

# ***FBS-railML<sup>®</sup>-Interface (Import)***

railML-Versions 2.0 / 2.1 / 2.2

## **Manual**

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Internet: [www.irfp.de](http://www.irfp.de)  
E-Mail: [info\(at\)irfp.de](mailto:info(at)irfp.de)

Adress: iRFP e. K.  
Institut für Regional- und Fernverkehrsplanung  
Hochschulstraße 45  
01069 Dresden

Phone: +49 351 4706819

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# 1. General Hints Concerning the FBS-railML-Interface

For many years, FBS has had special interfaces to third-party systems that are in productive use with a large number of customers. Since 2002, iRFP has been intensively involved in the development of an exchange format for railway data that is as uniform as possible - the **XML exchange format railML**<sup>®</sup>. FBS data can therefore be exchanged more easily with third-party systems via the railML<sup>®</sup> format.

In the current version, the FBS-railML interface enables an import of almost all **timetable data** from the railML format into FBS. It is also possible to export timetable data to railML, for which a separate description exists. This document describes the **import**.

Please note that the railML standard does not automatically mean that two programmes can always exchange data without errors. This is due to the fact that the railML standard does define the general structure of infrastructure and vehicle data - however, on the one hand, the **scope** of the data (the completeness) and on the other hand, the **details** of some special data differ depending on the application in different programmes. For this reason, there is a special interface description for the FBS implementation of the RailML format. It describes the specific data fields used by FBS and their contents. The current version of the interface description and the scheme documents (\*.xsd) can be found at

<http://www.en.irfp.de/technical-advice-to-railml.html>

Therefore, please bear in mind that before using the interface, it is usually necessary to use some test data from the software supplier of the other programme involved in the data exchange for test imports. We are, of course, happy to support our customers with the pre-conversion of user-specific test data and the discussion of the interface contents.

Of course, it is also possible to exchange timetable data in an uncomplicated way via this interface if both applications involved are FBS.

The implementation of the interface is not to be regarded as completed at any time, i.e., extensions or adjustments can be made at any time.

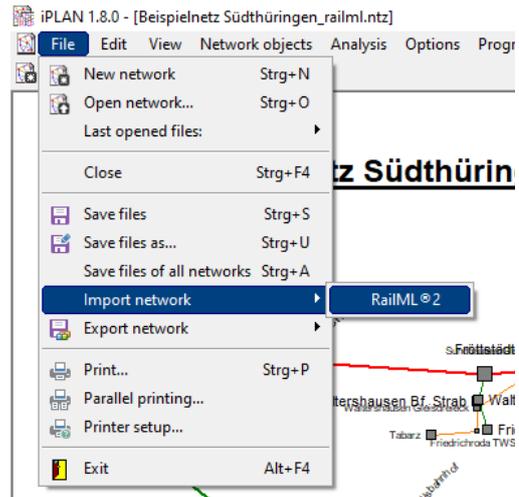
## 2. Information About Using the Interface for FBS-Users

The following requirements are necessary on the FBS side to be able to import data via railML:

- The FBS-railML interface (version 2) must be purchased or rather activated for the iPLAN installation used. Higher railML versions (2.3 - 2.5) are usually possible, as they are largely compatible with railML 2.2. If you are unsure, please contact iRFP with reference to the concretely required source or target software of the data exchange.
- You will find further information on installation and updates at:  
<http://www.en.irfp.de/technical-advice-to-railml.html>
- The railml-file to be imported must have been generated by a railML export interface of a verified railML conversion application.
- All network object windows (graphic timetables, circulation plans etc.) in the FBS network file used as import target, must be closed.
- The FBS-railML import interface (unlike the export interface) does not allow detailed infrastructure data exchange at the current status (June 2022). The timetable data is imported as trains. Nevertheless, the railML import file used must also contain selected infrastructure data in order to be able to transmit the routes of the trains as well as their public stops.
- The timetable data contained in railML files do not differentiate according to the usual layers in iPLAN. When importing the data to FBS, exactly one target layer can be determined for all trains concerned. If necessary and sensible, the data exchange should be run through several times (i.e., for a different target layer in each case).

