



FBS is a programme for railway conception, which has been developed since 1993. Naturally, it combines the opportunities of today's computer technology with scientific calculations and the knowledge of daily railway operation. FBS represents an efficient tool with regard to creating timetables and utilization of obtained data. With FBS you command a programme package, which **iPLAN-modules**, additional programmes and interfaces offer you as the user an impressive wide range of functionality.

Apart from eliminating the practice of creating graphic timetables manually, FBS also makes the manual adoption of timetable data into the building process, which one may still encounter today, unnecessary. Until now, integrated planning processes have been disrupted by a change of media. Likewise, the danger of transmission errors or non-current data because of interminable tuning processes did not correspond with the unsteady railway market, especially with regards to the public transport.

FBS supports the user right from the first conception to the daily printout of timetables. FBS suggests complex solutions and carries out feasibility studies without making all decisions for the user. FBS is by no means intended to replace the experienced railway agent. The time-saving search for traces indeed provides more freedom for creativity and flexibility to fulfil customer's requests.

FBS transfers science to everyday life. Complex formulas and methods of calculation of travelling times, which have solely been used in railway research so far, can now be applied to the planning process.

At this time, decisions for investments in vehicles or tracks can be verified. Thus, computer-aided railroading becomes a true opportunity.

One of the great advantages of the **iPLAN module graphic timetable** is that it offers the search for slots and calculation of running times while it is identifying conflicts at the same time. The evaluation of the timings, which is done according to approved scientific standards, provides neutrality regarding the practicability of timings.

Provided statistic results out of the **statistic module**, such as quantities of train-kilometres (mileage), represent an important basis for business management calculations.

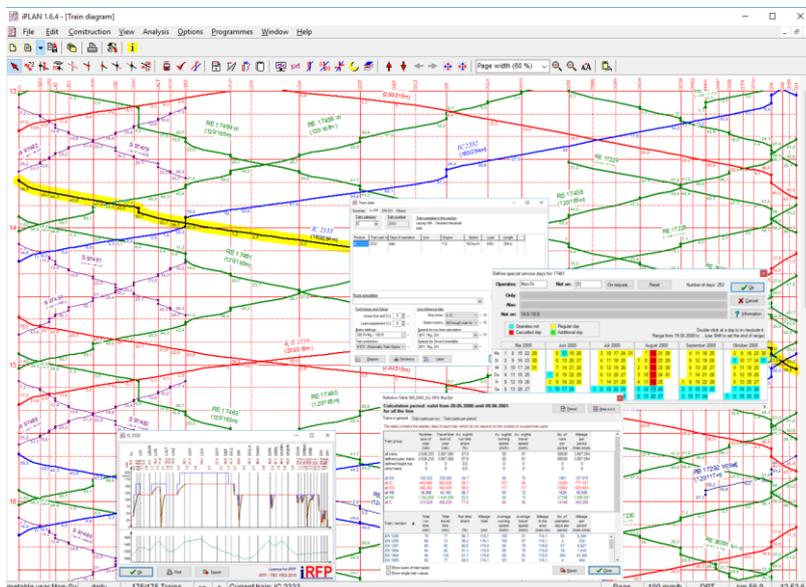
The **iPLAN module station timetable**, it is possible to create clear graphic timetables for stations, track occupation diagrams and similar train sequence table documents from train diagram with the help of data transfer with only a few working steps.

In iPLAN the created train diagrams and train sequence tables are transferred into the daily needed documents, motive power units or wagons are planned economically: The module **Customer's Timetable** easily compiles booklets and leaflets upon short-term request. This way, customers may be attracted while attending events and in case of track construction understanding can be attained – principles which are indispensable in today's commuter traffic. **Driver's Timetable** compiles the necessary working timetables for train driver and personnel at low cost on standard computer programmes.

With the **iPLAN module arrival and departure posters** you can easily create an overview over all arrival and departure times at a station.

