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9.2 Stellwerksim mode

9.2.1 Why are not all trains shown in the train graph?
1 Terms and conditions

The application jTrainGraph was developed by Moritz Scherzinger, all right are reserved. For possible damages caused by using the application, there is no liability of the author.

By using jTrainGraph, these terms and conditions are accepted by the user.

jTrainGraph must only be used for non-commercial purposes, if there is no separate permission. This is valid not only for the user interface of jTrainGraph, but also for all files that are created. That means, that the train graphs (e.g. pdf or png), timetable files, Excel/csv files and others must not be used for commercial applications.

Users have to contact the author before using the application for commercial uses and before embedding the application, it's parts or it's concepts (like user interfaces) into other applications.

jTrainGraph in it's free version must only be handed over to other users for free and on non-public platforms. The rules for passing the application to other users might be more restricted by the author.

The non-free version jTrainGraph Pro must not be handed over to other users in general.
2 System prerequisites and installation

jTrainGraph is a platform-independent Java application, therefore it runs on all operating systems, where a Java runtime environment exists. The Java runtime environment has to be downloaded and locally installed:

http://www.java.com/download/

If you use the executable exe-file on a windows computer, the application automatically checks if Java is installed. Otherwise, your browser will be opened to download Java.

On any other operating systems, use the jar-file to open the application. Ensure, that .jar-files are correctly linked to the Java runtime environment (search online for „open jar file on [operating system]“).

JTrainGraph is compatible from Java 8 Update 101 onwards (in earlier versions, the SSL certificate for the update functionality won't work).
In general, it's best to update to the most current Java version.
3 Current version

3.1 Change log

3.1.1 New in version 3.1

- Timetables with multiple tracks
  - Define tracks per station (with default track per direction) - 5.2
  - Enter tracks for each train stop (if it’s not on the default track) - 5.6.2
  - Show tracks in train graph (optionally) - 5.5.1.1
  - Enter shunting movements (jTrainGraph Pro) - 5.6.3
- Checks: Chapter 7.2
  - Checks for consistency
  - Check occupation of parts of the route (beta-version in jTrainGraph Pro)
  - Check occupation of tracks in stations (beta-version in jTrainGraph Pro)
- Extended possibilities to define rules for train styles (regular expressions in 7.3)
- Better error messages during Excel-import of timetables
- Enter hostname in Stellwerksim-mode in case the instance runs on another machine (see 7.5.1)
- Manual is now also available in English

3.1.2 New in version 3.03

Bugfixes, e.g. open a file using the command line and import Excel-cells with formatting.

3.1.3 New in version 3.02

Bugfixes.

3.1.4 New in version 3.01

Bugfixes + check if all libraries necessary for starting the application exist in lib-folder.

3.1.5 New in version 3.0

- Redesign of application with completely new concept for using it more comfortable
  - New: Unlimited number of opened windows
  - New: Undo/Redo functionality
  - New: Select trains by clicking on the train graph
  - New: Change times directly in train graph
• Introduction of jTrainGraph Pro with this extended functionality:
  ◦ No message stating the train graph was created with the free version of jTrainGraph in the header / footer of the train graph
  ◦ Link trains (instead of copying) to automatically apply timetable changes later on to all linked trains
  ◦ Import and export of timetables to Excel and to csv file format
  ◦ Connect trains to their successors at the final stop.
  ◦ Some comfort functions, like copy times, modify multiple train times at once
• Live mode:
  ◦ Show live train graph jumping to the current time
  ◦ Enter and visualize delays
  ◦ Manually set delays or define delays based on rules (e.g. when a train has to wait on another one)
### 3.2 Version log

<table>
<thead>
<tr>
<th>Version</th>
<th>Status</th>
<th>Release date</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Full version</td>
<td>04.03.19</td>
</tr>
<tr>
<td>3.03</td>
<td>Full version</td>
<td>01.11.18</td>
</tr>
<tr>
<td>3.02</td>
<td>Full version</td>
<td>11.05.18</td>
</tr>
<tr>
<td>3.01</td>
<td>Full version</td>
<td>02.04.18</td>
</tr>
<tr>
<td>3.00</td>
<td>Full version</td>
<td>29.03.18</td>
</tr>
<tr>
<td>2.03</td>
<td>Full version</td>
<td>26.02.18</td>
</tr>
<tr>
<td>2.02</td>
<td>Full version</td>
<td>22.01.17</td>
</tr>
<tr>
<td>2.01</td>
<td>Full version</td>
<td>20.09.16</td>
</tr>
<tr>
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<td>Full version</td>
<td>11.01.14</td>
</tr>
<tr>
<td>1.25</td>
<td>Full version</td>
<td>29.08.13</td>
</tr>
<tr>
<td>1.21</td>
<td>Full version</td>
<td>28.04.13</td>
</tr>
<tr>
<td>1.2</td>
<td>Full version</td>
<td>13.04.13</td>
</tr>
<tr>
<td>1.1</td>
<td>Full version</td>
<td>13.07.12</td>
</tr>
<tr>
<td>1.0</td>
<td>Full version</td>
<td>01.06.12</td>
</tr>
<tr>
<td>0.5</td>
<td>Beta</td>
<td>16.05.12</td>
</tr>
<tr>
<td>0.41</td>
<td>Beta</td>
<td>20.04.12</td>
</tr>
<tr>
<td>0.4</td>
<td>Beta</td>
<td>07.04.12</td>
</tr>
<tr>
<td>0.3</td>
<td>Beta</td>
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</tr>
<tr>
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<td>Beta</td>
<td>26.07.12</td>
</tr>
<tr>
<td>0.2</td>
<td>Beta</td>
<td>22.07.12</td>
</tr>
<tr>
<td>0.11</td>
<td>Beta</td>
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</tr>
<tr>
<td>0.1</td>
<td>Alpha</td>
<td>25.04.11</td>
</tr>
<tr>
<td>0.02</td>
<td>Alpha</td>
<td>24.04.11</td>
</tr>
<tr>
<td>0.01</td>
<td>Alpha</td>
<td>20.04.11</td>
</tr>
</tbody>
</table>
4 General usage

The application starts in the mode of creating own timetables by default. In order to show timetables live (own timetables or timetables of interfaces, e.g. Stellwerksim), change the mode in the menu on File → Live view.

When you open the application, there is the main window that consists of a toolbar and a text area, that shows different messages during the usage of jTrainGraph. At startup time, there are these tabs beside the log:

- Stations
- Trains and days of operation
- Timetable
- Train graph
- Checks

You can shift the tabs to another position using the arrows beside the titles. Using the +-sign on the right, you can show these tabs additionally:

- Styles of stations
- Styles of trains
- Display rules
- Settings

Other windows can be shown using the menus Views and Windows or using the symbols in the upper part of the main view. Changes can be applied in every windows and every tab, all others will automatically be updated. Using the items Undo and Redo in Edit menu, changes can be withdrawn.

Trains are shown according to their individual style (defined in Styles of trains view). On top, rules can be defined, e.g. to show all trains of the train type IC in red.

The timetables and all relevant settings are stored in timetable files (.fpl). These files are compatible with other applications like FPLEdit.

There are some settings to customize jTrainGraph. These settings are stored in the file preferences.xml, that will be created in the folder where jTrainGraph is started. If you delete this file, jTrainGraph will start with default settings.