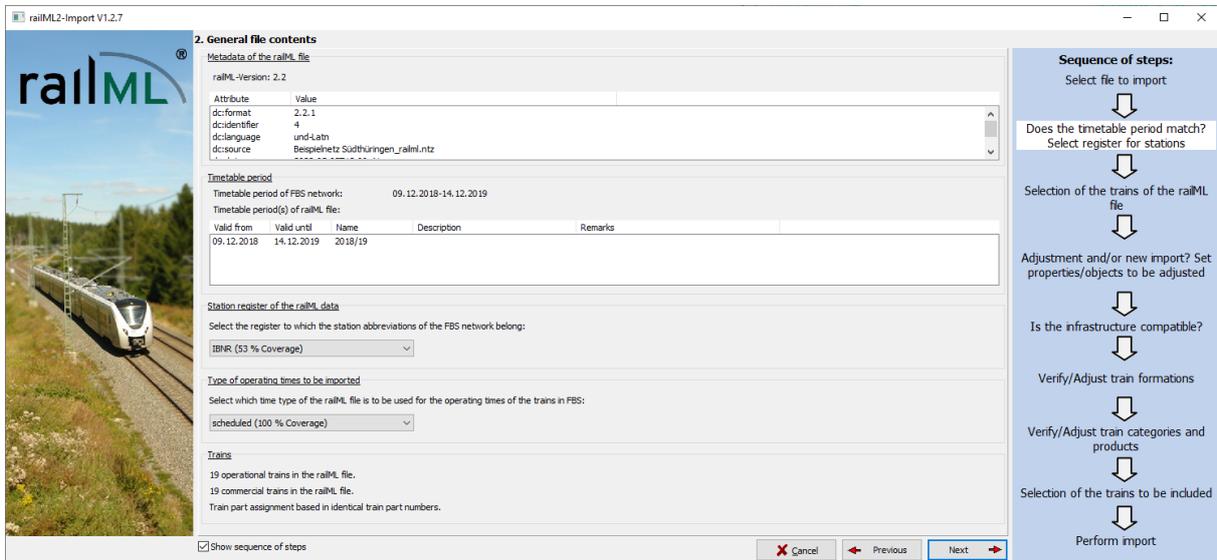
### 3. Operating the Interface

The interface for importing data from railML is started from iPLAN in the network main window via the menu item **File** → **Import network** → **RailML®2**. The menu item is available if the FBS-railML interface has been installed and is activated for the current FBS licence.



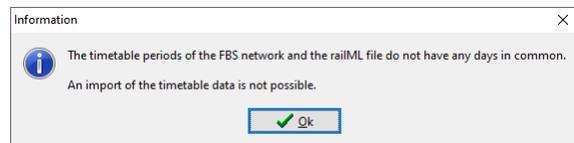
When the railML import is called up, the window for selecting the desired railML import file appears. After the file has been successfully loaded, the user interface assists the user in carrying out the individual steps. Optionally, a flow chart illustrates the current step and all other intermediate steps that follow successively during the import process.

#### 3.1. General file contents



This window provides an overview of various metadata of the railML file to be read in and allows some basic settings to be made.

In principle, a railML file can only be imported if its timetable period (at least partially) matches that of the FBS network. Should this not be the case, the user of the programme is informed of this with an error message.



#### Station register of the railML-data

The selected station register is used to match the identification noted there with the corresponding abbreviations in FBS. The respective identifications (abbreviations) of operating points are recorded in the different station registers. Here you can select, on which

station register the abbreviations of the operation points in the railML-file are based on. The programme automatically selects the register that occurs most frequently in the railML file. When matching the train routes, the name of an operating point is ignored and only the abbreviation in FBS and the selected station register matter.

A list of the already established registers and their origin can be found in the [railML Wiki entry "Registers"](#).

### Type of operating times to be imported

Similar to the station register, the time scope to be read in from the railML file is selected here. The most common time scope is "scheduled" and reflects the operational timetable times of the trains. The time type "published" reflects published timetable date and can be used, for example, if only those times are available.