An **interval graphic** can visualize the clockface timetable system in traffic areas very efficiently.

Vehicles are used to the optimum in the entire network with **Circulation plan**. Working independently, urgent repairs or fixed connections are as easy to handle as complying with given target criteria such as well-balanced distribution of running mileage or avoidance of empty runnings. Circulation Plan suggests variations and lets the user know about conclusions on the optimization of timings with the Graphic Timetable.



The Graphic Timetable is the most important document when conceptualizing a new timetable. Here, position and sequence of trains are being fixed. When creating timings, two kinds of difficulties may occur: firstly, calculation of timings depend on a host of different factors which need to be taken into account, secondly, drawing a train diagram is time-consuming. The module is capable of solving both problems in succession. After estimating the running

procedure, the Graphic Timetable always checks whether the desired train slot is available every day, not only on weekdays but for the whole operating period. Current methods of modern forms of traction such as the so-called train-coupling and sharing do not represent any problems for the programme, any number of parts per train may be entered while considering different sections and days. Thus, different loads or several tractions may be taken into account easily. Compiled timetable data such as running times or train position may be directly taken over into the other FBS components. It goes without saying that copying times or other data are not needed anymore.

time for a desired train, the train is pictured in the diagram. Following the estimations for each train, the train diagram can be printed instantaneously.

Besides the data of engines which are contained in the programme, the following infrastructure data has to be imported or entered in order to use the Graphic Timetable's ability of estimating running times:

The module provides timetable statistics for business management calculations, including train mileage and storage balance, which can be transferred into text processing or spread sheet analyses. Balances and orders are simplified and changes in quantity of business evaluation decides whether timetable versions are practicable regarding their quality, moreover, it compares the debit sides, which were tracked and manifested in the disposition mode of the Graphic Timetable, with the credit sides in timings. Those factors turn out to be of growing importance to the increasingly regional commuter traffic market.

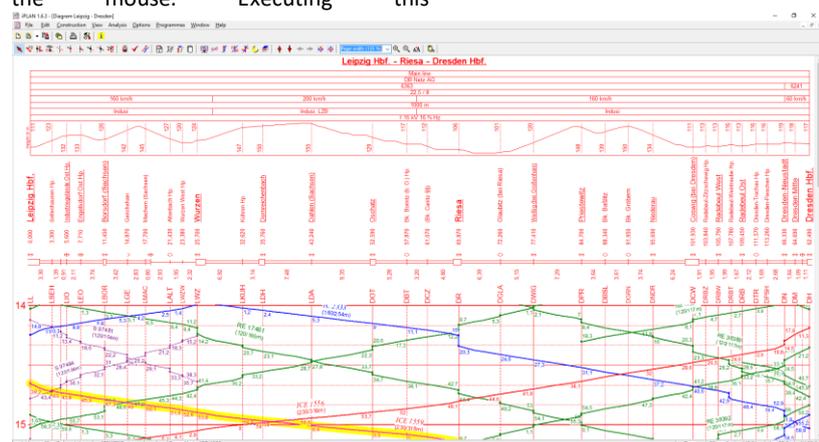
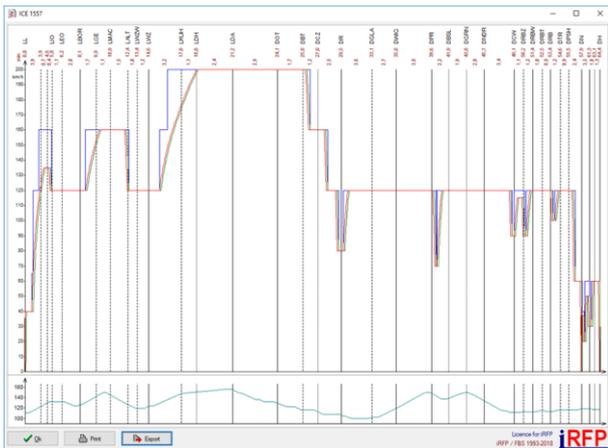
- Position and character of operating stations
- Number of stations and line tracks
- Gradient ratio between stations/gradient profile
- Regulations for station and main tracks

After choosing the train properties as headcodes, travelling time supplement, stop-off points and departure times the available train slots may be determined.