To get an overview of the jTrainGraph functionality, you might want to use the quick guides in chapters 5.1 or 6.3.2.
A general notice on this manual: The screenshots were created on the operating system Mac OS X. Depending on the platform where jTrainGraph is started, other Java designs are available so jTrainGraph will look slightly different – but this does not impact the number and position of the user interface components.
5 Create own timetables and train graphs

To create a train graph, most importantly stations and trains have to be entered. Stations are entered in the view Stations (see 5.2), trains can be created using these means:

• View Trains and days of operation
• View Timetable
• View Train graph when the timetable is entered directly into the train graph
• using the menu Edit → Add train

After that, many different settings exists to fine-tune the train graph (see chapter 7). Tracks can be entered optionally (see 5.2 and 5.6.2).

The train graph can be shown directly (see 5.5), can be exported as an image file (see 5.5.5) or be printed (see 5.5.6).

5.1 Quick start

To get a first impression on jTrainGraph, you can stick to the toolbar (pictures on top) of the main window, or to the different tabs of the main window.

You might want to open example timetables (see downloaded folder) and view the different tabs / windows. The windows should be mostly self-explaining and are already filled with information, if you opened a timetable.

5.2 Enter stations

The view Stations looks like that:
You can create new stations by entering the position of the station (in kilometres) and the name and a push on the enter key (or choose Add station button). You can double click on the cells in the table of stations in order to change positions or names. If you click on Delete station, all selected stations will be deleted. Currently there has to be a continuous mileage (that means “jumps” are not supported), negative values are permitted.

You can automatically create stations using the stations of another timetable file. Just click on Load stations of timetable file. Stations and their styles will be loaded, but no trains will be loaded.

In the lower part of the window, all stations are shown. You can click on a station to select it. The lower part also shows the tracks that are defined for stations. The position depends on the default tracks that are chosen.
To enter tracks, select a station in the table or the route overview and click on *Open details*. You can also enter the tracks in the same window, if you select the checkbox *Show details in this window* that causes the last selected station to be shown in details.

Details for stations consist of these information (note that all details are optional – you only have to enter tracks, if you want to show them in train graph or use checks for station tracks):

![Details of station Endingen](image)

Here you can enter a track name and push on the enter key. You can delete tracks, edit the names by double clicking on them or change the sortation with *Move up* and *Move down* buttons. The order of the tracks is relevant if you want to show them in train graph. The most upper track of the list is the leftmost track in train graph.

Default tracks define, where trains stop by default – if no specific track is chosen for a train. See also chapter 5.6.2.

Track names have to be distinct and must not start with “-”.

### 5.3 Enter train numbers (names) and days of operation

The following image shows the view *trains and days of operation*:
For each direction there is a table with trains and the days of operation of each train. Using the checkboxes you can define the days, the train departs (arrives) at it's first station.

New trains can be added by entering the name/number in the field right to the table of the desired direction. Keep in mind, that also other means exists (see e.g. chapter 5.4.2 Copy and link trains).

The buttons for setting days of operation, the buttons for opening details and deleting trains have an impact on all selected trains of the particular table.

Using the checkbox on the lower part of the window, another column is shown stating the first departure station and time of each train. You can edit the train name and comment by double clicking on the value in the table. The comments for trains can be shown on the train graph (optionally) and will be used as mouse-over in timetable view (when mouse is on title of table).

5.4 Enter the timetable

The timetable can be entered e.g. in the view Timetable:
There is one table containing timetables for each direction. For each table there are buttons to edit times in the specific table. New trains can be added and the trains can be sorted (see 5.4.1 Sort trains). For all selected trains details can be shown, trains can be copied (see 5.4.2 Copy and link trains), the timetable can be filled or shifted automatically (see 5.4.3 Automatically calculate a timetable) and the selected trains can be deleted.

If you enter a time when a cell is selected, you can overwrite the old value with a new one. If you double click on a cell, you can modify the existing value.

The following time formats are supported (the separation sign is arbitrary, as long as it is no number – in the examples it is a colon):

hhmm       e.g. 0900 oder 900  (leading 0 can be omitted)
hh:mm e.g. 09:00
h:mm e.g. 9:00
m e.g. 3 => 00:03 (also possible with leading colon)
mm e.g. 33 => 00:33 (also possible with leading colon)
hh: e.g. 3: => 03:00 (leading 0 can be omitted)
hh:m e.g. 12:3 => 12:03 (leading 0 can be omitted)

You don't have to enter times for all stations. Stations without times will be leaped and a line to the next station with an arrival time will be drawn.

If there is only a departure time at a station (no arrival time) and it is not the first station of a train, the departure time is interpreted as a drive through time and no arrival time will be displayed in the train graph.

If a departure time is defined at the last stop of a train or a arrival time is defined at the first stop of a train, this is interpreted as exit of the train graph and a train line is drawn on half of the distance to the next station. You can use this feature e.g. if the train has to use “your” tracks to get out of the last station. Note that this arrival/departure time is not taken into account when route occupation is calculated and checked.

5.4.1 Sort trains

You can open the sort train view in the Timetable window for one of the two directions. One or more criterions can be defined to sort the trains. You can see them here:
The selection in tab *Priority 1* is the most influential. More tabs can be added using the + - Button on the right and can be removed using the button *Remove this tab*. Sort for name is based on an alphabetical compare, *Sort for numbers* extracts all digits in a train name and does a mathematical comparison. Below that, the times at a specific stop can be taken into account or the times of all stations. The top-most priority has the time

- at the first station of the direction in case of *bottom-up*
- at the last station of this direction in case of *top-down*.

### 5.4.2 Copy and link trains

Using the Button *Copy* e.g. in the timetable view, a train can be carried forward with a specific pulse. The copy window opens like this:

![Copy window](image)

The explanation of the window is from top of the window to the bottom part. On top the selection is made, whether the train has to be copied or linked. When a train is copied, all current values are deep-copied (e.g. timetable) and later changes to one of the trains do not impact the others. When a train is linked, there is a reference to the basic train and all later changes are
applied to all linked trains. This link functionality is only available in jTrainGraph Pro.

For live mode of own timetables, the links are released and all trains can be edited individually (as not all will have the same delay e.g.).

In this example, the train RE 3205 is copied, its train number is increased by 2 for each copied train and 20 minutes are added to the timetable. For all three copied trains the style, the comments and the train transitions at the last station are copied (train transitions only in jTrainGraph Pro). The impact on the timetable is as follows:

<table>
<thead>
<tr>
<th></th>
<th>RE 3205</th>
<th>RE 3207</th>
<th>RE 3209</th>
<th>RE 3211</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jeßingen dep</td>
<td>06:49</td>
<td>07:09</td>
<td>07:29</td>
<td>07:49</td>
</tr>
<tr>
<td>Sasbach arr</td>
<td>06:53</td>
<td>07:13</td>
<td>07:33</td>
<td>07:53</td>
</tr>
<tr>
<td>Sasbach dep</td>
<td>06:53</td>
<td>07:13</td>
<td>07:33</td>
<td>07:53</td>
</tr>
<tr>
<td>Königschaffhausen arr</td>
<td>06:56</td>
<td>07:16</td>
<td>07:36</td>
<td>07:56</td>
</tr>
<tr>
<td>Königschaffhausen dep</td>
<td>06:56</td>
<td>07:16</td>
<td>07:36</td>
<td>07:56</td>
</tr>
<tr>
<td>Endingen arr</td>
<td>07:00</td>
<td>07:20</td>
<td>07:40</td>
<td>08:00</td>
</tr>
<tr>
<td>Endingen dep</td>
<td>07:02</td>
<td>07:22</td>
<td>07:42</td>
<td>08:02</td>
</tr>
<tr>
<td>Riegel Ort arr</td>
<td>07:06</td>
<td>07:26</td>
<td>07:46</td>
<td>08:06</td>
</tr>
<tr>
<td>Riegel Ort dep</td>
<td>07:07</td>
<td>07:27</td>
<td>07:47</td>
<td>08:07</td>
</tr>
<tr>
<td>Balingen arr</td>
<td>07:12</td>
<td>07:32</td>
<td>07:52</td>
<td>08:12</td>
</tr>
<tr>
<td>Balingen dep</td>
<td>07:12</td>
<td>07:32</td>
<td>07:52</td>
<td>08:12</td>
</tr>
</tbody>
</table>

5.4.3 **Automatically calculate a timetable**

In the view *Timetable* for a selected train this view can be opened using the button *Fill timetable*:

![Fill timetable](image)

The reference time field are pre-filled with the currently selected row of the timetable. Based on
the reference time the timetable is calculated based on the timetable of another train, of the trains of a specific type (e.g. all trains containing GZ in their name), the mean value of all trains or based on a mean velocity and a specific time for each stopover.