Further information on time scopes and their meanings can be found in the [railML Wiki - entry "Times"](#).

## 3.2. Select trains of the railML file

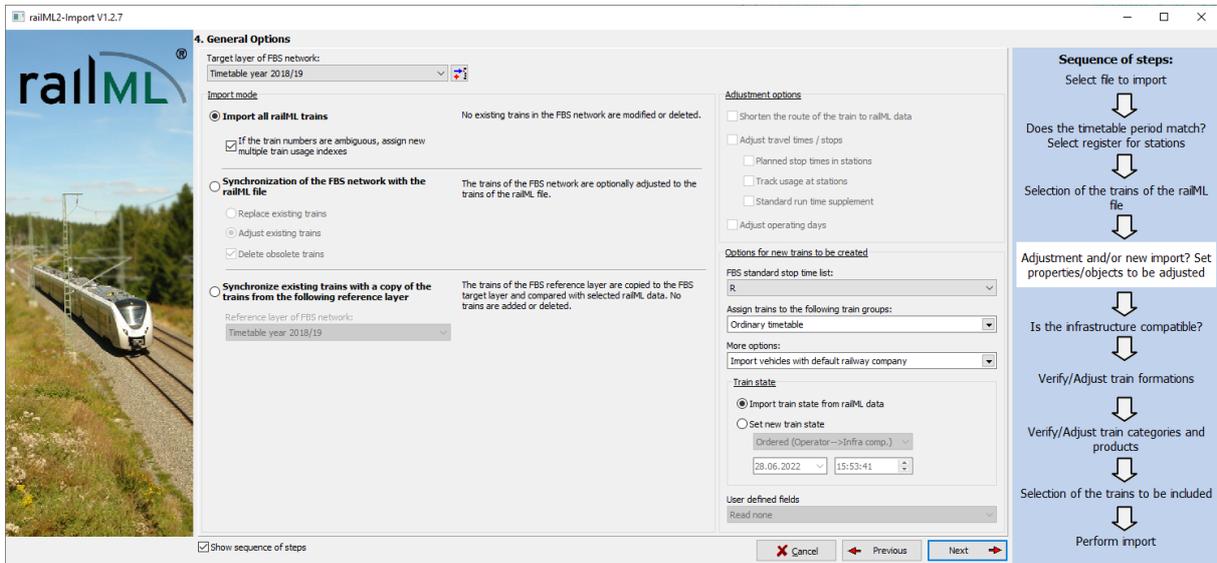
Cat.	Train	Line	From	Dep.	Arr.	To	Operating days	Timetable period	Remarks
IR	100		8010274	17:56,5	2:00,3	8010350	daily	09.12.2018-14.12.2019	
SPrZ/...	100-P4		8010007	29:29,0	2:39,5	8013008	only 20.3.	09.12.2018-14.12.2019	
RE/S/...	101-P4		8013008	20:00,3	0:14,6	8010007	only 1.5.	09.12.2018-14.12.2019	
RB	102		8010007	13:09,3	16:06,8	8013008	only 6.5.	09.12.2018-14.12.2019	
IRE	103-P4		8013008	21:31,3	0:50,4	8010007	daily/only 1.5.	09.12.2018-14.12.2019	
IR	105		8010391	15:41,3	18:33,2	8010176	daily	09.12.2018-14.12.2019	
IR	106		8010176	15:23,3	18:26,3	8010391	daily	09.12.2018-14.12.2019	
RB	200-P4		8010142	21:00,4	21:05,7	8010230	only 20.3.	09.12.2018-14.12.2019	
RB	201		8010230	20:00,3	21:09,8	8010007	only 20.3.	09.12.2018-14.12.2019	
RB	203		8012299	20:12,3	21:20,7	8010007	only 20.3.	09.12.2018-14.12.2019	
RE/Im/...	300		8010260	5:24,3	5:42,4	8011332	daily	09.12.2018-14.12.2019	
IR	2002		8010274	19:09,3	22:33,0	8012749	daily	09.12.2018-14.12.2019	
IR	2003		8011472	20:27,3	22:00,5	8010350	daily	09.12.2018-14.12.2019	
IR	2004		8010274	18:36,9	22:55,0	8012749	daily	09.12.2018-14.12.2019	
ICE	11004		8012866	21:49,6	22:30,6	8010350	daily	09.12.2018-14.12.2019	
ICE	11006		8011871	0:45,3	1:49,2	8012723	daily	09.12.2018-14.12.2019	
ICE	11008		8012866	21:00,3	23:26,1	8010350	daily	09.12.2018-14.12.2019	
ICE	11010		8010007	20:00,3	20:53,7	8012749	daily	09.12.2018-14.12.2019	
RB	778894		8010274	12:00,3	13:42,8	8010350	only 6.5.	09.12.2018-14.12.2019	

