



**TECHNISCHE
UNIVERSITÄT
DRESDEN**



Faculty of Transportation and Traffic Sciences “Friedrich List”

Institute of Traffic Telematics • Chair of Traffic Control and Process Automation



RailML Validator and Viewer

27th railML.org conference

(March 17st, 2015, Vienna)

Birgit Jaekel and Susanne Wunsch

Chair of Traffic Control and Process Automation

Institute of Traffic Telematics

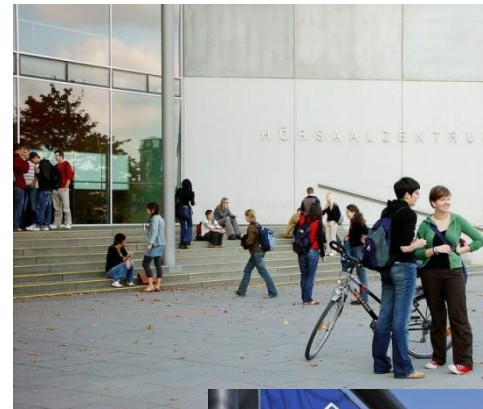
Faculty of Transportation and Traffic Sciences “Friedrich List”

TU Dresden

WIR BEWEGEN DIE WELT.



- University with 14 faculties in four scientific disciplines
 - Engineering
 - arts and social sciences
 - natural sciences
 - medicine
 - approx. 37.000 students
 - approx. 4.300 publicly funded staff members (without medical school)
 - among them approx. 500 professors
 - approx. 3.400 externally funded staff members (without medical school)
- **TU Dresden is the largest university in Saxony and one of the eleven German universities, that were identified as an “excellence university”.**



DRESDEN
concept



railML[®]-related Research Projects

- Driver Advisory Systems (DAS) and Intermodal Transport Control System (ITCS) for different railway undertakings and manufacturers using railML schemas for data exchange
- Research project PiLoNav for Precise Positioning Algorithms and Applications in Railway Transport (funded by a German ministry)
- Research project ON-TIME (funded in European FP7)
- Research project Capacity4Rail (funded in European FP7)
- TU Dresden train driving simulator





Chair of Traffic Control and Process Automation

Prof. Dr.-Ing. Jürgen Krimmling

21 staff members

approx. 800.000 Euro/a external funds

Staff for the project:



Dr. Martin Lehnert



Susanne Wunsch



Birgit Jaekel

UIC-ERIM workgroup Request for Proposal: “railML Validator and Viewers 2014”

Vision:

- UIC RailTopoModel will become an International Railway Standard.
- railML as an established data exchange format will be based on the UIC RailTopoModel.
- A software to view and validate railML data is needed.

→ Development of a railML

- Viewer and
- Validator
- which supports certification process
- as a modular open source framework.



The image shows the cover of a Request for Proposal (RfP) document. At the top right is the UIC logo (International Union of Railways). Below it, the text "UIC ERIM workgroup" is prominently displayed in blue, followed by "railML® Validator and Viewers" in a smaller blue font. Below this, the title "Request for Proposal: railML Validator & Viewer 2014" is written in a smaller, italicized font. At the bottom, there is a row of logos for various railway organizations and companies, including INFRABEL, Network Rail, Jernbaneverket, OBB, RESEAU FERRÉ DE FRANCE, VR, ProRail, railML.org, and SBB CFF FFS.

Views to be implemented

- graphic viewer for timetable data
- tabular viewer for timetable data
- rolling stock data viewer
- topography/topology viewer for infrastructure data
- geographic viewer for infrastructure data
- schema validator for railML



Time schedule (part 1)

PHASE 0

- detailed project plan, adjustment of development environment and test data, implementation of railML import (versions 2.0-2.2)...

PHASE 1

- **timetable views, presentation at railML-Conference...**

PHASE 2

- infrastructure views (incl. version 3.0 MockUp)...

PHASE 3

- rolling stock views, validator, presentation at UIC-ERIM-Conference...