5.4.4 Shift times

When one or more rectangular areas in the table of the **Timetable** view are selected, the affected times can be shifted:

After clicking on the button *Move times* there is this dialog, where a number of minutes (negative or positive) can be entered to shift all selected times:

Only those times are impacted, that are already set (non-empty cells).
5.5 Show the train graph

This view Train graph is split in three areas: On the upper part, there is an area with settings of the train graph. This panel either can be shown or can be made invisible. Below there is a toolbar for a fast access to functions impacting the train graph. In the lower part of the view the train graph itself is shown. By default, the edit mode is automatically selected that opens details for a train when clicking on it.

5.5.1 Settings for the train graph

The area of settings is divided in some tabs, where train graph can be customized. Most of the settings are saved to the timetable file (.fpl), a few of it are saved in the settings of the application instance (preferences.xml).

In the following chapters, each tab is explained shortly.
5.5.1.1 General settings

In the tab General the title line can be configured. It is shown above the train graph. Changes to the title are applied as soon as the enter key is pressed (or the textfield looses focus). The background color can be chosen out of all preconfigured colors (see also 7.5.2 Manage additional colors). The stations above the train graph can be shown vertically or horizontally. For stopping trains, either no (see left), linear (see middle) or cubical lines (see right) can be shown:

Show tracks of stations leads to all tracks getting displayed for station with at least one track defined. Note that this requires much more space than a train graph without tracks – therefore choose the width accordingly. Also refer to chapter 5.6.2 for multi-track information.

Depending on the line style that is chosen for lines shown for stopping trains (see above), the stops at stations with tracks looks different:

With no lines shown for stopping trains, there is a small circle for every arrival or departure or drive through of a train.

Show comments leads to comments being shown below the train graph for all trains, that are
displayed in the relevant plan / column.

### 5.5.1.2 Helpline settings

In the tab *Helplines* two types of helplines are configured:

<table>
<thead>
<tr>
<th>Helplines for complete width</th>
<th>Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>orange</td>
</tr>
<tr>
<td>Type of line</td>
<td>Normal</td>
</tr>
<tr>
<td>Size of line</td>
<td>2 pixels</td>
</tr>
<tr>
<td>Size of line at full hours</td>
<td>4 pixels</td>
</tr>
</tbody>
</table>

The upper part of the view is about helplines that span across the whole width of the train graph. They are shown in an user-defined interval, a specific color and with a specific line style (see also 5.5.7). There are two line sizes for these kind of helplines – for lines at full hours another line size can be defined.

In the lower part of the view an interval for smaller “minute lines” can be defined. They are shown as short lines at each station and track.

The example below shows those helplines that are defined in the example of this chapter:
5.5.1.3 Times / days of operation

The start and end times shown by default are automatically calculated based on the trains that are shown. If there is a train that drives across midnight, the whole time between 0 and 24 o'clock is shown. If the checkbox Calculate times automatically is deselected, the times can be entered manually. They are taken into account as soon as the field looses focus or the enter key is pressed. Also times after midnight can be entered in the field End time, e.g. start time 06:00 o'clock and end time 03:00 o'clock.

Caution: The times might be rounded up or down if Times are rounded to helpline intervals is selected in tab 5.5.1.4 Pages and columns.

Below the days of operation of the trains that have to be shown in the train graph can be selected. They define the days for the start of the train graph (in case of train graphs across midnight). If a train drives at least at one of the selected days (in a specific part of the route), it is shown.

5.5.1.4 Pages and columns

The train graph can be spread on more than one column, what is desirable especially for export and printing of train graphs. Show more than one column per page is appropriate for short routes with few stations.

The number of pages can be entered directly (first combobox), or the number of hours per page can be entered (second combobox).

The title line is shown only on the first page by default. By selecting Title line on every page it is also shown on all other pages. Also comments are shown below each column by default, but
there can also be one big comment block below the whole train graph.

Times are rounded when *Times are rounded to helpline intervals* is chosen.

Below, a train graph with more three columns is shown:

![Train graph Trossingen Railway](image)

### 5.5.1.5 Fonts

Fonts for stations, trains, times and helpline-descriptions can be chosen out of five platform-independent fonts. If you select *Use free text for font type*, you can choose any other font that is available on your system – but the font might not be available on other systems. On the right, an example for each font is shown.

<table>
<thead>
<tr>
<th>Font for stations</th>
<th>Font for train names</th>
<th>Font for arrive/depart times</th>
<th>Font for helplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>SansSerif</td>
<td>SansSerif</td>
<td>SansSerif</td>
<td>SansSerif</td>
</tr>
<tr>
<td>normal</td>
<td>normal</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>12 Beispiel</td>
<td>12 Beispiel</td>
<td>12 Beispiel</td>
<td>12 Beispiel</td>
</tr>
</tbody>
</table>

### 5.5.1.6 Route

25
The part of the route that is shown in the train graph can be restricted in this tab. By default, the whole route is shown.

5.5.1.7 Display/usage

These settings are not stored to the timetable file, but they only impact the way the train graph is shown in an application instance and how the interface of jTrainGraph behaves.

Show stations when scrolling down has the impact, that the bar with all station names (and track names) is always shown, even if the user scrolls down the train graph. Using this function, the times and lines can be better assigned to the station names, but this requires some height of the view, so less train graph area can be shown.

Automatically scroll to current time for live plans leads to the train graph aligning his middle to the current time for live plans, as soon as the time changes (each minute).

The next train number for trains created on click in the train graph (see 5.5.4) and the increasing number for each train is configured in the two text fields in the lower part of the view.

5.5.2 Toolbar

On the left of the toolbar, the size of the train graph is changed. If you click on the left button (+) or the right button (-), the size is increased or decreased in both dimensions. If you press the alt-key, only the height of the train graph is changed (increased/decreased), if you press the strg-key (Mac: cmd-key), only the width of the train graph is changed.

Using the button in the middle of this two keys (A), the pixel-size of the train graph can be
entered precisely.

There are two buttons in the Export-panel, that start the export of the train graph to an image file or start printing the train graph.

On the left, there are three buttons to choose the edit mode of the train graph view, see 5.5.4 Create and move trains directly in the train graph. On the right, the next action is shown. This action will be executed as soon as there is a click in the train graph.

### 5.5.3 Train graph

The train graph is shown according to the settings that were entered. By clicking to the train graph, the actions described in 5.5.4 are executed.

### 5.5.4 Create and move trains directly in the train graph

There are three modi to process clicks to the train graph. They are selected in the toolbar.