19 / 19 trains selected.  
 Show sequence of steps

Sequence of steps:  
 Select file to import  
 ↓  
 Does the timetable period match?  
 Select register for stations  
 ↓  
 Selection of the trains of the railML file  
 ↓  
 Adjustment and/or new import? Set properties/objects to be adjusted  
 ↓  
 Is the infrastructure compatible?  
 ↓  
 Verify/Adjust train formations  
 ↓  
 Verify/Adjust train categories and products  
 ↓  
 Selection of the trains to be included  
 ↓  
 Perform import

In this window, you can preselect which trains from the loaded railML file are to be taken into account. All known filters (e.g., types, lines) of the FBS train selection can be used. The final decision on which trains (from this pre-selection) should actually be taken over into the network or synchronised takes place later (see [Select trains to be processed](#)).

## 3.3. General Options

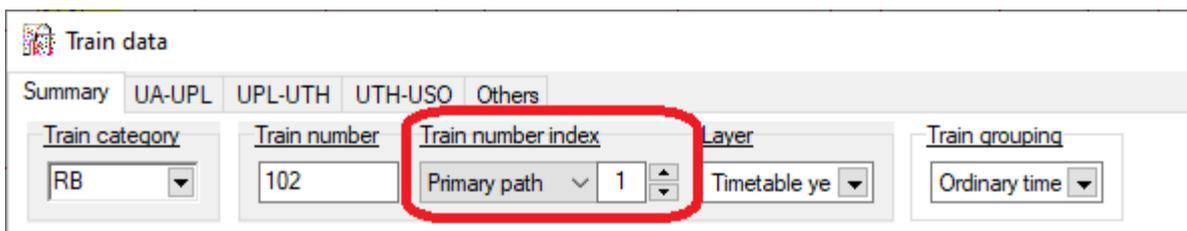


The RailML import offers more differentiated options than simple one-to-one transfer of trains from the import file to FBS. The main question is how to handle trains that already exist in the network file. They can be compared and synchronised with the trains to be imported (if necessary, with regard to individual criteria) or be completely replaced or be deleted without replacement.

The above window allows essential settings on how to proceed with the trains to be imported. First you have to determine which layer in FBS the import should affect (target layer), whereby a new layer can also be created. There are three different import modes: *Import*, *Synchronise* and *Synchronise with copy*.

### Import all railML trains

When importing, all trains imported from the railML file are transferred to the FBS network without changing the trains already there. If the checkbox *If the train numbers are ambiguous, assign new train number indexes* is not selected, train number conflicts may prevent the import. If it is selected, a new train number index is added to the imported train if its train number already occurs in the target layer.



### Synchronization of the FBS network with the railML file

The main difference between synchronisation and import is that existing trains in the network can be changed when synchronizing. There is the possibility to replace the already existing trains with those from the railML file or to adjust them. When adjusting, the data of the train already existing in the network is overwritten (based on the *Adjustment options*); when replacing, a new train is created that only contains data from railML. All data not present in the railML file (e.g., individual line colours) are lost in the process.

Optionally, existing trains in the FBS that do not appear in the railML file can be deleted. Trains that only exist in the railML-file are newly created. Therefore, this option can be used to display the exact proposed schedules of the railML file in the target layer of the FBS network.