PHASE 4

- support until October 31st, 2016

Technical data

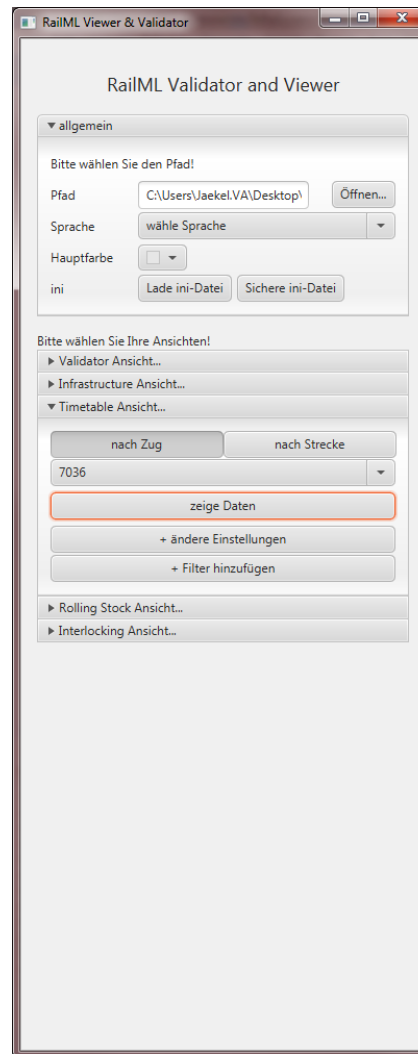
- Open Source software offered
- Implementation with Java and javaFX
- Software delivery for Windows 7, MacOS, Linux...
- Graphical User Interface (GUI) in English and German and easy adaption for other languages
- User manual in English and German
- Enhanced functionality with available Internet access, regarding infrastructure geographic viewer
- Provides printing of diagrams
- Ticket system and Wiki for software development: <http://viewer.railml.org>
- UIC decided for EUPL v.1.1.