#### 5.5.4.1 Choose train

Right above the train graph it is shown, which trains are near the current mouse cursor position. When clicking on the train graph, the train detail view of the chosen train is opened. If more than one train is next to the mouse cursor, the train has to be chosen in a list view. You can navigate with the cursor keys or your mouse in this view and open the details for the selected train by pressing on the enter-key.
5.5.4.2 Move train

If you click on move train in the toolbar, the mode is changed. By clicking on a train, it is selected. Afterwards, all the times of the train can be shifted by moving the mouse cursor up or down, till the number of minutes (shown right above the train graph) has the desired value. When another click to the train graph is made, the timetable shift is performed. Now, the next train can be selected.

If the strg-key is pressed, only specific times of the train are shifted. Which time is again shown right above the train graph, there is also the number of minutes for the shift. The train is selected in the same way, afterwards an unlimited number of specific time changes can be performed. To change the times of another train, click again on the mode Move train.

5.5.4.3 Create train

Choose the mode Create train. Click on one timetable point after another. You are free to define arrival or departure (drive through) times. Note that the train might not be shown (correctly) when the first time is defined, as in most cases two times are necessary to find out the direction of the train. Just keep selecting one time after another.

To create the next train, click on Create train again.

5.5.5 Export the train graph to an image file

Exporting the train graph can be started directly in an train graph view by clicking this symbol in the toolbar:

```
[Image]
```

There is the alternative to use the menu of the main frame: File → Export → Image
In this case, a new view is opened. The export can be started by clicking on Export image file(s) on the bottom of the view.

In both cases, a small window opens afterwards. There, the pixel-sizes of the images are shown (and might be adjusted). The image file format has to be chosen amongst jpg, gif and png.
After a click on *Export image file(s)* the target file can be entered. If the train graph is split across multiple pages, one file per page will be created. In this case, the page number is appended to the file name (e.g. _1 for page 1).

### 5.5.6 Print the train graph

Printing the train graph is started in the same way, exporting an image file is started (see 5.5.5). For printing, this window is opened:

When the resolution of a printout or printed pdf-file is too high or too low, in this window the resolution can be adjusted. When you click on *Printer settings*, the default system dialog to change printout settings is shown. In this window there is the setting for portrait or landscape format.

When *Print* is clicked, the printer has to be chosen. This can either be a real printer, or a so-called PDF printer to create a pdf file.

### 5.5.7 Design of stations

In the view *Design of stations* the style of each station can be defined separately. The view is opened using the menu of the main frame: *View → Change station design*
The line style of each station can be adjusted (see Different line styles). When *Apply design to all* is executed, the style of the currently selected station is applied to all stations.

For stations that are not printed, no train times are shown in the train graph.

**5.5.8 Different line styles**

For lines (e.g. stations in 5.5.7 and trains in 5.5.10), the color, the size and the style can be defined. This picture shows the six different line styles and two examples for colored lines with sizes of 3 and 6 pixels:
5.5.9 Show and hide train names (numbers)

In order to hide the train names (numbers) in the train graph on specific parts of the route, you can open the view View → Change route design. For each part of the route, the user can choose for which train direction(s) the train names should be displayed.
For a train that drives through a station without having a departure time there, the train number is shown, if it should be shown in at least one part of the route.

### 5.5.10 Individual design of trains

For the individual train design there is a view similar to the design view of stations (see Design of stations). The view can be opened using the menu View → Change individual train design.

If you want to define the train design according to rules (e.g. all trains of the train type ICE are red), please refer to chapter 7.3 Show trains using rules. When you activate the rule-based design for trains, then the settings of the individual train design view are only applied, if no rule matches a train (including the default rule).

### 5.6 Change trains

When you click on a train in the train graph (see 5.5.4.1) a window pops up, where the most important settings for the train can be adjusted:

Parts of the window are only activated in jTrainGraph Pro, e.g. the functions Next train (see 32
5.6.1 Connect trains

In the view that is shown in the previous chapter, there is a combo box for Next train. The trains are sorted depending on their departure time at the last station of the current train. When Next train is chosen, the connection is valid for all days on which both trains are running. If you want to further restrict the days of operation for a connection, you have to work with multiple base trains (e.g. one for Monday to Friday, one for the weekend). Then for each one the connection to the next train can be selected separately.

An extension to set connections that are valid only for specific days (and maybe not on the last stop) is not available, but planned in the future.

When Next train is selected, you can easily jump to the next train using the button Open next train and close this one in order to enter tour plans.

Connections are copied if possible, when linked trains (see lower right part of the view) are defined. Using this feature, for a route with only one commuting train composition in only two clicks all connections are defined for the whole day.

The connections are shown like this in the train graph, when Display of stopping trains is activated:

![Train graph example]

5.6.2 Choose tracks

Right beneath the timetable, the individual tracks for a train can be chosen. When no tracks are chosen, in brackets the tracks automatically calculated by jTrainGraph are shown. They are calculated like this:

- When neither for arrival, nor for departure a track is chosen, the default track is used (like it is defined in 5.2 Enter stations).

In general: When the train arrives at his last station, and the next train is chosen (see 5.6.1), then the departure of the next train is taken into account. When no track is selected for both, then the default track for arrival is relevant.

- When an arrival or a departure track is chosen, it is used for both arrival and departure.
• When both arrival and departure track are chosen, both are valid. The train has to change the track in this case automatically or manually (see 5.6.3).

5.6.3 Shunting

On the right part of the window, shunting movements are defined. Each shunting movement is entered with four information: time, source track, target track and a flag, if the track is empty afterwards.

To define shunting movements, first the right station has to be selected in the table on the left of the frame.

For source and target track, also None can be selected. In this case, the train enters (source=None) or leaves (target=None) the plan. Two small lines are shown like this (example of a train that arrives it's departure track 10 minutes before departure):

This is the example of the train, that does a shunting movement to the departure track 10 minutes before departure:

The second example is a combined example, first the locomotive of the train shunts on the other
side of the train (leaving the train at track 4 and shunting on the other side using track 2), then the whole train leaves the plan:

<table>
<thead>
<tr>
<th>Shunting movements at station Breisach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
</tr>
<tr>
<td>09:20</td>
</tr>
<tr>
<td>09:30</td>
</tr>
<tr>
<td>09:40</td>
</tr>
</tbody>
</table>

In a train graph with tracks shown for all stations, this will look like this:

There are three types of shunting movements that are automatically calculated:

1. When no arrival shunting is defined at the first station and no connection from another train is defined, the train automatically shunts to the departure track by default 10 minutes before departure. This time can be changed using `Edit → Change default time for track occupancies` (also in the free version of jTrainGraph).

2. Same situation, if no time for leaving the final track at the final station is defined and there is no connection to another train.

3. When arrival and departure track are different, and no shunting movement is defined manually, there will be a automatic shunting from arrival to departure track after half of the time.
6 Live timetables

6.1 Display own timetables live

In order to show an own timetable live, choose File → Live view → Timetable file. A new tab within the main frame is opened:

To start the live display of a timetable, first choose the timetable file using the button Open. By default, the current system time is used as current time in the train graph. You can choose another time when you click on Set time. There is also a field for the Speed-up factor of time to move the time forward more quick. Changes are applied, as soon as the enter key is pressed or the field looses focus. If you e.g. choose factor 30, every 2 seconds the minute is increased. In the lower part of the timetable, the day of operation for the timetable is chosen.

The live display is started, when the button Connect in the upper part of the view is pressed. The train graph is automatically selected.

6.2 Train graph in live mode

6.2.1 Display

There are these differences for a live train graph compared to the normal version:

- Delays are shown per part of the route behind the train name
- The current time is shown, if help lines are activated
- When you click on a train, a frame to change it's delay is shown instead of the detail view.
6.2.2 Delays

Delays are changed in the live mode, when the train is selected in the train graph (click on the train). There is this window:
In the upper part the timetable is shown with the actual delays. If the check box Man. Is selected, the delay for the arrival or departure time can be set completely manual, when the values in the columns Delay are changed.