## Synchronize existing trains with a copy of the trains from the following reference layer

This import method is a kind of mixture of the other two modes. Again, no existing trains are changed or deleted, but no trains are added either. Instead, copies of the existing trains from one selected layer are created and synchronized with the trains from the railML file. This option is particularly useful if the train schedules of the trains loaded from the railML-file are to be compared with those already existing in iPLAN before the import.

## Adjustment options

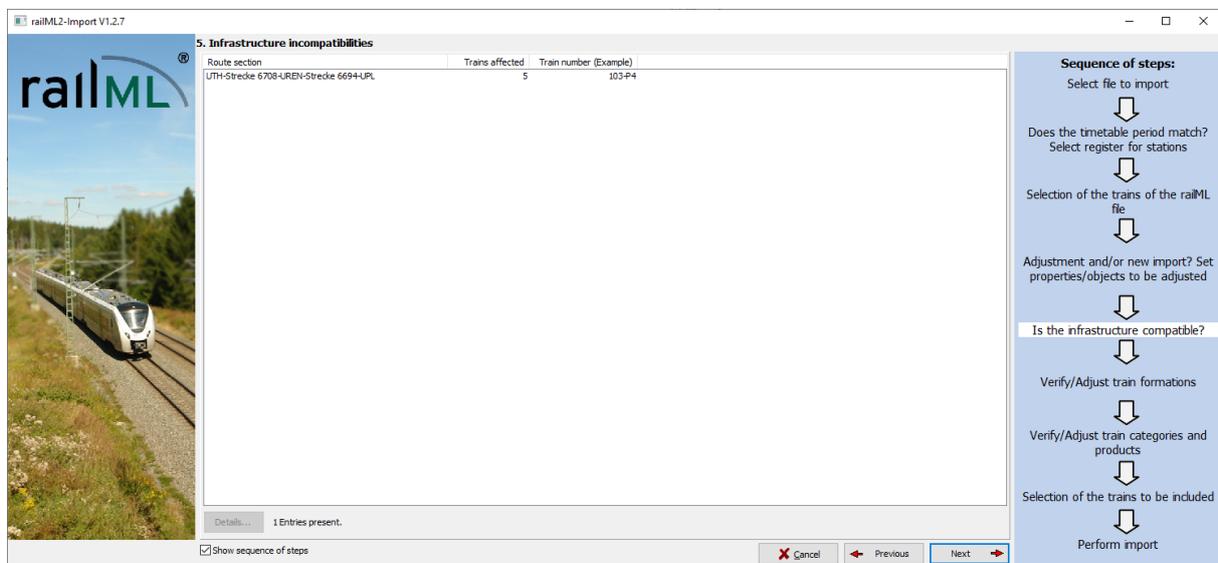
Here you can set which data will be taken over from the railML file when synchronizing a train. At least one option must be selected. All options not selected remain unchanged in the original FBS train.

The *adjustment options* are only available if the selected import mode also includes adjustments, i.e. when synchronizing and adjusting existing trains or when synchronising with copies from a reference layer.

## Options for new trains to be created

When trains are newly created, all train data that is not stored in the railML file (e.g., interval group information, line colours, etc.) is lost. The selected FBS standard stop time list is assigned to all newly created trains. The values of the stops for the respective train are provided by the railML file; if required, it can be chosen under *More options* to *Copy planned stops from FBS stop list* which will replace the stop times of the railML-file. If the newly created trains are to be assigned to different stop time lists, the corresponding trains must be imported in separate processes. The same applies to the assigned train groupings.

## 3.4. Infrastructure incompatibilities



This window is shown if, for example, the trains use line sections that cannot be found in the FBS network or the train routes in the railML-file are not described distinctly.

The problem might be limited for trains to be *synchronized* by checking *Shorten train route based on railML data* in the [Adjustment options](#). Trains added via *import* only have the railML route anyway. The window contains a list of all missing or ambiguous sections and the number of trains affected. By double-clicking a list element or clicking the button *Details...* the

window *Check infrastructure* is opened which provides further information.