The more complicated the timetable, the more indispensable the module is for the user. Inserting train data into the computer does not only determine possible arrival and departure times, it also suggests the next available train slot or train crossing on single track lines. If the position of the train is not suitable, the line can be moved effortlessly with the mouse. Executing this

In order to employ the module's current knowledge of driving dynamics, one has to know about the technical data of the particular motive power units. The programme comes with an extensive database, containing many European manufacturers and engines. These data may be edited upon request.

When calculating running times, employed types of brakes are considered as well as the effects of different ATP and ATO devices on running and braking conditions.



Train circulation plans control the sequence of trains, which are formed by certain vehicles. These lists are indispensable with respect to economic railway operation as well as increasingly to obtaining vehicles and strategic planning of offers, for example local passenger traffic invitations for tender.

Circulation Plans represent a problem when intending an economical and technical optimum as they allow close to endless combinations of single runnings. Besides, diverse target criteria of different weight have to be taken into consideration. Technical aids of sound scientific basis must be utilized in order to establish sensible variations or the optimum train allocation.

iPLAN is able to solve these problems. It checks some hundred thousand train allocation possibilities within minutes. While compiling this, the programme makes sure that train allocations are confined within themselves along with the fact that those allocations are correct for different days and weekdays.

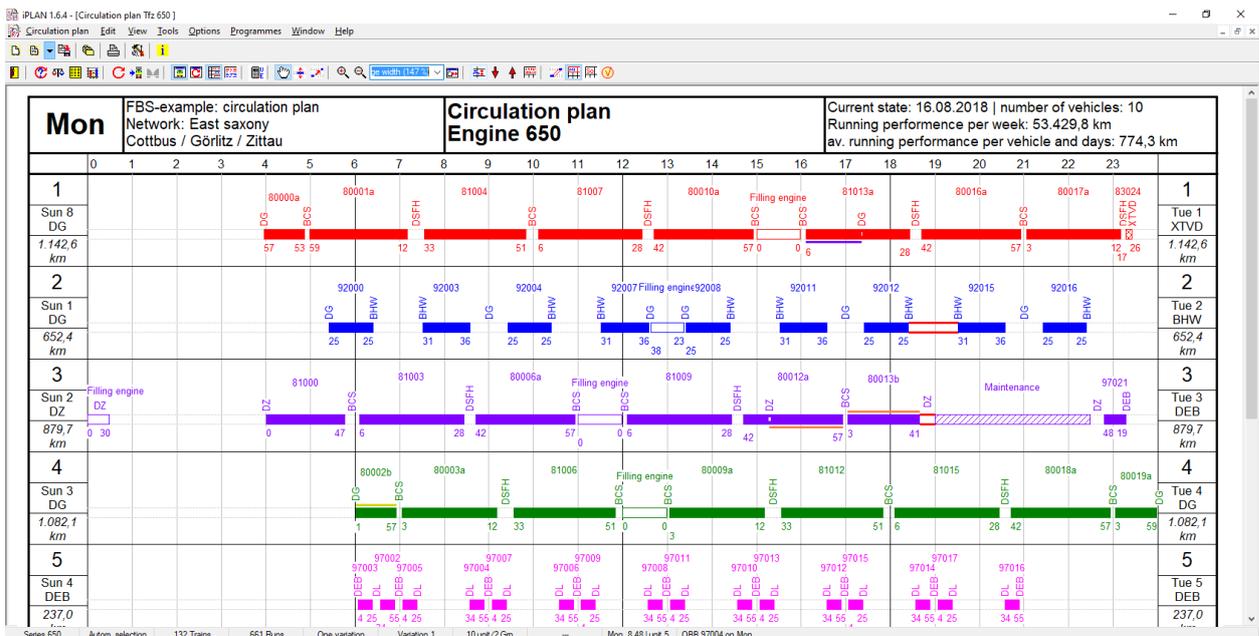
Various iteration phases of the well-known Hungarian method, which has been developed for the circulation programme, provide excellent allocation results. This way, the number of required vehicles together with a well-balanced train mileage and combined grouping of vehicles is optimized.