All non-manually entered delays are automatically calculated according to the system delay (if applicable – only if timetable is read over an online interface) and the rules that are entered in the lower part of the view.

The delay rules in the upper part are impacting the delays at specific points of the plan, either arrivals or departures. The delay can be impacted in these ways:

- exact; the delay has exactly this value
- more; this value will be added to the delay
- less; this value will be subtracted from the delay
- at least; if the delay is smaller, then this value will be set as the new delay
- at most; if the delay is greater, then this value will be set as the new delay

On top, delay rules can be set based on other trains in the timetable. Therefore there is another area in the lower part to enter crossings or take-overs. Example: Train 317 has a delay rule, that it has 10 minutes delay from it's start station onwards. Therefore, the crossing with train 318 is moved from Intragna to Corcapolo. Train 318 has to wait there, till train 317 has passed:

To reach this, a delay rules is defined for train 318. A crossing with train 317 in Corcapolo is entered and train 318 can leave one minute after train 317 has arrived (so there is time to e.g. release the train route):

Due to that, train 318 gets a delay of one minute:
6.2.3 Save the live timetable

Using *File → Save live state* the current timetable is saved to a timetable file. It can be modified manually afterwards.

The delay values are lost during this save action, so the current times are took-over as normal times. E.g. in the example of chapter 6.2.2 train 318 would get the departure 14:30 o'clock at Corcapolo.

6.3 Display Stellwerksim-timetables

6.3.1 Prerequisites

To use jTrainGraph, the plugin interface of the Stellwerksim simulation has to be activated: [http://doku.stellwerksim.de/doku.php?id=stellwerksim:plugins](http://doku.stellwerksim.de/doku.php?id=stellwerksim:plugins)

6.3.2 Quick start

To start quickly, when Stellwerksim is already running you click on *File → Live view → Stellwerksim* in the main frame. jTrainGraph tries to connect to the Stellwerksim instance and checks, if there is already a file with the definition, which stations are lined up in the train graph. If yes, the train graph is directly opened. If not, jTrainGraph asks the user for a model train that defines, which stations are shown in the train graph. In this case, it's best to choose a train with many stops to show as much points of the timetable as possible.

6.3.3 Connect

By default (you can disable this in the settings), jTrainGraph tries to reach the Stellwerksim instance automatically, if jTrainGraph was closed in Stellwerksim live mode last time. In every case the tab in the main frame is opened:
To connect manually, click on the *Connect* button in the upper part of the view.

When the connection is established, a configuration is needed. From Stellwerksim, all stations are obtained, but the sequence of the stations is unknown to the Stellwerksim interface. The configurations can be calculated half-automated and later be modified manually. The configuration can be saved in a file with the file-ending `.stsconfig`, so it does not need to be entered each time.

The configuration contains a list of drives (drive ins/drive outs) and platforms, to assign a train stop to a station in the train graph. All trains are shown, that touch at least two stations (that's the only way to determine the direction).

*jTrainGraph* automatically searches for configurations in this order:

1. **Offline**: In subfolders of the folder, where *jTrainGraph* is currently executed, it searches for configuration files, that match the currently chosen Stellwerksim interlocking (according to the Stellwerksim-ID).
   
   If exactly one configuration file is found, it is directly loaded. If more than one file is found, the user has to choose the right file.

2. **Online**: *jTrainGraph* searches online for a configuration. The internet address is defined
in the settings (default: jTrainGraph-website). Same as in step 1 – if one file is found, it is
directly loaded, otherwise the user chooses one of the files.

3. When neither online nor offline a configuration is available, it can be calculated half-
automated based on one or two trains. The procedure is like that:

1. The train graph will start on the left with the drive in, where the first train comes
from.

2. For each timetable stop, a new station is created with the platform, where the train
stops and all neighbor platforms plus platforms, that have a similar name (e.g. will
RSEE 6 be added, when the train stops at RSEE 1, even when they are not
neighbors).

3. The train graph will end at the drive out, where the last train leaves the interlocking.

To obtain as much timetable data as possible, select trains that have a long ride through
the interlocking and serve as much platforms as possible.
If a train ends early in the interlocking, another train can be chosen to continue the half-
automated calculation. This is appropriate, where two lines of e.g. local trains meet at a
common station in the middle of the interlocking.
The frame to choose the trains looks like this:
You can modify the loaded configuration manually in any case. The procedure is explained in the following chapter. In the lower part of the window, a schematic view of the route is shown:

### 6.3.4 Define or extend the configuration manually

Entering the configuration can be performed fully manual, or an existing configuration can be manually optimized. The input is splitted in three columns:

In the left column the configuration itself is shown: There are all stations and stops, that are shown in the train graph. One the one hand, there are stations defined by the platforms they contain. On the other hand there are drives, that relate to Stellwerksim-Drives or junctions, where the train reaches a platform after using the junction (but not the arrival at the station is relevant, but the time the train leaves the train graph).

Stations and drives are added with the buttons *Add station* and *Add drive* and they are deleted with the button *Delete*. The order can be changed with *Move up* and *Move down*, positions can be entered manually (e.g. using the Wikipedia-article to a route) or they are calculated automatically, when the checkbox *Set kilometre values automatically* is deselected (click on *Distribute kilometres* to force this). The column in the middle shows the platforms or Stellwerksim-drives that are configured for the station that is currently selected in the left column. Also, the type of the station can be changed to a drive and vice versa. For drives, it can be set, if the drive is defined by a Stellwerksim-drive or by platforms (see example below). For drives, also the direction is provided, from where the drive can be reached (from left, from right or both directions).
In the right column the available Stellwerksim-platforms and drives are listed. When you click on << add all selected platforms/Stellwerksim-drives are added. If you click on << add with neighbor platforms, also all neighbor platforms are added (based on the neighbors that are defined in Stellwerksim).

Not all Stellwerksim-drives are transmitted on the interface to jTrainGraph, therefore Stellwerksim-drives can be entered manually by the user, when the text field on the right (behind Add missing drive) is used. Please enter the name and click on Add.

As this explanation was theoretically, here is an example. The example is about the interlocking Höllentalbahn. The route from Freiburg to Donaueschingen has to be shown with the junction to Seebrugg. Here is overview on the route: [http://www.stellwerksim.de/shot/see_864.jpeg](http://www.stellwerksim.de/shot/see_864.jpeg)

First the drive in Freiburg is entered:

- Click on Add drive

- Enter the name Freiburg the the second column of the table on the left

- Optionally, you can enter that the drive is reachable from the right (as the train graph continues on the right)

- Choose Freiburg Hbf in the right column and click in << add.

After that, all stations are entered by doing this:

- Click on Add station
• Enter the name in the second column of the new row in the table on the left

• Select all platforms in the right column and click on << add with neighbor platforms

Afterwards, the view looks like this:

The drive on the right – Donaueschingen - was created in the same way as Freiburg Hbf. Only difference is, that it can be reached from the left side.

In Titisee there is the junction to Seebrugg. The whole route is modeled in the interlocking. Therefore, the trains do not leave the interlocking using a Stellwerksim-drive (like Freiburg Hbf). Therefore, the type of the drive is platforms and the platform names of the next station Feldberg-Bärental are added.

All trains that run on the line configured in the train graph and come from or leave to the platforms of Feldberg-Bärental will be displayed from/till the junction Seebrugg.

The configuration of Seebrugg-drive looks like this:
The configuration that was just entered will lead to this train graph:

![Train Graph]

**6.3.5 Save and load configurations**

In order to enter the configuration not every time from scratch, the currently used configuration can be saved using *File → Save configuration*. In order to be usable on every platform, advice is to avoid umlaute and other additional signs.