Infrastruktur prüfen: Streckenabschnitt nicht gefunden

**Der in der railML-Datei angegebene Streckenabschnitt konnte im FBS-Netz nicht gefunden werden.**

Streckenabschnitt in der railML-Datei:	Folgende Fahrwege zwischen den beiden Betriebsstellen bestehen im derzeitigen FBS-Netz:	
Operating location UTH (Themar) ↓ Line 6708 Operating location UREN (Rennsteig) ↓ Line 6694 Operating location UPL (Plaue (Thüringen))	Operating location UTH (Themar) ↓ Line 80.6311 Operating location UGM (Grimmenthal) ↓ Line 80.6298 Operating location UPL (Plaue (Thüringen))	Operating location UTH (Themar) ↓ Line 80.6311 Operating location UWH (Wernshausen) ↓ Line 80.6698 Operating location UZL (Zella-Mehlis)

The following causes should be considered:

- The FBS network misses a line (e.g. spur).
- In the FBS network a line is wrongly named (wrong line number).
- In the RailML data a line is wrongly named.
- Theline number changes in the RailML data at a different location than in the FBS data. In one of the two data sources, an operation point may be missing at which the line number changes (e.g. junction, infrastructure boundary).

Depending on the cause, we recommend considering a correction of the FBS data or the RailML data.

**Der Streckenabschnitt wird z. B. von folgendem Zug genutzt:**  
103-P4

The left column shows the train route that is to be used according to railML. The right columns show the existing routes in the FBS network between the two operating points that border the missing or ambiguous train section. This is purely informative and intended as an aid to find a way to solve any problems that may exist due to incomplete infrastructure information.

### 3.5. Edit train composition

6. Edit train composition

The vehicle designations used in the railML data cannot be automatically assigned to the designations in FBS in every case. This table defines the assignments of the train formations from the railML file to engines and waggons from the FBS vehicle databases.

Save	Train composition/Designation railML	Train composition FBS
<input checked="" type="checkbox"/>	DRB.0 (Masse:78 t;Länge:15 m;Vmax:90 km/h)	101 (Last:0 t;Länge:19 m;Vmax:100 km/h)
<input type="checkbox"/>	DB.101 (Masse:87 t;Länge:19 m;Vmax:220 km/h)	101 (Last:0 t;Länge:19 m;Vmax:220 km/h)
<input type="checkbox"/>	DB.101 (Masse:87 t;Länge:19 m;Vmax:30 km/h)	101 (Last:0 t;Länge:19 m;Vmax:30 km/h)
<input type="checkbox"/>	DB.101 (Masse:87 t;Länge:19 m;Vmax:80 km/h)	101 (Last:0 t;Länge:19 m;Vmax:80 km/h)
<input type="checkbox"/>	DB.101+2-Bghw+Hf (Last:125 t;Länge:19 m;Vmax:120 km/h)	101+2-Bghw+Hf (Last:125 t;Länge:19 m;Vmax:120 km/h)
<input type="checkbox"/>	DB.101+Hf (Last:19 t;Länge:19 m;Vmax:140 km/h)	101+Hf (Last:19 t;Länge:19 m;Vmax:140 km/h)
<input type="checkbox"/>	DR.212+2-Bghw+Hf (Last:125 t;Länge:17 m;Vmax:120 km/h)	DR.212+2-Bghw+Hf (Last:125 t;Länge:17 m;Vmax:120 km/h)
<input type="checkbox"/>	DR.230+2-Bghw+Hf (Last:119 t;Länge:17 m;Vmax:120 km/h)	DR.230+2-Bghw+Hf (Last:119 t;Länge:17 m;Vmax:120 km/h)
<input type="checkbox"/>	DR.244 (Masse:78 t;Länge:15 m;Vmax:90 km/h)	DR.244 (Last:0 t;Länge:15 m;Vmax:90 km/h)
<input type="checkbox"/>	DRB.93.5+2-Bghw+Hf (Last:119 t;Länge:15 m;Vmax:70 km/h)	DRB.93.5+2-Bghw+Hf (Last:119 t;Länge:15 m;Vmax:70 km/h)
<input type="checkbox"/>	DRB.94.5-18+2-Bghw+Hf (Last:119 t;Länge:13 m;Vmax:45 km/h)	DRB.94.5-18+2-Bghw+Hf (Last:119 t;Länge:13 m;Vmax:45 km/h)
<input type="checkbox"/>	DRB.94.5-18+2-Bghw+Hf (Last:125 t;Länge:13 m;Vmax:60 km/h)	DRB.94.5-18+2-Bghw+Hf (Last:125 t;Länge:13 m;Vmax:60 km/h)
<input type="checkbox"/>	DRB.94.5-18+2-Bghw+Hf (Last:87 t;Länge:13 m;Vmax:45 km/h)	DRB.94.5-18+2-Bghw+Hf (Last:87 t;Länge:13 m;Vmax:45 km/h)
<input type="checkbox"/>	HSG-Maxima 40 CC+Hghw+Hf (Last:53 t;Länge:56 m;Vmax:120 km/h)	HSG-Maxima 40 CC+Hghw+Hf (Last:53 t;Länge:56 m;Vmax:120 km/h)

