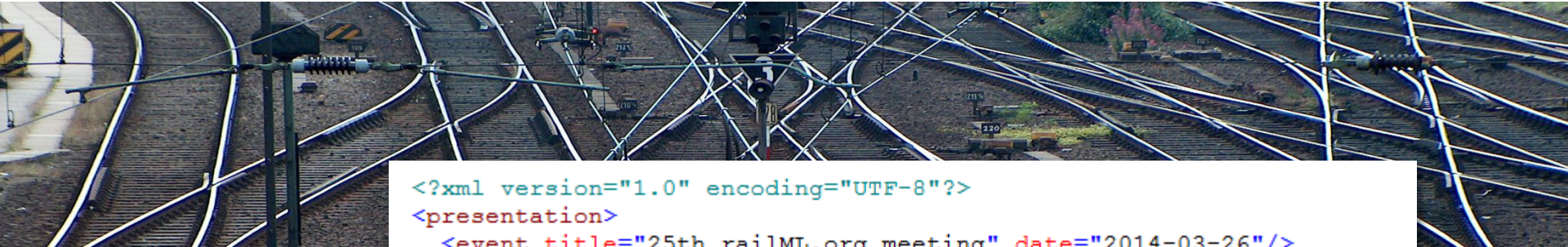


HaCon, TPS and railML 2.2



```
<?xml version="1.0" encoding="UTF-8"?>
<presentation>
  <event title="25th railML.org meeting" date="2014-03-26"/>
  <sessions>
    <session>
      <title>Introduction HaCon as new railML partner</title>
      <speaker>
        <name>Philip Wobst</name>
        <position>Consultant TPS</position>
        <company>HaCon Ingenieurgesellschaft mbH</company>
      </speaker>
    </session>
  </sessions>
</presentation>
```

Agenda

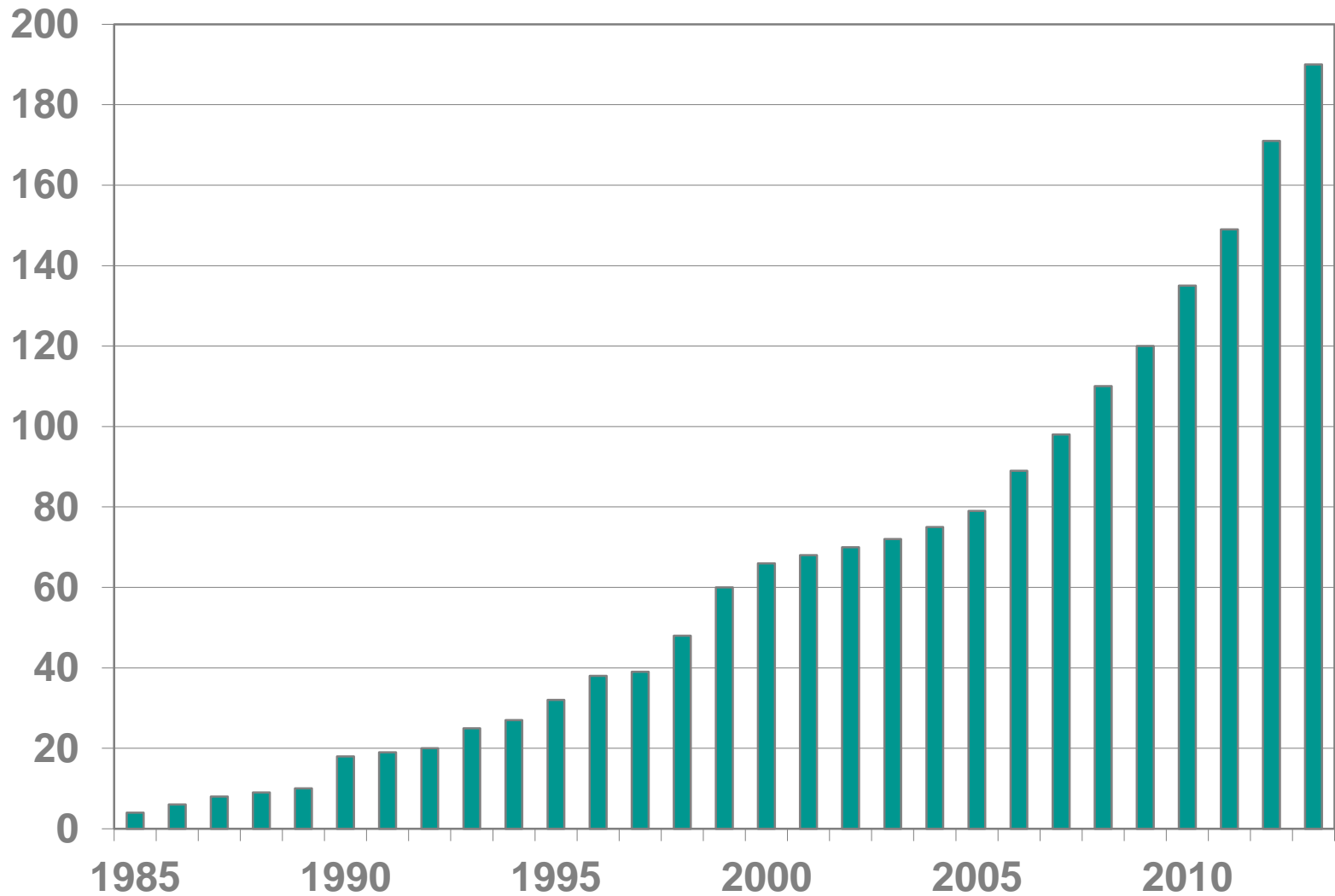
- Vorstellung HaCon und TPS
- Aktuelle railML Projekte