To protect other Stellwerksim-users from creating own configuration files, the author of this application collects the configurations centrally so they are taken into account, when online configurations are downloaded. This is the schema for naming the files:

Interlockingname_SourceTarget_comment.stsconfig
The example in chapter 6.3.4 would be named
Hoellentalbahn_FreiburgDonaueschingen_WithSeebruggJunction.stsconfig

You can use camel case to provide a distinction of words, e.g. for BadSalzungen.

I'm happily waiting for other configuration files! When the user name is entered in the settings (see 7.5.1), the name is stored in the file and will be shown to other users that use this file.

6.3.6 Close the connection

In most of the times, jTrainGraph will detect if the connection to Stellwerksim was lost. The connection will be cleanly closed in this case and can be manually restarted.

If a lost of connection wasn't detected automatically, you can click on Close in the live tab of the main frame.
7 Additional functions

7.1 Import and export to Excel / csv

In jTrainGraph Pro timetables can be exported to and imported from Excel files. Templates define, how the timetable has to look when it is exported and how jTrainGraph tries to interpret imported tables. Look to chapter 7.1.3 for further details.

Timetables can be distributed on several table sheets (csv: several files).

To ensure an optimal re-import of exported table files, the name of the table sheets or files should keep untouched.

7.1.1 Export

Export is started in the menu of the main frame using File → Export → Tabular timetable (Excel/csv). This window is opened:
In the upper part the template is selected (7.1.3). Below, the user can define, if both directions should be contained in the same sheet of the table, or if there has to be one separate sheet for each direction.

In the next section states the days of operation, that should be taken into account for the specific tablesheets (or tablesheet-pairs). A train is contained in a sheet, when it drives at least at one of the specified days.

By clicking on the +-button, additional tablesheets with other days of operation can be added.

Below, the output file is defined. If an export to csv is performed, per tablesheet one file is created with the name of the sheet appended to the filename. The target file format can be changed here, if necessary. For csv-files, the separation sign can be defined (default: comma).

In the panel Start that is bordered in black, warnings and error messages are shown. In the
example screenshot there is a warning, as two trains with the name 327 are contained in the timetable. For trains with the same name, the connection to former or next trains can't be restored when the timetable is imported again. The export might be started even when there are warnings, as soon as Start Export is pressed.

In the lower part, a preview of the exported tables are shown.

### 7.1.2 Import

You can open the view for import at File → Import → Excel/csv-timetable file:

In this view the template (7.1.3) and the input files are shown. For Excel imports, one file is possible, for csv-imports one or more files are possible. As soon as the file is chosen (using the button Choose file) it is imported in the background and the log shows potential errors during import. In the bottom part of the view, a preview of the imported timetable is shown (stations, trains, timetable).

The timetable data are used in all views and frames of jTrainGraph, as soon as Apply timetable data is clicked.
7.1.3 Templates

There are three default templates for import and export. Also own templates can be defined in Excel or csv (with user-defined formatting).

These are the default templates:

- Stations in 2 rows, trains in columns
  Stations are written top down and the departure and arrival times are shown in separate rows. Per train there is one column, where the name (number) of the train, the days of operation, comments, predecessor and times are shown. Times are listed just like in the timetable view.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of train</td>
<td>334</td>
<td></td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Days of operation</td>
<td>daily</td>
<td></td>
<td>daily</td>
<td></td>
</tr>
<tr>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predecessor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>Locarno</td>
<td>dep.</td>
<td>00:05</td>
<td>05:41</td>
</tr>
<tr>
<td>1.9</td>
<td>Locarno St.Antonio</td>
<td>arr.</td>
<td>00:07</td>
<td>05:43</td>
</tr>
<tr>
<td>1.9</td>
<td>Locarno St.Antonio</td>
<td>dep.</td>
<td>00:07</td>
<td>05:43</td>
</tr>
<tr>
<td>2.5</td>
<td>Salduno</td>
<td>arr.</td>
<td>05:44</td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>Salduno</td>
<td>dep.</td>
<td>05:44</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>St. Martino</td>
<td>arr.</td>
<td>00:08</td>
<td>05:45</td>
</tr>
<tr>
<td>3.1</td>
<td>St. Martino</td>
<td>dep.</td>
<td>00:08</td>
<td>05:45</td>
</tr>
<tr>
<td>5.2</td>
<td>Ponte Brolla</td>
<td>arr.</td>
<td>00:11</td>
<td>05:48</td>
</tr>
<tr>
<td>5.2</td>
<td>Ponte Brolla</td>
<td>dep.</td>
<td>00:11</td>
<td>05:48</td>
</tr>
</tbody>
</table>

- 1 row per station, trains in columns
  Just like template 1, with the difference, that for each station only one row is filled. Arrival and departure times are shown side by side, that means, a train ranges over two columns:
• Stations in columns, trains in rows

Vice versa to template 1: Per station there are two columns with arrival and departure times. Each train is shown in a row and the timetable has to be read from the left to the right:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name of train</td>
<td>334</td>
<td>300</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Days of operation</td>
<td>daily</td>
<td>daily</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Predecessor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>Locarno</td>
<td>00:05</td>
<td>05:41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.9</td>
<td>Locarno St.Antonio</td>
<td>00:07</td>
<td>00:07</td>
<td>05:43</td>
<td>05:43</td>
</tr>
<tr>
<td>2.5</td>
<td>Salduno</td>
<td></td>
<td></td>
<td>05:34</td>
<td>05:44</td>
</tr>
<tr>
<td>3.1</td>
<td>St. Martino</td>
<td>00:08</td>
<td></td>
<td>05:25</td>
<td>05:45</td>
</tr>
<tr>
<td>5.2</td>
<td>Ponte Brolla</td>
<td>00:11</td>
<td></td>
<td>05:48</td>
<td>05:48</td>
</tr>
<tr>
<td>6.1</td>
<td>Tegna</td>
<td>00:14</td>
<td></td>
<td>05:50</td>
<td>05:50</td>
</tr>
<tr>
<td>7.1</td>
<td>Verscio</td>
<td>00:16</td>
<td></td>
<td>05:52</td>
<td>05:52</td>
</tr>
<tr>
<td>7.8</td>
<td>Cavignano</td>
<td>00:18</td>
<td></td>
<td>05:54</td>
<td>05:54</td>
</tr>
<tr>
<td>9.9</td>
<td>Intragna</td>
<td>00:23</td>
<td></td>
<td></td>
<td>05:58</td>
</tr>
</tbody>
</table>

You can create own templates by writing some parameters in an Excel or a csv file. jTrainGraph parses the parameters and fills them with information (for export) respectively reads information at this position (for import).

Therefore in tables, where the stations are shown in rows (see templates 1 and 2), all columns with information about trains are copied to the right so all trains are contained. All information that is on the right of these columns is shifted respectively. Stations are expanded top down.

For timetables with trains in rows (see template 3) the same applies vice versa.
The function for own templates is recommended for advanced users. Only in special cases, support can be provided.