Red: Not available or invalid

Show sequence of steps

**Sequence of steps:**

Select file to import

↓

Does the timetable period match?  
Select register for stations

↓

Selection of the trains of the railML file

↓

Adjustment and/or new import? Set properties/objects to be adjusted

↓

Is the infrastructure compatible?

↓

Verify/Adjust train formations

↓

Verify/Adjust train categories and products

↓

Selection of the trains to be included

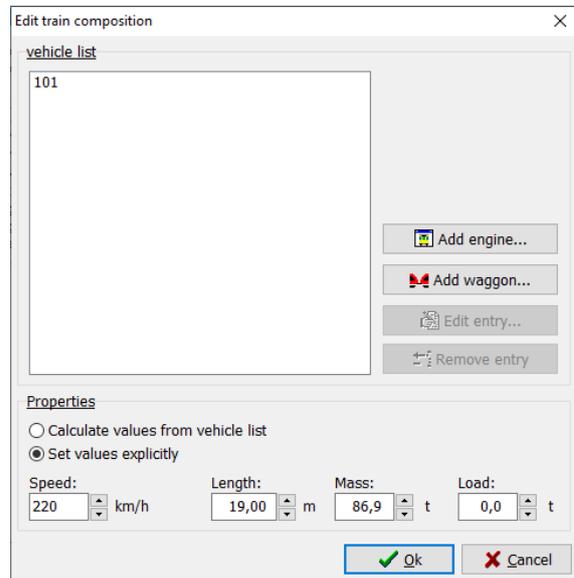
↓

Perform import

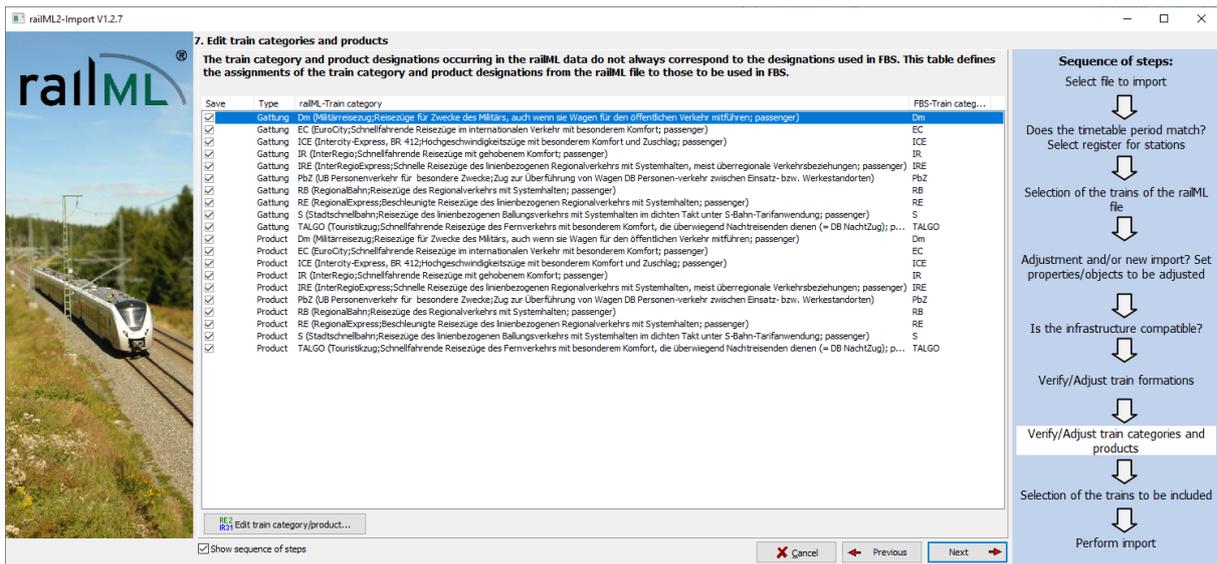
This window provides an overview of the train composition that occur in the railML file and their interpretation by FBS.

If a certain train composition is not correctly identified by FBS, it can be manually adjusted by double-clicking it or via the button *Edit train composition*. In addition, essential driving dynamic data can also be set manually or determined via the FBS vehicle database.

If an incorrectly interpreted train formation occurs regularly, the adjustments can be saved so that they do not have to be done manually each time. The corresponding checkbox can be set in the main window.



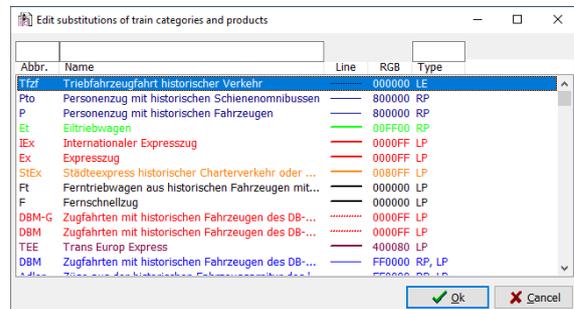
### 3.6. Edit train categories and products



This window is functionally similar to [Edit train composition](#), except that train types are interpreted here.

If a particular category is not correctly identified by FBS, it can be manually adjusted by double-clicking it or via the button *Edit train category/product...*

If a misinterpreted category occurs regularly, these adjustments can be saved to save time in the future.



### 3.7. Select trains to be processed

This window gives a final overview of the trains to be imported, divided into new trains (1), trains to be adjusted / replaced (2) and trains that are obsolete (3).

