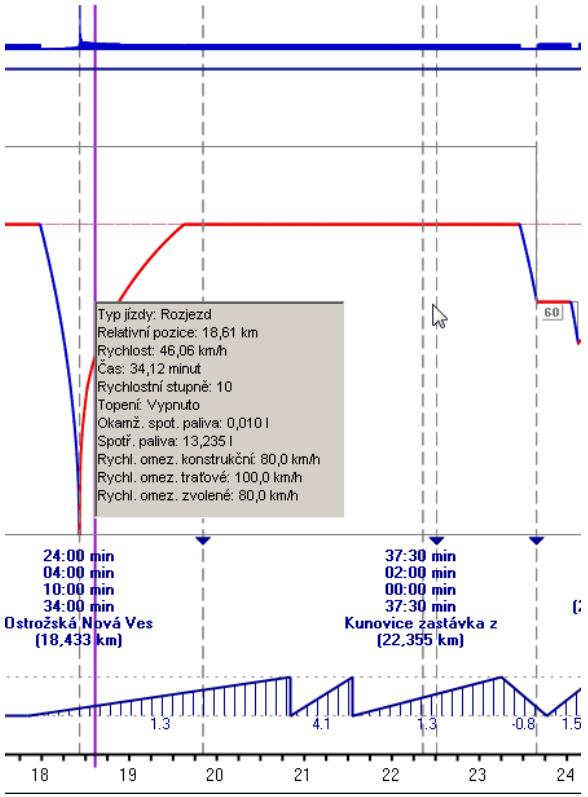
KADR - news

- semi-automatic traffic times calculation.
- Optimal station track is automatically suggested by tool.
- Timetable for locdriver is automatically created by the tool without timetable designer activity.
- Timetable for passenger are automatically created by the tool

KADR - traffic times calculation

KADR enables traffic times calculation based on:

- **Maximal speed given by RU,**
- **Type of train running resistance**
- **Parameters of infrastructure – speed restrictions,**
- **Technical parameters of loco,**
- **Function of loco in a train,**
- **braking percentage,**
- **type of train**



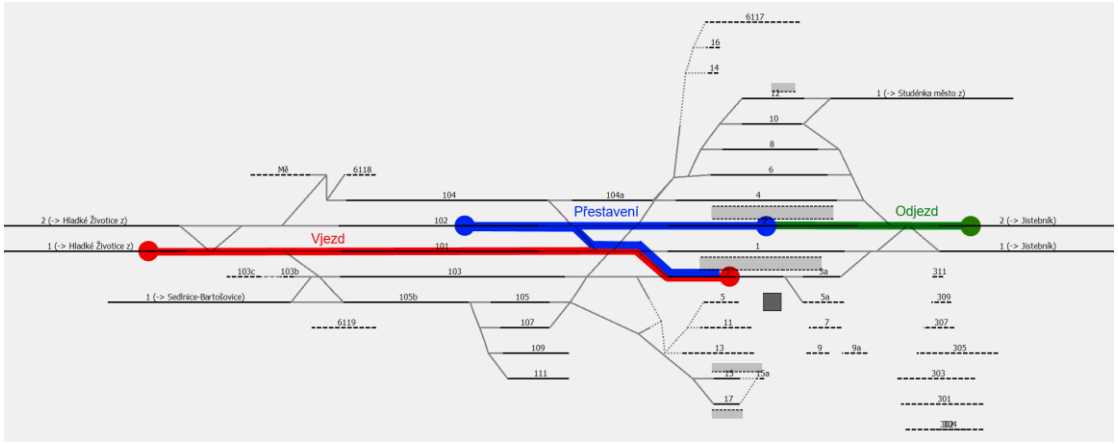
Správa železniční dopravní cesty

KADR – optimal station track suggestion - 1

KADR suggest automatically optimal station track based on sequence of traffic points – defined as shortest route between traffic points given by RU

Precondition for station track to be used

- **there must exist train route between line track and station track.**
- **All suitable station track are detected together with all available routings to respective track and are further evaluated**



Správa železniční dopravní cesty

KADR – optimal station track suggestion - 2

Optimal station track is automatically suggested to TT designer:

- **Only traffic station track are used – no sidings track are used**
- **Station tracks under maintenance are not used.**
- **Passanger trains with passenger stop use station track with platform longer than train – if not possible than station track with shorter platform**
- **All trains must use station track longer than train if possible,**
- **Freight trains with stop use station track longer than length of train and without platform if possible.**
- **Electric loco trains use station track with same catenary system**
- **Station track without change of direction of train run is selected – if possible.**
- **If there is more suitable station tracks – main tracks or fastest connection are used**

KADR – Timetable for locdriver

- **Timetable for locdriver is automatically created based on Train and infrastructure parameters – no TT designer activity is necessary.**
- **When capacity is allocated – than TT is automatically available to RU and SŽDC staff**
- **TT is automatically available as pdf and XML (UIC 612)**
- **As identification of TT is used TAF TSI identification PAID (Path ident)**

Os 11608

Bzenec - Kunovice

TJŘ AD HOC vlaku

Platí: 30.XI.2017

Pro strojvedoucího tohoto vlaku jsou závazné i informace uvedené v tabulce 1 a 3 příslušného SJŘ.

Informace v tabulce 4 platí pouze tehdy, není-li v tomto TJŘ uveden normativ hmotnosti.

Motorový vůz ř. 810.

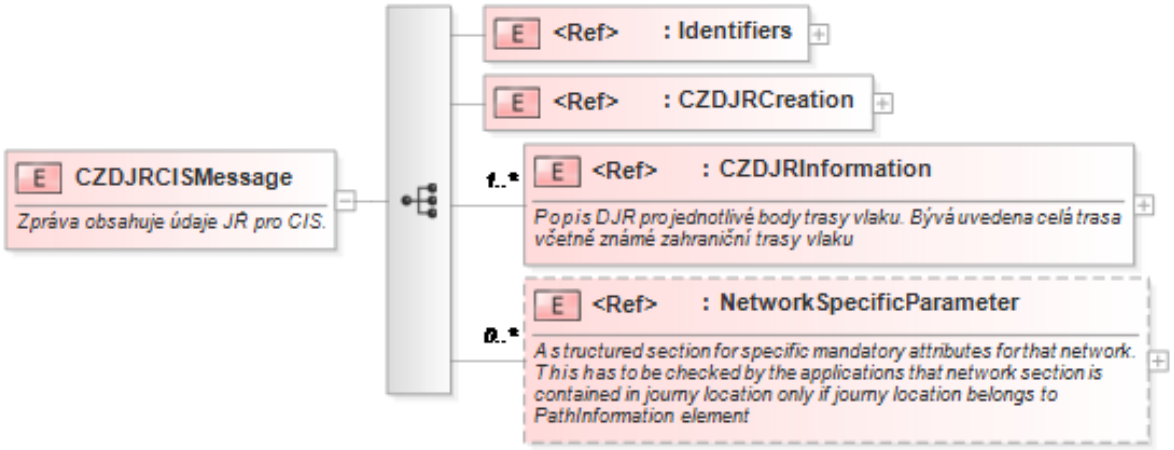
Vlak brzděn I. způsobem brzdění.

1	2	3	5	6	7	8
‹**Bzenec**.....	✣				**22 11**	**80**/57
‹**Veselí nad Moravou**.....	P	**9**			**20**	
Uherský Ostroh.....		**4**	**22 24**	15^{5}	39^{5}	
Ostrožská Nová Ves.....		**4**			43^{5}	
Kunovice.....		6^{5}	**22 50**			

Správa železniční dopravní cesty

KADR – Timetable for passengers

- Based on CZ legislation all public passenger trains must be available to public in XML format from 12/2017
- National format developed - based on TAF TSI message
- When any public passenger created or adopted in KADR – XML is automatically created and uploaded in ftp://ftp.cisjr.cz



Správa železniční dopravní cesty

OPEN DATA – intentions

- There is intention to make available to public open data in extent reasonable to public
- Data available open data format free of charge
- Suggestion of available open data:
  - Description of infrastructure – intention to use format railML 3.1 to be used
  - TT to passenger - TAF TSI XML
  - Passanger train running information and forecast - TAF TSI XML
  - Passenger service available in stations - internal format based on TAF TSI
  - Restriction of infrastructure to passenger - internal format based on TAF TSI

Thank you for attention!
Questions?

Miloš Futera
futera@szdc.cz

www.SŽDC.cz