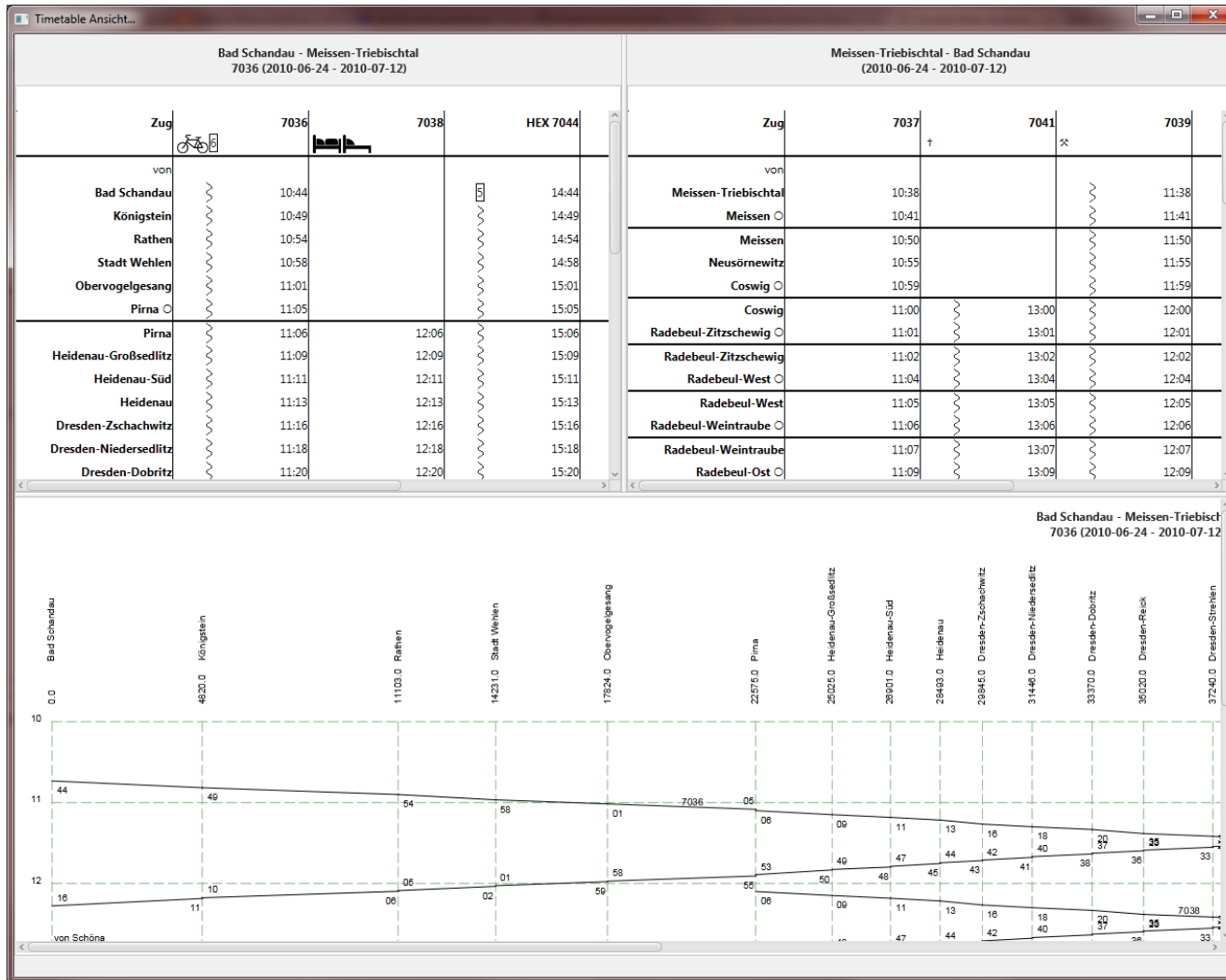
Licence EUPL

- conforms with the specificity and diversity of Member States Law, especially with different copyright law versions.
- is translated into all official languages of the European Union.
- allows to adapt and modify the software for own purposes.
- requires, that original and modified versions of the software and their components must be bound to a compatible Open Source licence in case of distribution. Commercial licences for distribution of this software parts are not possible.
- is already spread among railway related software, like openETCS
- is compatible with GNU General Public License (GPL), that offers a wide range of useful software libraries.
- see licence text under <https://joinup.ec.europa.eu/software/page/eupl/licence-eupl>

Libraries used (as of 03/23/2015)