Thereby, iPLAN fulfils today's requirements of railway operation. Additionally, iPLAN is capable of optimizing the allocation by exhaustion.

Various calculated allocation variations of the same value are presented to the designer. Whatever he chooses can be distributed either as a clear graph or in table form. Upon request, preventive maintenance or cleaning times may be set and therefore included in the optimization process. Furthermore, the consumption of operating supply items is displayed by two running mileage counters; for all circulation variations statistics can be read off directly.

Specific operating conditions are included by considering fixed connections. Fixed Connections interrupt the optimization for the reason of automatically assigning connections if this is deemed sensible by the employee.

Thereby, every possible peculiarity can be depicted, for example, the turning of coupled train parts in head terminuses.

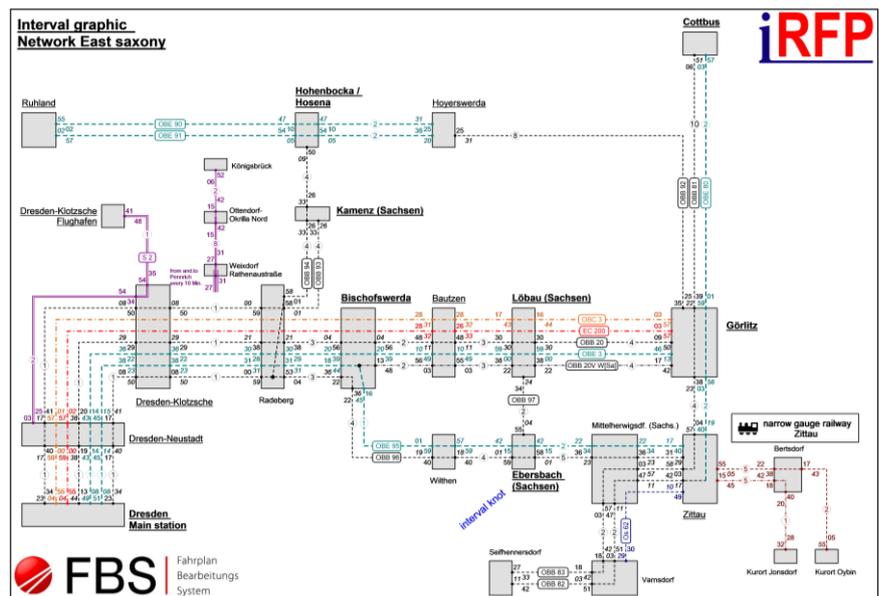
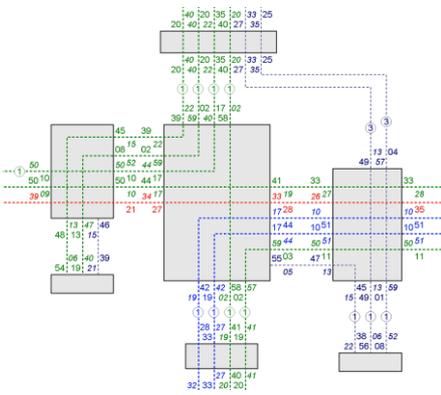


FBS offers an extensively automated possibility to create interval graphics. The module Interval Graphics, part of FBS, is a component of the iPLAN programme. Prerequisite for creating an interval graphic are the graphic timetables for the individual lines and their combination in a FBS network.