There are these parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Meaning</th>
<th>Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>%CONSTANT_STATIONS_RIGHT%</td>
<td>Removed when applied</td>
<td>Insert this at a random place in the table to show, that stations have to be expanded to the right (stations in columns) Not needed, when STA_NAME_RIGHT is used</td>
</tr>
<tr>
<td>%CONSTANT_TRAINNAME%</td>
<td>Is replaced by the static text <em>Name of train</em></td>
<td></td>
</tr>
<tr>
<td>%CONSTANT_DAYS%</td>
<td>Is replaced by the static text <em>Days of operation</em></td>
<td></td>
</tr>
<tr>
<td>%CONSTANT_COMMENT%</td>
<td>Is replaced by the static text <em>Comment</em></td>
<td></td>
</tr>
<tr>
<td>%CONSTANT_PREDECESSOR%</td>
<td>Is replaced by the static text <em>Predecessor</em></td>
<td></td>
</tr>
<tr>
<td>%CONSTANT_SUCCESSOR%</td>
<td>Is replaced by the static text <em>Successor</em></td>
<td></td>
</tr>
<tr>
<td>%TITLE%</td>
<td>Replaced by the title of the plan</td>
<td></td>
</tr>
<tr>
<td>%STA_POS%</td>
<td>For a station: Position</td>
<td></td>
</tr>
<tr>
<td>%STA_NAME%</td>
<td>For a station: Name</td>
<td></td>
</tr>
<tr>
<td>%STA_NAME_RIGHT%</td>
<td>For a station: Name</td>
<td>Automatically shows, that stations have to be expanded to the right (see template 3)</td>
</tr>
<tr>
<td>%STA_COLUMN%</td>
<td>Is replaced by the static text <em>Arrival</em> resp. <em>Departure</em></td>
<td>Automatically shows, that per station two rows/columns have to be written</td>
</tr>
<tr>
<td>%STA_COL%</td>
<td>Is replaced by the static text <em>arr. resp. dep.</em></td>
<td></td>
</tr>
<tr>
<td>%TRAIN_NAME%</td>
<td>For a train: name</td>
<td></td>
</tr>
<tr>
<td>%TRAIN_DAYS%</td>
<td>For a train: days of operation (e.g. daily, Mo-Fr; Mo, Sa-Sun)</td>
<td></td>
</tr>
<tr>
<td>%TRAIN_COMMENT%</td>
<td>For a train: comment</td>
<td></td>
</tr>
<tr>
<td>%TRAIN_PREDECESSOR%</td>
<td>For a train: predecessor</td>
<td></td>
</tr>
</tbody>
</table>
For a train: successor train (according to connected train, 5.6.1)

%TRAIN_SUCCESSOR%

For a train at a station: time

%TRAIN_TIME%

For a train at a station: arrival time

%TRAIN_TIME_ARRIVE%

For a train at a station: departure time

%TRAIN_TIME_DEPART%

For a train at a station: arrival time, when train drives through

%TRAIN_TIME_DTLINE%

For example, the Excel template for the default template 1 looks like this:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>%TITLE%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>%CONSTANT_TRAINNAME%</td>
<td>%TRAIN_NAME%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>%CONSTANT_DAYS%</td>
<td>%TRAIN_DAYS%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>%CONSTANT_COMMENT%</td>
<td>%TRAIN_COMMENT%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>%CONSTANT_PREDECESSOR%</td>
<td>%TRAIN_PREDECESSOR%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 6       | %STA_POS%             | %STA_NAME%  | %STA_COL% | %TRAIN_TIME%
| 7       | %CONSTANT_SUCCESSOR%  |         |         |         |
| 8       | %CONSTANT_SUCCESSOR%  |         |         |         |

7.2 Checks

Since version 3.1 some checks can be applied to the timetable. In version 3.1, this is contained as kind of a beta functionality. Please report any messages, that are shown superfluous or that are missing.

There is tab in the main window, the checks can be also shown in an own window using Windows → Show checks:
In the upper part of the view the rulesets to be applied to the timetable can be chosen. By default, all are selected. In the free version of jTrainGraph only consistency checks can be applied.

The rules are rechecked whenever a change occurs in the timetable. The results are shown in the table. When a row is selected, its details are shown in the text field on the bottom.

Above the table there is a textfield to filter the table entries. When a text is entered, all rows are shown that contain this text at any position in any column. The filter can be applied more precisely by using the name of the column, e.g. “Number=130”. More than one column can be assigned, so e.g. “Number=130;Context=Intragna” will find all messages with number 130, where the context contains Intragna.

On the right of this textfield there is a button to export the current content of the table to an Excel- or csv-file (in jTrainGraph Pro).
These are the possible error messages:

<table>
<thead>
<tr>
<th>Number</th>
<th>Rule set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Consistency</td>
<td>Two stations are at the same position. This will cause errors in train graph.</td>
</tr>
<tr>
<td>102</td>
<td>Consistency</td>
<td>Default track is not in station.</td>
</tr>
<tr>
<td>103</td>
<td>Consistency</td>
<td>Track name is invalid, as it starts with -.</td>
</tr>
<tr>
<td>104</td>
<td>Consistency</td>
<td>Two tracks in this station have the same name. This will cause errors.</td>
</tr>
<tr>
<td>110</td>
<td>Consistency</td>
<td>Train transition invalid, as train(s) are no longer contained in plan.</td>
</tr>
<tr>
<td>111</td>
<td>Consistency</td>
<td>Train has times after last arrival.</td>
</tr>
<tr>
<td>120</td>
<td>Station track occupation</td>
<td>Train arrives in occupied track.</td>
</tr>
<tr>
<td>130</td>
<td>Route track occupation</td>
<td>Trains meet on route part with only one track.</td>
</tr>
<tr>
<td>131</td>
<td>Route track occupation</td>
<td>Train passes by on route part with only one track.</td>
</tr>
<tr>
<td>132</td>
<td>Route track occupation</td>
<td>Train passes by on route part with two tracks. No free track found.</td>
</tr>
</tbody>
</table>

These are possible warnings:

<table>
<thead>
<tr>
<th>Number</th>
<th>Rule set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td>Station track occupation</td>
<td>Multiple shunting movements from different trains are in this track at the same time.</td>
</tr>
</tbody>
</table>

These are possible information messages:

<table>
<thead>
<tr>
<th>Number</th>
<th>Rule set</th>
<th>Description</th>
</tr>
</thead>
</table>
| 701    | Route track occupation | These trains drive through stations without departure times. Times are automatically calculated.  
  Note that this will be done on the safe side – arrival is rounded up, departure time is rounded down. Therefore the safe arrival time can be one minute later than the safe departure time. |
<p>| 702    | Station track occupation | These trains drive through stations without departure times. No tracks are blocked for drive through at these stations. |
| 703    | Station track occupation | Shunting is automatically calculated.                                      |
| 704    | Station track | Track change is calculated automatically (different arrival, than |</p>
<table>
<thead>
<tr>
<th>Number</th>
<th>Rule set</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>705</td>
<td>Route track occupation</td>
<td>For a route part with more than 3 tracks, no check of track occupation is performed.</td>
</tr>
<tr>
<td>710</td>
<td>Route track occupation</td>
<td>Train passes by another train in route part with 2 tracks. No conflicting trains found.</td>
</tr>
</tbody>
</table>

### 7.3 Show trains using rules

In order to show the trains in the train graph using rules, first this functionality has to be activated in the main view: View → Display trains according to rules. Afterwards the rules are configured: View → Configure train display rules and this view is opened:

![Rules for display of trains](image)

Every row represents a rule. There is a default rule that applies to all trains (column 1 says Default). Rules are added, removed and reordered using the buttons on the right. Rules that are displayed on top have a higher priority than the ones on the bottom of the view. When more than one rule applies for a train, the rule with the higher priority defines the train style in case of conflicts.

The second column defines the criterion to apply to the train name / train number:

1. Name of train contains
2. Name of train is
3. Name of train starts with / ends with
4. Train number is smaller / greater than
5. Train number is even / odd

6. Train name matches regular expression

In column 3, for criterions 1-4 and 6 the search text / the number is defined, that has to be compared to the train name or number. For criterions 4 and 5 all digits in the train name are taken into account (e.g. S1 3845 will be evaluated to number 13845).