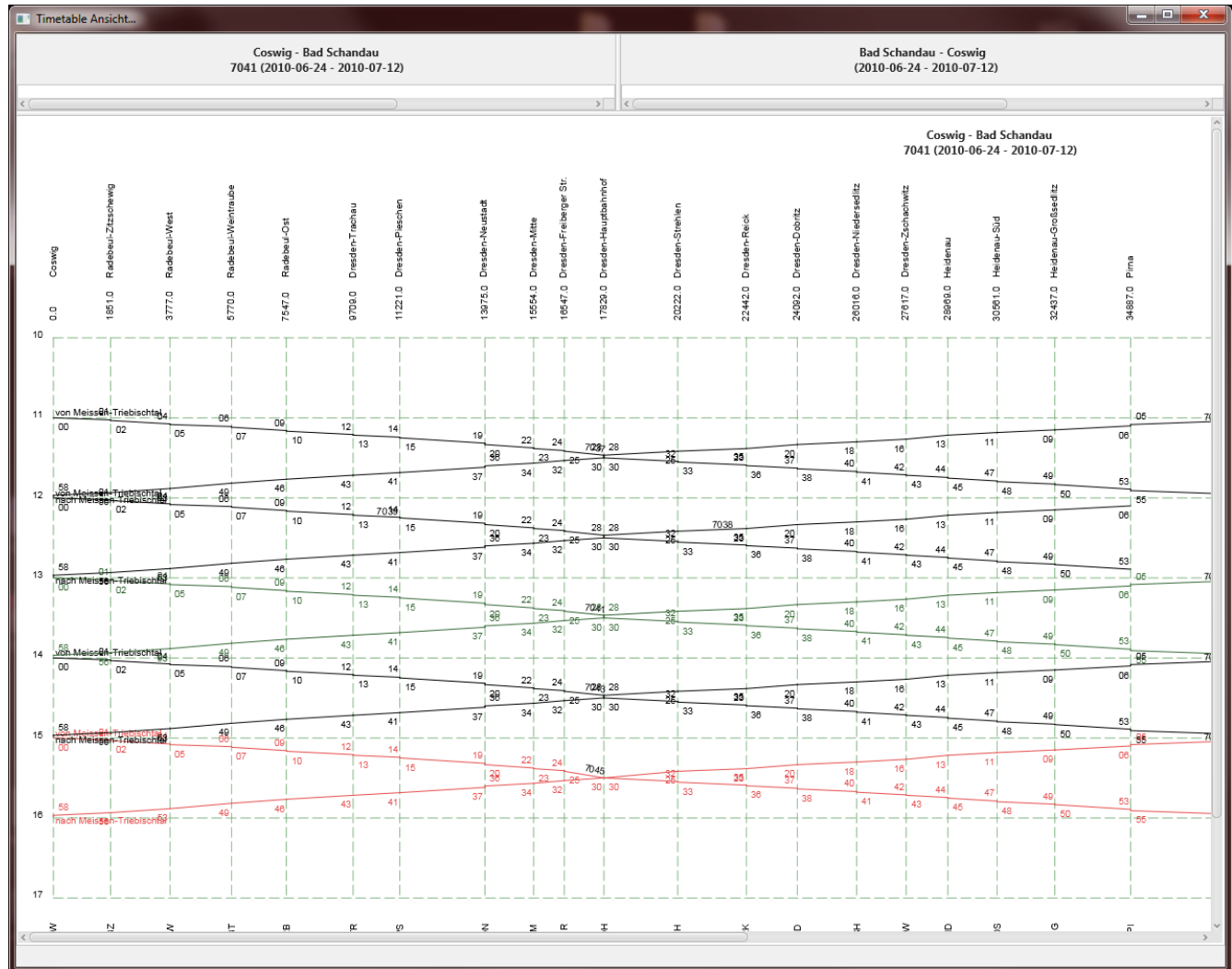
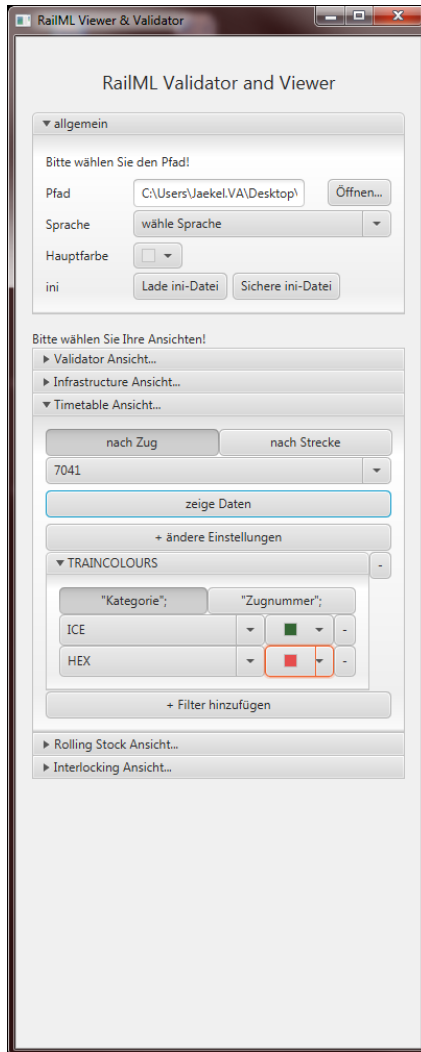
- VTD-XML (GPL); library for fast processing of large xml files
- FXControls (BSD); library supporting spreadsheet view for timetable
- Apache POI (Apache); library for writing excel files from timetable view
- Apache Commons-IO (Apache); handling of zip-files
- iText (AGPL); for PDF producing; may be changed later
- Mapstraction (BSD); JS library for using different map API in infra view with single code