After the creation of a new interval graphic in an FBS network, the programme proposes the knot station and the train in intervals. The user may change or adapt the proposals of the programme manually. When selecting the route, the programme orientates itself by the interval group information of the graphic timetables, in order to identify trains in intervals and their interval times. Alternatively, it is possible to set exemplary interval trains manually, when the graphic timetables do not contain the interval group information. In this case a single train with its arrival and departure times is given symbolically for a train in interval. The interval time has to be entered by hand.

This way, interval graphics can be created from simple exemplary interval graphic timetables (they only contain trains for one single interval period). The position of interval knots on the interval graphic is also proposed automatically by the programme, provided that geographic coordinates are included in the station directory (the exemplary station directory, supplied with FBS, contains geographic coordinates for most of German stations). That is why stations do not need to be positioned manually when creating a new interval graphic. FBS Interval Graphics may be revised by hand in every respect, but usually most of the possible manual settings are not needed. Regular improvements are restricted to line corrections between junctions by entering or relocating of the so-called drawing points, in order to avoid overlapping. Furthermore, inscribing with individual information or headings for instance may be part of the general corrections.

Interval graphics may be printed or plotted on every printer, configured under Microsoft® Windows®, in every format from DIN A4 upwards. FBS offers a print preview, a print-out ("diversion") in different graphic file formats and an independent creation of PDF-files (Portable Document Format, PostScript® Page Description Language).

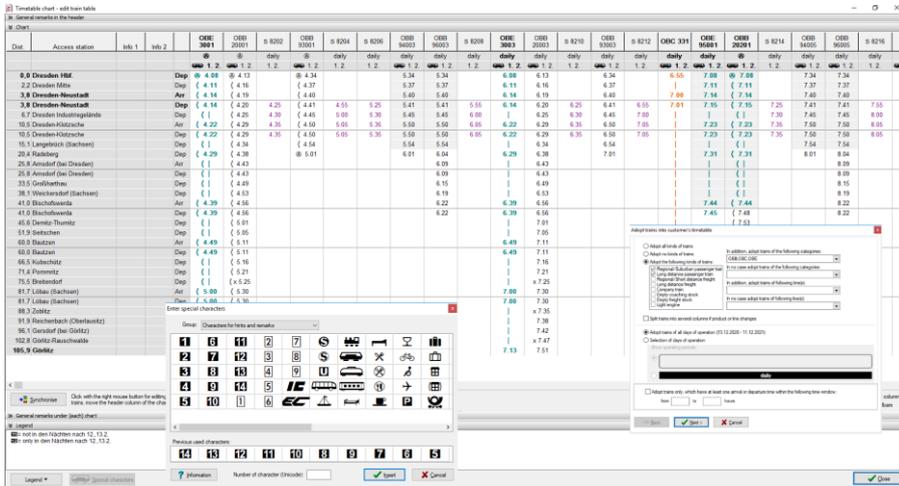


In iPLAN, customer's timetables of any size either hot type or photo lettering, can be compiled according to UIC guideline 411. The earlier hot type has been used in German timetables until the beginnings of the nineties. Its creative power is remarkable, adapting flexibility to individual needs. With the advent of electric data processing photo lettering came into existence, which had been difficult to configure with the software until then. Unfortunately, this caused difficulty among passengers who had a hard time reading the timetable. Furthermore, photo lettering was intensely time-consuming for the employees.

In iPLAN, the timetable's layout is rather adaptable for the user. Elements of both types may be combined, individual variations of timetable type and adaption concerning transport authorities become possible. Timetable charts comprising various lines from the graphic timetable are compiled with the aid of an assistant. In the course of this, diverted lines may be added and clearly arranged. In case that timings are subject to change, arrival and departure may be kept up-to-date and separate trains or buses (replacement services) may be entered manually.