The columns 4 to 7 define the style of all trains the rule applies to. Four different aspects of the style can remain untouched or be defined explicitly.

Example based on the image above:

- All trains are shown, as this is the default rule. This means, that also trains that are individually defined as not shown are still shown in the train graph (see 5.5.10 Individual design of trains).
- All trains with even train numbers are shown with pointed lines, all trains with odd numbers are shown with longly dashed lines.
- All trains with names that start with ICE, are shown in red.
- All trains whose names end with -D are shown in black with 3 pixels line size. Exception: All trains with names starting with ICE and ending with -D are shown in red (as the ICE-rule has a higher priority) with 3 pixels line size.

Rule sets can be saved using Save rules to file and reloaded using Load rules from file. They are saved to plain xml files with ending .xml.

7.4 Update functionality

The update function of jTrainGraph is started explicitly using Help → Search for update in the main window. It searches for new versions of the application and, if the user wants, starts downloading this new version (or opens jTrainGraph-website so the user can).

By default, the update function is executed every time the application is started. This behaviour can be deselected in the preferences. If a new version is available, a dialog is shown to the user, otherwise there is a message in the log of the main window.

For statistical purposes and to get the best possible proposal for a new version, the following
information is transmitted to the update server:

- Currently used jTrainGraph-version
- Operating system
- Selected language
- User name and serial number / activation code, when the Pro-functionality is used
- Flag which mode is currently executed (Stellwerksim-mode or not)
- Flag if the update function is executed automatically at application start

### 7.5 Settings

#### 7.5.1 Change settings

Using *Settings* → *Settings* some parameters can be modified in order to better align the application to the user needs.

Some special parameters are described here briefly:

![Settings Dialog](image)

**Language:**

Changes to this parameter will be applied at next start of the application.

Send failures of application without providing information / Never send application failures:
If an unexpected failure occurs in jTrainGraph, a window is opened where the error can be reported. In this window, a description of the actions leading to this error can be entered. If this window does not have to be shown, but the error should be automatically reported, the upper checkbox has to be selected. If errors should never be reported, the lower checkbox has to be selected. It is not recommended to change the default settings, as errors can't be fixed in this case (or it's more difficult to do so).

When the error is reported, no user settings are transmitted. Only the description, an optionally to be entered e-mail address and the crash message of the application (stack trace) is sent.

![Settings Window]

Author of configurations: For newly created or automatically created configurations the user name entered here will be filled into the configuration file. When the file is provided to other users, they will see the name entered here in their application log.

Hostname to connect: Applies when Stellwerksim runs on another machine within the same network. This hostname will be directly used for startup of Stellwerksim interface the next time a connection is established.

URL for online-configurations:
To this web-address the question for online-configurations is transmitted. For the moment, only the address that is entered by default is possible, but there might be other providers later.

Show platforms in train graph: Below every train name / train number, the Stellwerksim platforms will be shown.
Only show numbers: Only the numbers of Stellwerksim platforms are shown
(e.g. for Stellwerksim-platform RHIZ 1 only “1” will be shown)

Show the first/last x characters: Only the first/last x characters of the Stellwerksim-platforms will be shown. Any number can be entered. For value -1, the whole name is shown. For values greater than 0, this number of characters will be shown in the way, that e.g. for first x characters = 2 and last x characters = 1 the Stellwerksim-platform will be shown as RH1. When 0 is entered, only the other parameter applies, so e.g. first x characters = 2 and last x characters = 0 resolves to RH for Stellwerksim-platform RHIZ 1.

The settings chosen in this frame will be stored in the file preferences.xml in the folder, where the jTrainGraph jar- or exe-file is. In this file also some additional, invisible settings are stored, e.g. if jTrainGraph was in Stellwerksim mode when it was executed last time (in this case it will be started in this mode also the next time).

7.5.2 Manage additional colors
The existing colors can be extended by additional colors. To do this, in the main window Settings → Manage additional colors has to be selected in order to show this window:

Using Add color a new color can be entered. In the first column (from the left), the name of the color is shown. In the second column, the color is shown. The color can be entered in three ways:

1. Enter decimal values for red, green and blue component of the color (0 - 255)
2. Enter the hexadecimal value for RGB-value in the rightmost column
3. Select the color and click on Edit selected color on the right in order to define the color
using the default frame of the operating system.

Using Load unnamed colors all colors are loaded, that are used for trains, stations and helplines, but are not listed in the additional colors table and are also no default color. This can be caused when timetable files of other users are loaded without applying their color settings.

When the checkbox For changes to colors, change every usage to new color is selected, changes are directly applied to all existing trains, stations and helplines.

The colors are also stored in preferences.xml file.

7.5.3 Change color sortation

For a quicker selection of colors, the order of default and additional colors can be modified. This is started using Settings → Change sequence of colors in the main window. There is a table with all colors and the sortation can be changed by selecting a color and using the buttons on the right:

Colors no longer present will be removed at next startup of jTrainGraph, newly created
additional colors are appended at the end of the list.

7.5.4 Restore default settings

In order to load default settings after changes by the user, *Settings → Restore default settings* has to be chosen. In this window, several options define which parts of the settings are reset and which are not.
8 Shortcuts

Windows are closed using Strg/Cmd + W or Strg/Cmd + S. In the main windows, these additional shortcuts apply:

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strg + N</td>
<td>Create new file</td>
</tr>
<tr>
<td>Strg + O</td>
<td>Open file</td>
</tr>
<tr>
<td>Strg + S</td>
<td>Save file</td>
</tr>
<tr>
<td>Strg + Shift + S</td>
<td>Save file to</td>
</tr>
<tr>
<td>Strg + Z</td>
<td>Undo</td>
</tr>
<tr>
<td>Strg + Shift + Z</td>
<td>Redo</td>
</tr>
<tr>
<td>Strg + Q</td>
<td>Close application (not on Mac OS)</td>
</tr>
<tr>
<td>Strg + E</td>
<td>Export train graph to image file</td>
</tr>
<tr>
<td>Strg + P</td>
<td>Print train graph</td>
</tr>
<tr>
<td>Strg + T</td>
<td>Switch between mode to create own timetables and mode to show Stellwerksim-live data</td>
</tr>
<tr>
<td>Strg + B</td>
<td>Open new windows to edit stations</td>
</tr>
<tr>
<td>Strg + K</td>
<td>Open new window to edit trains and days of operation</td>
</tr>
<tr>
<td>Strg + Z</td>
<td>Open new window to edit timetable</td>
</tr>
<tr>
<td>Strg + R</td>
<td>Open new windows to show train graph</td>
</tr>
<tr>
<td>Strg + ,</td>
<td>Open new window with application settings</td>
</tr>
</tbody>
</table>

On Mac OS, the cmd-key is used instead of the strg-key.
9 FAQ

9.1 General

9.1.1 How to report errors?

Errors can't be completely avoided during development, therefore it is important to localize and fix bugs. To be able to do this, I need a description of the failure and all steps that are necessary to reproduce it – and if possible and applicable the files needed to reproduce it.

When the problem only occurs on a specific operation system / platform, I also need the version of the operation system and the version of the installed Java version(s).

9.2 Stellwerksim mode

9.2.1 Why are not all trains shown in the train graph?

Trains are only shown, when they stop at least at one platform that is added to a jTrainGraph station and

- have their source or destination at a drive defined in jTrainGraph
- stop at a second platform defined in a jTrainGraph station

Therefore the first platforms right beneath the start of the interlocking area should be contained in the configuration (see 6.3.4).

In order to use meaningful slopes for trains, at least two platforms for each train should be defined in jTrainGraph.