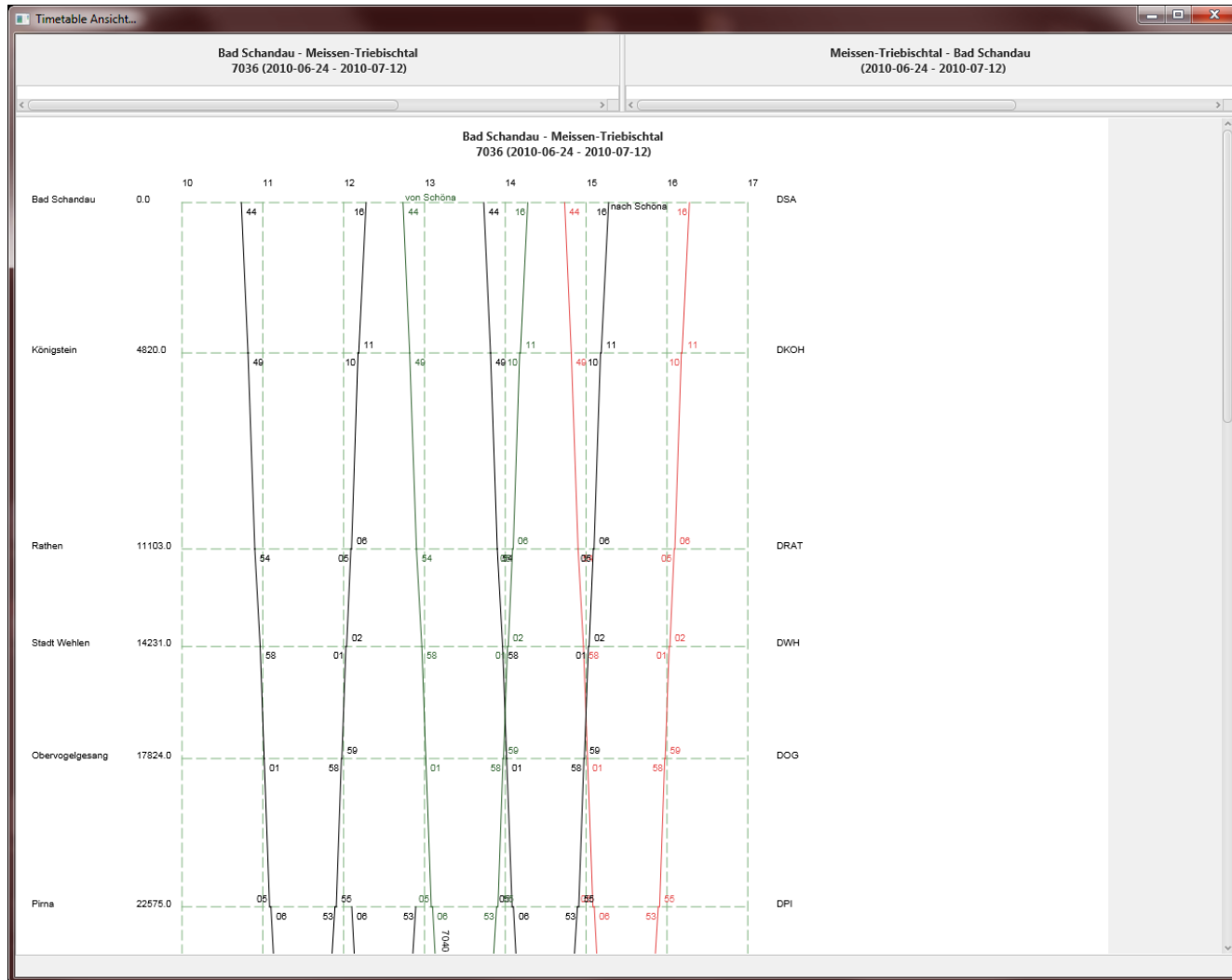


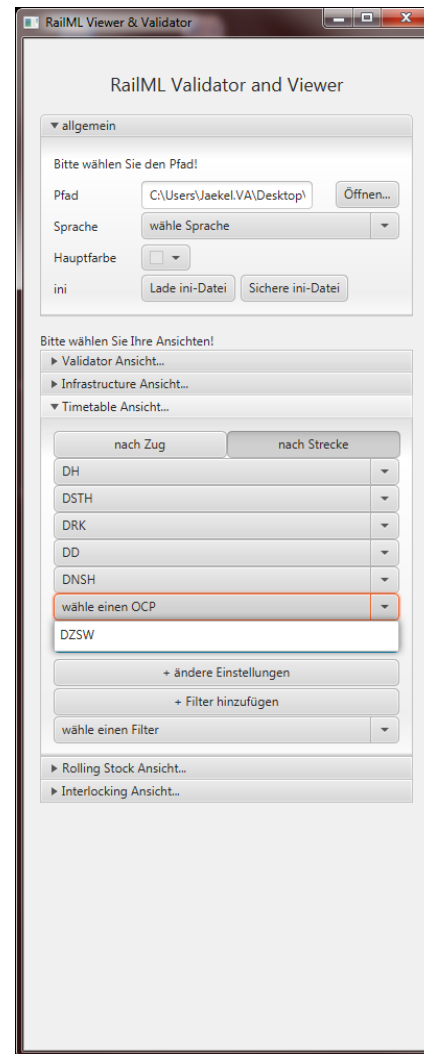


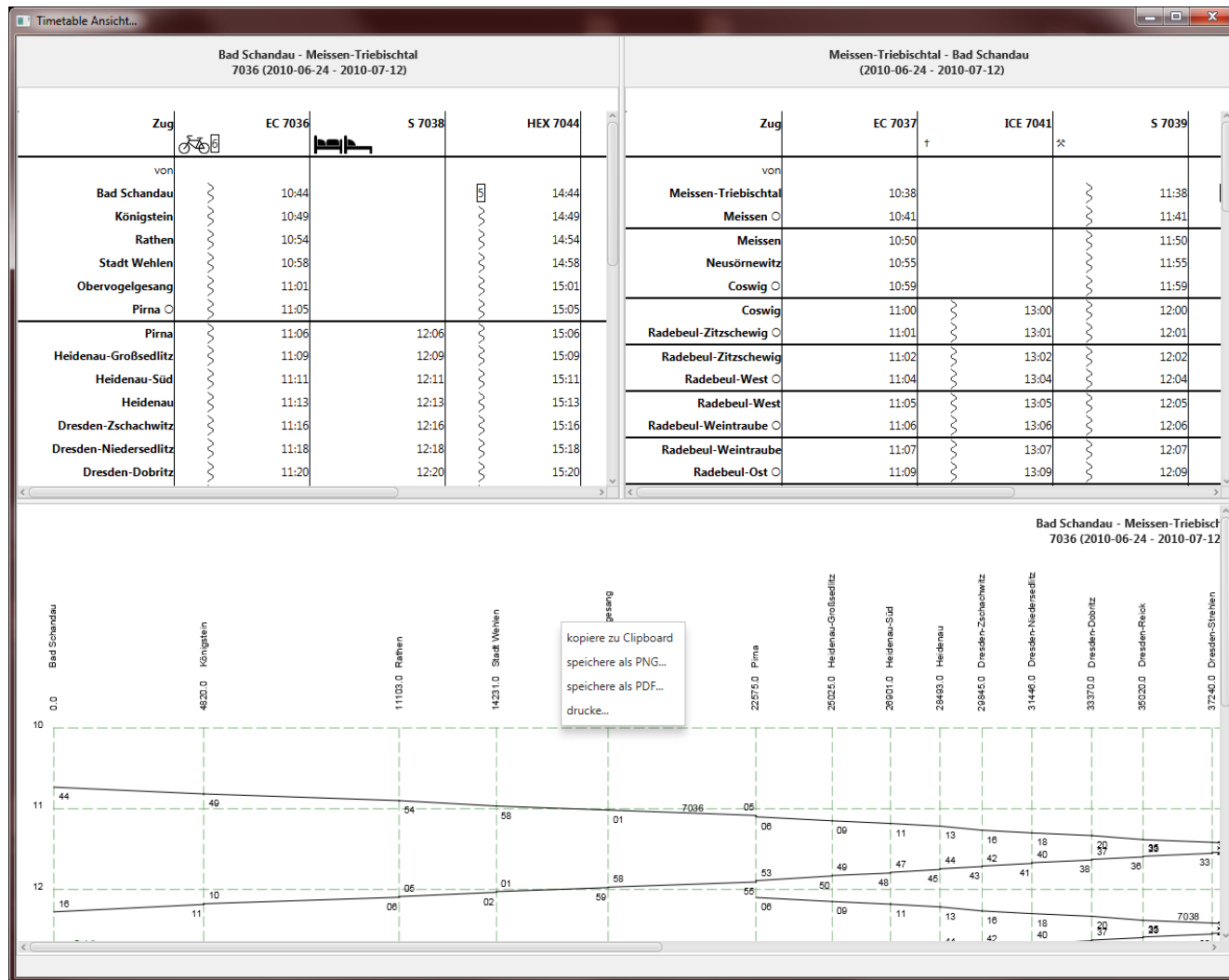
Coswig - Bad Schandau 7041 (2010-06-24 - 2010-07-12)			
Zug	7041	7037	7039
VON		Meissen-Triebischtal	Meissen-Triebischtal
Dresden-Strehlen	13:33	11:33	12:33
Dresden-Reick	13:35	11:35	12:35
Dresden-Reick	13:36	11:36	12:36
Dresden-Dobritz	13:37	11:37	12:37
Dresden-Dobritz	13:38	11:38	12:38
Dresden-Niedersedlitz	13:40	11:40	12:40
Dresden-Niedersedlitz	13:41	11:41	12:41
Dresden-Zschachwitz	13:42	11:42	12:42
Dresden-Zschachwitz	13:43	11:43	12:43
Heidenau	13:44	11:44	12:44
Heidenau	13:45	11:45	12:45
Heidenau-Süd	13:47	11:47	12:47
Heidenau-Süd	13:48	11:48	12:48
Heidenau-Großsedlitz	13:49	11:49	12:49