Printing the timetables can be conducted with any printer at low cost, making sure that passengers can be informed effortlessly in the event that changes in timings occur. In addition, timetables can be exported as graphics file (e.g. arrangement of web pages) or as postscript file for exposure in printing houses. The timetable's whole range of symbols is available to both layout types. In the process, the usual symbols for days on which trains run are assigned automatically. Trains can be equipped with any foreground or background colours so passengers know about different periods of time, types of trains or exceptions immediately and clearly.

iPLAN provides an additional general and chart-related legend, individual arrangement can be carried out by an integrated text editor and a reading aid can be adjusted in both hot type and photo lettering.



N11 Angerapp - Treuburg - Osterode - Cranz - Darkehmen - Eylau		all trains with 1. + 2. class	
RE Eylau - Darkehmen - Schirwindt - Kudowa		RE Eylau - Darkehmen - Angerapp	
So macht man Fahrpläne!		Zug	RB 26717 RE 3617 RE 3517 RB 26763 RB 7919 52 RB 26719 RE 3619
km	von	Bartenstein	Muhlbach
0,0	Angerapp Hbf.	7.11	7.32
6,8	Radiumbad Quednau	7.39	7.44
12,4	Nesselbeck Hp.	7.24	7.50
19,6	Trauburg	7.25	7.51
25,0	Laplau	7.25	7.56
30,7	Bledau	7.33	8.01
37,1	Cranz-Neustadt	7.36	8.06
40,4	Cranz	7.39	8.09
9,0	Osterode (Nadrauen) Ost	6.38	7.38
11,8	Rautenberg (Kr. Bartenstein)	6.43	7.46
16,0	Nautzken-Pronitten ob. Hp.	6.49	7.52
20,6	Raglin	7.00	8.02
25,6	Nautzken-Pronitten unt. Hp.	7.07	8.09
30,8	Tharau	7.14	8.16
36,5	Cranzbeek	7.31	8.31
40,4	Cranz	7.36	8.36
40,4	Cranz	7.40	8.10
45,3	Cranz Süd	7.45	8.15
53,6	Weischkitten	8.23	8.23
60,3	Mollehnen	8.31	8.31
63,9	Fischhausen oberer Bf.	8.34	8.34
66,5	Darkehmen Nord Hp.	8.38	8.38
71,2	Darkehmen Angerappbrücke	8.42	8.42
78,2	Darkehmen Hbf.	8.04	8.47
91,8	Insterburg	8.11	8.55
106,1	Bad Schönfelde Hp.	8.19	8.19
116,9	Mehlanken	8.28	9.18
131,9	Eylau	8.35	9.28
	nach	8.44	Berlin Ostbf.

With this iPLAN module arrival and departure posters, with the help of which the passengers on site at the stations and halts can catch up on the arrival and departure times, can be created effortlessly in only one step.

To create arrival and departure posters, the FBS user has to select for which operating point the poster is desired and if it involves the notice for the arrivals or the departures. Precondition of course is also here, that the concerning tracks with the driving positions of the trains are integrated in the respective network over the in the graphic timetable processed timetable files. The programme takes the information for the arrival and departure posters out of this data source.

The presentation takes place in the classic way, that means in chronological ordered, line by line consecutive disclosure of the trains. For the management of the contentual amount of the posters to be created the programme iPLAN offers various options: So the train types to be considered can be selected differentiated, for the time indications there are also the rounding rules known from other FBS modules available. Did the trains in the graphic timetable get already the correct use of tracks, this information can be recorded in the arrival and departure poster, too. For the presentation of the days of run, at which the trains drive, you can choose between the usage of symbols by UIC411 or the general common shortcuts.

Here iPLAN also enables specifications in regard to the indication of further (departure posters) or previous (arrival posters) stops for the particular trains – this stops can be released selective by amount, importance or random selection. Moreover the creation of such timetables isn't limited on stations in the tourist traffic, that means by absorption of further information of for example the including of freight trains you can facilitate also a usage for official business or intern purposes.