- Ziele und Herausforderungen
- Eigene Erweiterungen
- Ausblick railML 2.3 und 3.0



- Software solutions for timetables
 - Creating, Editing, Controlling
 - Publishing, Maintaining
- Established in 1984
- Based in Hannover
- Owned by management and founders
- 200 employees
- 75% software developers





Employees	...	200
Annual employee turnover rate (fluctuation)	...	2%
Employees with university degree	...	84%
PhDs (Dr.) at HaCon	...	30
Average age of all HaCon employees	...	38
Languages spoken by HaCon employees	...	13
Male employees	...	81%
Female employees	...	19%
Babies born since 2009	...	42



Traffic • Software • Service

Consulting

Software

IT and Projects
Transport and Traffic

Train Planning System
TPS

Timetable Management
TPS Integrator & HIM

Timetable Information
HAFAS

Intermodal Systems

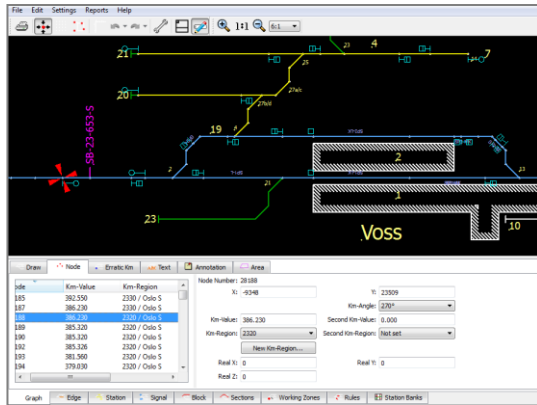
Network Capacity
and Possession
Management