Heidenau-Großsedlitz	13:50	11:50	12:50
Pirna	13:53	11:53	12:53
Pirna	13:55	11:55	
Obervogelgesang	13:58	11:58	
Obervogelgesang	13:59	11:59	
Stadt Wehlen	14:01	12:01	
Stadt Wehlen	14:02	12:02	
Rathen	14:05	12:05	
Rathen	14:06	12:06	
Königstein	14:10	12:10	
Königstein	14:11	12:11	
Bad Schandau	14:16	12:16	
nach			
†	sonn- und feiertags		
*†	werktags		
‡	Mo-Fr		
§	Mo-Fr außer 29.6.		
¶	donnerstags		

Bad Schandau - Coswig (2010-06-24 - 2010-07-12)			
Zug	7038	7036	HEX 7044
VON			
Bad Schandau		10:44	14:44
Königstein		10:49	14:49
Rathen		10:54	14:54
Stadt Wehlen		10:58	14:58
Obervogelgesang		11:01	15:01
Pirna		11:05	15:05
Pirna	12:06	11:06	15:06
Heidenau-Großsedlitz	12:09	11:09	15:09
Heidenau-Süd	12:11	11:11	15:11
Heidenau	12:13	11:13	15:13
Dresden-Zschachwitz	12:16	11:16	15:16
Dresden-Niedersedlitz	12:18	11:18	15:18
Dresden-Dobritz	12:20	11:20	15:20
Dresden-Reick	12:23	11:23	15:23
Dresden-Strehlen	12:25	11:25	15:25
Dresden-Hauptbahnhof	12:28	11:28	
Dresden-Hauptbahnhof	12:30	11:30	15:30
Dresden-Freiburger Str.	12:32	11:32	15:32
Dresden-Mitte	12:34	11:34	15:34
Dresden-Neustadt	12:36	11:36	15:36
Dresden-Neustadt	12:37	11:37	15:37
Dresden-Pieschen	12:41	11:41	15:41
Dresden-Trachau	12:43	11:43	15:43
Radebeul-Ost	12:46	11:46	15:46
Radebeul-Weintraube	12:49	11:49	15:49
Radebeul-West	12:53	11:53	15:53
Radebeul-Zitzschewig	12:56	11:56	15:56
Coswig	12:58	11:58	15:58
Coswig	12:59	11:59	15:59
nach	Meissen-Triebischtal		Meissen-Tribischthal
‡	Mo-Fr außer 29.6.		
§	Mo-Fr		