Different to the remaining documents and plans created by iPLAN (that means circulation plans, customer's and driver's timetables, interval graphics), the programme doesn't drop the arrival and departure posters in the object list of the iPLAN main window. Instead of this the posters are saved immediate as independent documents in the Rich-Text-Format and then can be opened and edited in a word processing programme. So the opportunities for the contentual and creative processing pursuant to individual ideas and demands of the users (like e.g. usage of another typeface, insertion of company specific logos, including of additional information and remarks) have no limits.

The print on customary printers and plotters upon the engrossment of large-sized copies can be realized uncomplicated.

Arrival			Bautzen			valid from 13.12.2020 to 11.12.2021					
Time	Train	from	Track	Time	Train	from	Track	Time	Train	from	Track
4.48	OB 20	KubSchütz 4.43 - Pommitz 4.58 - Brielandorf 4.55 @ - Gerlitze 4.09		11.56	OB 20 V	KubSchütz 11.51 - Pommitz 11.45 - Brielandorf 11.43 @ - Gerlitze 11.17		16.03	OB 20 V	Setschen 17.58 - Demitz-Thumitz 17.53 - Bischofswerda 17.48 @	
4.49	OB 20000	Bischofswerda 4.39 - Radeberg 4.39 - Dresden-Jüdische 4.22		12.03	OB 20 V	Setschen 11.58 - Demitz-Thumitz 11.53 - Bischofswerda 11.48 @		16.04	OB 2011	to Bischofswerda as OB 20 V OB 95011 from Dresden-Neustadt 17.15 - Dresden Hbf 17.04	
5.10	OB 3	Dresden-Neustadt 4.14 @ - Dresden Hbf 4.08		12.28	OB 3	to Bischofswerda as OB 20 V OB 95005 from Dresden-Neustadt 11.15 - Dresden Hbf 11.08		16.27	EC 200	Gerlitze 16.03 @	
5.11	OB 3	Löbau (Saachsen) 4.59 - Gerlitze 4.46 @		12.28	OB 3	Löbau (Saachsen) 11.17 - Gerlitze 10.63 @		16.48	OB 20	KubSchütz 16.43 - Pommitz 16.38 - Brielandorf 16.35 @ - Gerlitze 16.09	
5.11	OB 20 V	Setschen 5.05 - Demitz-Thumitz 5.01 - Bischofswerda 4.56 @		12.48	OB 20	KubSchütz 12.43 - Pommitz 12.38 - Brielandorf 12.35 @ - Gerlitze 12.09		16.49	OB 3	Bischofswerda 16.39 - Radeberg 16.29 - Dresden-Jüdische 16.22 - Dresden-Neustadt 16.14 @ - Dresden Hbf 16.08	
5.48	OB 20 V	Dresden-Neustadt 6.20 - Dresden Hbf 6.13		12.49	OB 3	Bischofswerda 12.39 - Radeberg 12.29 - Dresden-Jüdische 12.22 - Dresden-Neustadt 12.14 @ - Dresden Hbf 12.08		19.10	OB 3	Löbau (Saachsen) 18.59 - Gerlitze 18.46 @	
5.49	OB 3	KubSchütz 5.43 - Pommitz 5.38 - Brielandorf 5.35 @ - Gerlitze 5.09		13.10	OB 3	Löbau (Saachsen) 12.59 - Gerlitze 12.46 @		19.11	OB 3014	Setschen 19.05 - Demitz-Thumitz 19.01 - Bischofswerda 18.96 @ - Dresden-Neustadt 18.20 - Dresden Hbf 18.13	