Integration of Timetable
and
Disruption Information

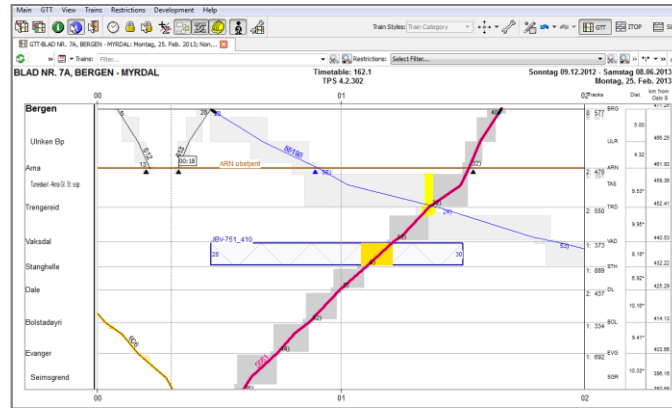
Information
Management

Train Planning System TPS

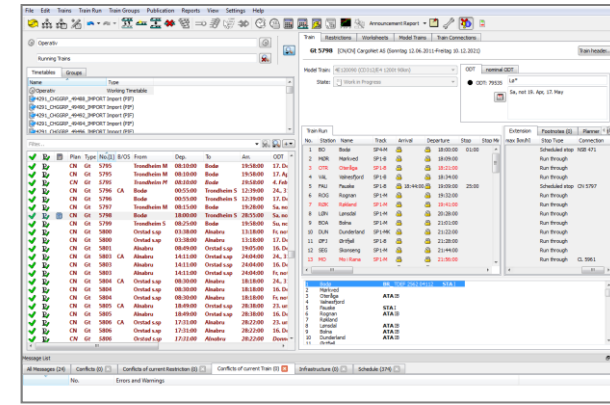
Infrastructure Editor



Graphical Editor



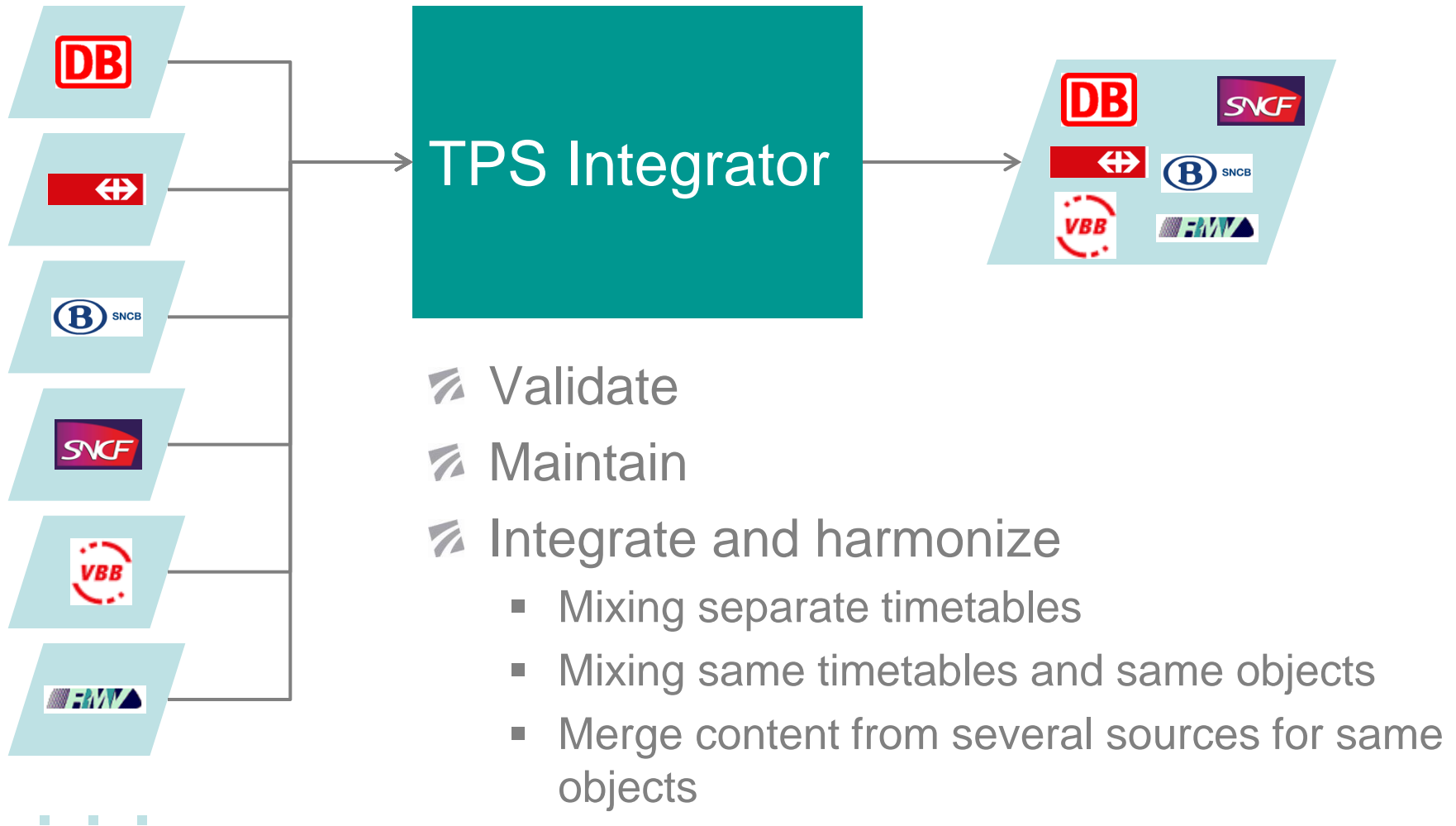
Timetable Editor



References

- DSB - main train operator within Denmark
- Banedanmark - infrastructure manager of Denmark
- Trafikstyrelsen - Regulation Authority within Denmark
- Network Rail - infrastructure manager of the UK
- Réseau Ferré de France - infrastructure manager of France
- SNCF - main train operator in France
- Abellio UK + Scandinavia
- TP Ferro - infrastructure manager Perpignan<->Figueres
- Jernbaneverket - infrastructure manager of Norway
- FMG - Fortescue Rail, Australia





Nationwide solutions

- Germany - Deutsche Bahn AG
- Switzerland - SBB
- Austria - ÖBB
- Poland – PKP
- Luxemburg CFL & CdT
- Denmark - Rejseplanen
- Sweden - Samtrafiken
- Norway – NSB & NRI
- Belgium - SNCB

Railway solutions

- SNCF, NS, DB
- SBB, ÖBB, PKP, CFL
- SNCB, NSB, Irish Rail
- Eurostar, ADIF, UIC
- Network Rail, UK train operators

Other public transport operators

- USA, Great Britain, Ireland
- Germany, Austria, Switzerland
- Italy, Luxembourg, Denmark
- Norway, Sweden, Finland
- New Zealand, Israel, Columbia