It offers the possibility to decide for each individual train that was read from the railML file whether it should really be transferred to the FBS network. If a train has been selected, its route and arrival / departure times can be seen on the right, for railML, the status quo of the FBS network (original train) and the status after import. It depends on the selected mode (see [General options](#)) which of these columns are filled (for example, the column *Source train FBS only* shows contents if synchronization of trains is to take place. The font colour of the lines in this overview indicates how the train is handled in FBS at this point:

- **Train has errors** → train will not be imported
- **Operation point / train route will be added**
- **Operation point cannot be added** (e.g., due to not being in the FBS network)
- **Time at operation point differs between railML and FBS**
- **No change** = railML and FBS are equal

Double-click on a train or the button *Report...* display further information on the selected train. This includes information, warnings and errors.

Only the trains selected by the checkbox in the left list are taken into account during the import. If obsolete trains are to be deleted in the FBS network, the corresponding option must have been activated in [synchronisation mode](#) (the trains concerned are then listed here for information in the *Obsolete* tab). For trains marked in red, the selection checkbox cannot be activated.

Via a context menu in the overview list on the left it is also possible to change the train

number or train number index for the marked train, e.g. in case of train number conflicts.  
The process is completed by pressing the button *Import*, which will trigger a report to appear which can optionally be saved as a protocol (text) file.