



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 17<sup>st</sup>, 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".







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# railML<sup>®</sup>-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



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### Staff for the project:



Dr. Martin Lehnert



Susanne Wunsch



**Birgit Jaekel** 

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# 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.

# $\rightarrow$ Development of a railML

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



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## 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 31<sup>st</sup>, 2016

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### **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: <u>http://viewer.railml.org</u>
- 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 <a href="https://joinup.ec.europa.eu/software/page/eupl/licence-eupl">https://joinup.ec.europa.eu/software/page/eupl/licence-eupl</a>







# 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





### Main Window with controls



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## Timetable window with moveable splitters



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### Timetable with operating days



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# Graphical timetable with different colours for train categories





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### Transposing the view





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# Choose route by ocp sequence



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### Validator view



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## Sort by clicking into the table header



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Datei Hilfe					
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## Filtering of table data in the main control window



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





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