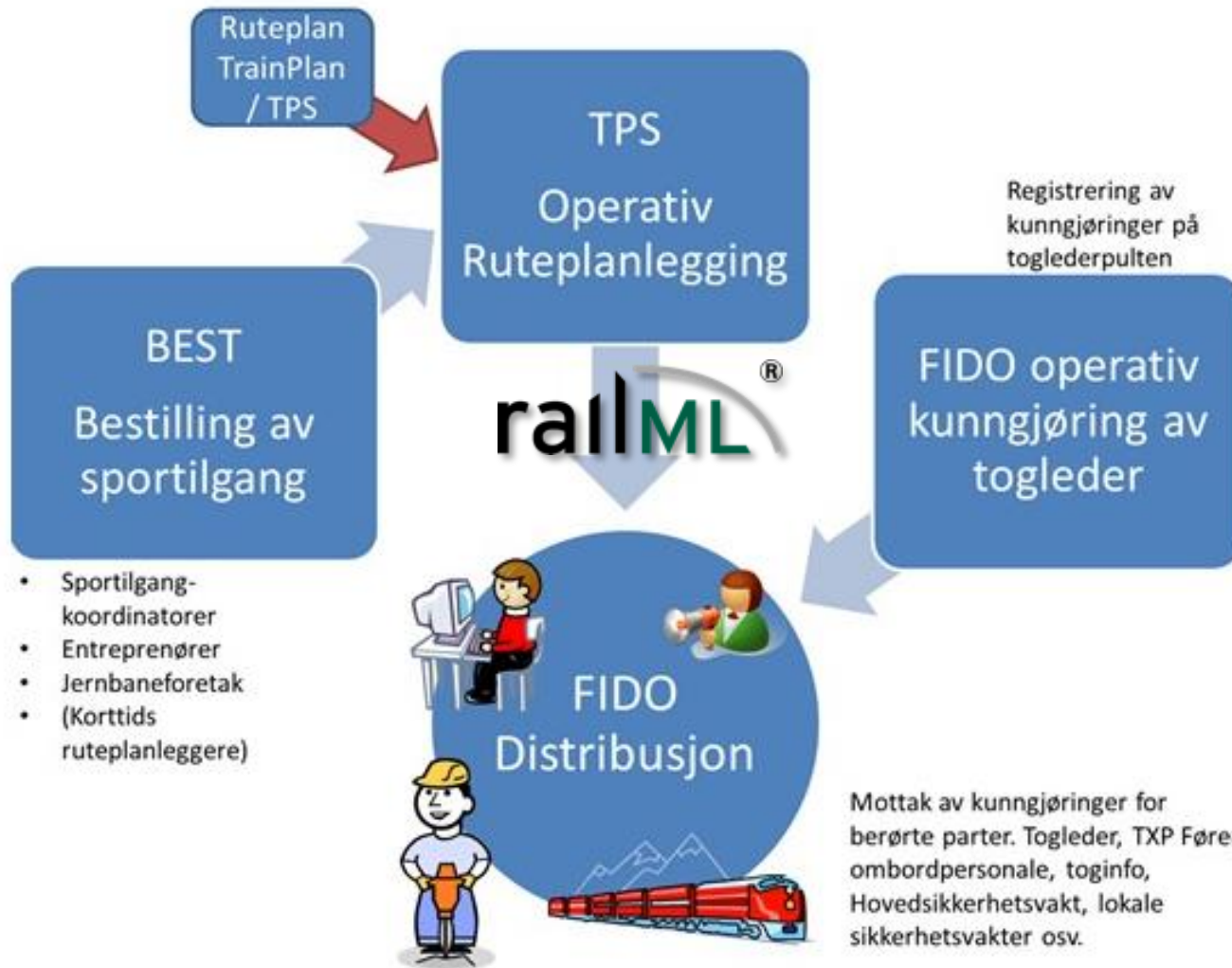
Other

- Nokia, Automotive
- Freight operator





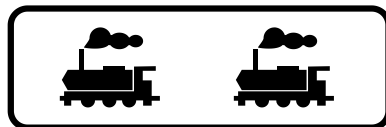
Jernbaneverket



<http://www.jernbaneverket.no/en/Marked/Informasjon-for-togselskapa/Nytt-verktoy-for-bestilling-tildeling-og-kunngjoring-av-ruteplan/>



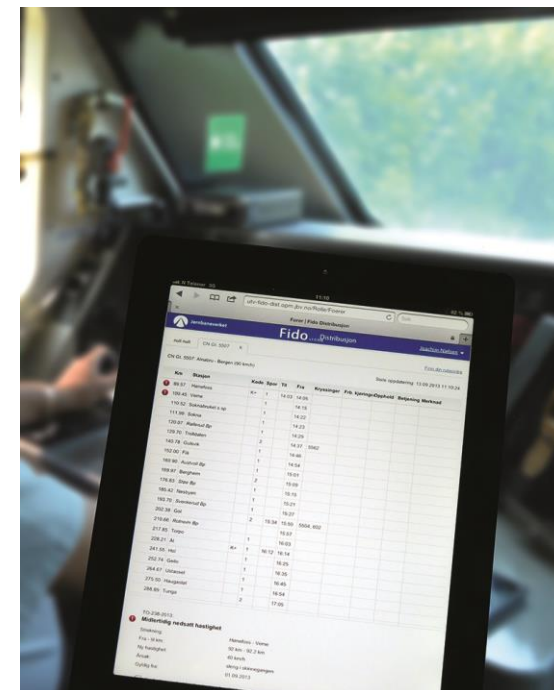
➤ TPS liefert railML 2.2 Daten für



➤ FIDO koordiniert in einem externen System nun die ‚Verteilung‘ an u.a.



- » Triebfahrzeugführer
- » Fahrdienstleiter
- » Disponenten
- » EVU

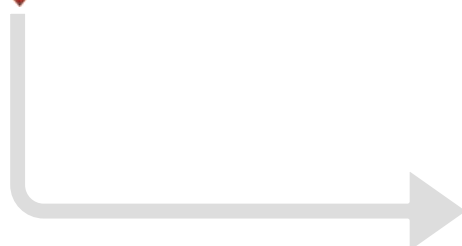


<https://fido.jbv.no/dokumenter/resources/pdf/informasjonsfolder-om-fido.pdf>

TPS liefert railML 2.2



TPS
Train Planning System



railML®



Kundensystem generiert
und verteilt Reports



192 Montag - Freitag

Bemerkungen	ab	-	08:05	08:25	08:45	09:05	09:25	09:45	gleiches Takt bis	12:05	12:25	12:45	13:05	-	13:25	-
S Friedrichsfelde Ost (Berlin)																
Gensinger Str. (Berlin)																
Feierabendheim (Berlin)																
Alt-Friedrichsfelde/Gensinger Str. (Berlin)																
Märkische Allee/Alt-Friedrichsfelde (Berlin)																
Waldbacher Weg (Berlin)																
Berlichamer Weg (Berlin)																
Rudlawer Str. (Berlin)																
S Biesdorf (Berlin)																
Biesdorfer Promenade (Berlin)																
Buschner Str. (Berlin)																
Eisenstr. (Berlin)																
Cecilienstr./Oberfeldstr. (Berlin)																
Melissenstr. (Berlin)																
Adershofer Weg (Berlin)																
Alt-Marzahn (Berlin)																
Hinter der Mühle (Berlin)																
Rebhühweg (Berlin)																
Marzahn Promenade (Berlin)																
S Marzahn (Berlin)																