The screenshot displays two windows from the RailML Validator & Viewer application.

RailML Validator and Viewer

allgemein

Bitte wählen Sie den Pfad!

Pfad: C:\Users\Jaekel.VA\Desktop\ Offnen...

Sprache: wähle Sprache ▼

Hauptfarbe: □ ▼

ini: Lade ini-Datei | Sichere ini-Datei

Bitte wählen Sie Ihre Ansichten!

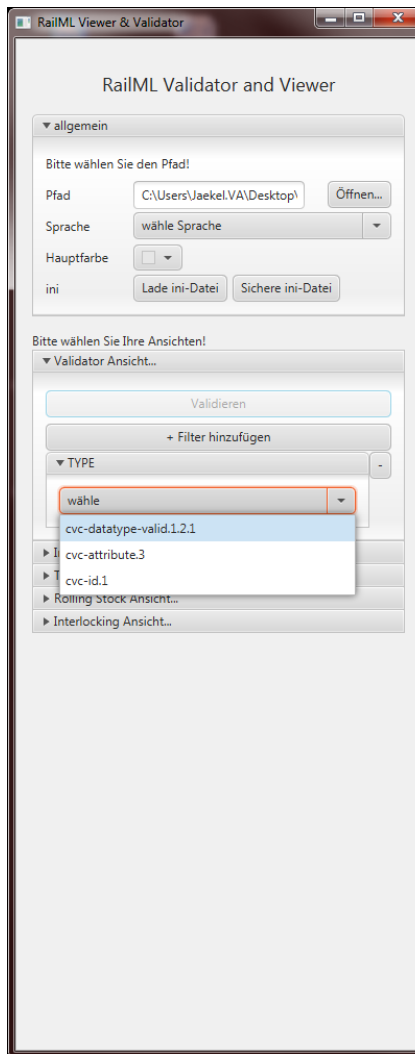
- Validator Ansicht...**
 - Validieren
 - + Filter hinzufügen
- Infrastructure Ansicht...
- Timetable Ansicht...
- Rolling Stock Ansicht...
- Interlocking Ansicht...

Validator Ansicht...

Type	Text	Line Number	Column Number	File
cvc-datatype-valid.1.2.1	"3x" ist kein gültiger Wert für "integer".	2785.0	75.0	file:///C:/Users/Jaekel.VA/Desktop/RAILMLValidatorSample
cvc-attribute.3	Wert "3x" des Attributs "vehicleCount" bei Element "vehicleRef" hat keinen gültigen Typ "tCounter".	2785.0	75.0	file:///C:/Users/Jaekel.VA/Desktop/RAILMLValidatorSample
	Schlüssel "vehicle-trainOrderKeyref" mit Wert "v1x" nicht gefunden für Identity Constraint des Elements "railml".	4960.0	10.0	file:///C:/Users/Jaekel.VA/Desktop/RAILMLValidatorSample
	Schlüssel "track-lineKeyref" mit Wert "tr1x" nicht gefunden für Identity Constraint des Elements "railml".	4960.0	10.0	file:///C:/Users/Jaekel.VA/Desktop/RAILMLValidatorSample
cvc-id.1	Kein ID>IDREF-Binding für IDREF "tr1x" vorhanden.	4960.0	10.0	file:///C:/Users/Jaekel.VA/Desktop/RAILMLValidatorSample

Bereit

[illegible]



Changing language triggers changes in views (also contents like „train“ in table inscription are changed)