Rahmenbedingungen

- railML 2.2
- Export definierter Teilmengen
- Fahrplanrelevante Infrastrukturdaten

Ziele

- Vollständige Zuginformationen
- TPS spezifische Erweiterungen minimieren

➤ Zugvarianten



➤ Baustellen



➤ Teilexporte



➤ Zugausfälle



Infrastruktur

- TPS spezifische Definition von Infrastrukturbereichen und Gleisabschnitte für die Referenz bei Baustellen, etc.

Timetable

- **<tps:trainAttributeLists>**: Definition von Zug- und Stationsattributen – werden von train/ocpTT referenziert
- **<tps:restrictions>**: Definition von Einschränkungen der Infrastruktur (Baustellen, etc.)
- **<tps:connections>**: Abbildung von connections ohne referenzierte Züge
- **<ocpTT>**: Zusatzattribute für die Angabe von Gleisinformationen

Darstellung als HTML Datei erleichtert Verifizierung

Summary

Summary of the the first level railML elements

Path	Element	Count	Full XPath
railml/infrastructure	operationControlPoints	72	railml/infrastructure/operationControlPoints
railml/rollingstock	formations	1	railml/rollingstock/formations
railml/rollingstock	vehicles	1	railml/rollingstock/vehicles
railml/timetable	categories	1	railml/timetable/categories
railml/timetable	operatingPeriods	2	railml/timetable/operatingPeriods
railml/timetable	timetablePeriods	1	railml/timetable/timetablePeriods

Train Number: 103C - (ODT: 71330)

trainPart	Model train (m, t, km/h)	Seq.	Station	Track	Arrival	Departure	Attributes	Connections
tp-69462	73160K (220, 462, 160)	1	Oslo S	SP18-U		06:02:00	bidReference jbvPublicationTrainType	TDEF 2389 20042 IC
tp-69462		2	H-sign 259 Oslo	SP1		06:02:57		
tp-69462		3	H-sign 603, Oslo	SP1		06:05:15		
tp-69462		4	Ekeberg Bp.A	SP1		06:06:16		
tp-69462		51	Sandesund	SP1-O	07:21:00	07:24:00		108C ← crossing 108C → crossing 10.06.2013 - 14.06.2013 (bitmask: 11111) 10.06.2013 - 14.06.2013 (bitmask: 11111)
tp-69462		52	Sarpsborg	SP1-OK	07:27:00	07:29:00		

Train Number: 108C - (ODT: 71332)

trainPart	Model train (m, t, km/h)	Seq.	Station	Track	Arrival	Departure	Attributes	Connections
tp-69460		8	Sandesund	SP2-L		07:24:00		103C → crossing 103C ← crossing 10.06.2013 - 14.06.2013 (bitmask: 11111) 10.06.2013 - 14.06.2013 (bitmask: 11111)
tp-69460		17	Haug	SP2-L		07:53:00		105C → crossing 10.06.2013 - 14.06.2013 (bitmask: 11111)
tp-69460		18	Rygge	SP2-L	07:55:30	07:56:00		105C ← crossing 10.06.2013 - 14.06.2013 (bitmask: 11111)
tp-69460		20	Moss	SP1B1A-	08:03:00	08:08:00		1107C → crossing 1107C ← crossing 10.06.2013 - 14.06.2013 (bitmask: 11111) 10.06.2013 - 14.06.2013 (bitmask: 11111)
tp-69460		58	Oslo S	SP17-I	08:51:00			109C → changeTrainNumber 10.06.2013 - 14.06.2013 (bitmask: 11011)

railML 2.3

- Teilmengenübertragung (#247)
- Anschlüsse verfeinern (#244)

railML 3.0

- Zugidentifikation /
Planungszustände (#245)

Roadmap TPS

- Ausbau railML Datenumfang
- Fahrplan Import
- Infrastruktur Export



Vielen Dank für Ihre
Aufmerksamkeit



Traffic • Software • Service

HaCon

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