6.49	OB 3	Bischofswerda 6.39 - Radeberg 6.29 - Dresden-Jüdische 6.22		13.11	OB 20	Setschen 13.05 - Demitz-Thumitz 13.01 - Bischofswerda 12.96 @ - Dresden-Neustadt 12.20 - Dresden Hbf 12.13		19.31	OB 3	Dresden-Neustadt 19.01 - Dresden Hbf 18.55 @	
6.49	OB 3003	Dresden-Neustadt 6.14 @ - Dresden Hbf 6.08		13.32	EC 200	Dresden-Neustadt 13.02 - Dresden Hbf 12.55 @		19.56	OB 20 V	KubSchütz 19.51 - Pommitz 19.46 - Brielandorf 19.43 @ - Gerlitze 19.17	
7.10	OB 3	Löbau (Saachsen) 6.59 - Gerlitze 6.46 @		13.56	OB 20 V	KubSchütz 13.51 - Pommitz 13.46 - Brielandorf 13.43 @ - Gerlitze 13.17		20.03	OB 20 V	Setschen 19.58 - Demitz-Thumitz 19.53 - Bischofswerda 19.48 @	
7.11	OB 20	Setschen 7.05 - Demitz-Thumitz 7.01 - Bischofswerda 6.96 @		14.03	OB 20	Setschen 13.58 - Demitz-Thumitz 13.53 - Bischofswerda 13.48 @		20.28	OB 3	to Bischofswerda as OB 20 V OB 95013 from Dresden-Neustadt 19.15 - Dresden Hbf 19.08	
7.31	OB 3	Dresden-Neustadt 7.01 - Dresden Hbf 6.55 @		14.27	EC 200	Gerlitze 14.03 @		20.48	OB 20	KubSchütz 20.43 - Pommitz 20.38 - Brielandorf 20.35 @ - Gerlitze 20.09	
7.56	OB 20 V	KubSchütz 7.51 - Pommitz 7.46 - Brielandorf 7.43 @ - Gerlitze 7.17		14.48	OB 3	KubSchütz 14.43 - Pommitz 14.38 - Brielandorf 14.35 @ - Gerlitze 14.09		21.09	OB 3	Bischofswerda 20.39 - Radeberg 20.29 - Dresden-Jüdische 20.22 - Dresden-Neustadt 20.14 @ - Dresden Hbf 20.08	
8.03	OB 20 V	Setschen 7.58 - Demitz-Thumitz 7.53 - Bischofswerda 7.48 @		14.48	OB 3	Bischofswerda 14.39 - Radeberg 14.29 - Dresden-Jüdische 14.22 - Dresden-Neustadt 14.14 @ - Dresden Hbf 14.08		21.11	OB 20	Setschen 21.05 - Demitz-Thumitz 21.01 - Bischofswerda 20.96 @ - Dresden-Neustadt 20.20 - Dresden Hbf 20.13	
8.03	OB 20201	to Bischofswerda as OB 20 V OB 95001 from Dresden-Neustadt 7.19 - Dresden Hbf 7.08		15.10	OB 3	Löbau (Saachsen) 14.59 - Gerlitze 14.46 @		22.48	OB 20	KubSchütz 22.43 - Pommitz 22.38 - Brielandorf 22.35 @ - Gerlitze 22.09	
8.28	OB 3	Löbau (Saachsen) 8.17 - Gerlitze 8.03 @		15.11	OB 20	Setschen 15.05 - Demitz-Thumitz 15.01 - Bischofswerda 14.96 @ - Dresden-Neustadt 14.20 - Dresden Hbf 14.13		22.49	OB 3	Bischofswerda 22.39 - Radeberg 22.29 - Dresden-Jüdische 22.22 - Dresden-Neustadt 22.14 @ - Dresden Hbf 22.08	
8.48	OB 20	KubSchütz 8.43 - Pommitz 8.38 - Brielandorf 8.35 @ - Gerlitze 8.09		15.31	OB 3	Dresden-Neustadt 15.01 - Dresden Hbf 14.55 @		23.10	OB 3	Löbau (Saachsen) 22.59 - Gerlitze 22.46 @	
8.49	OB 3	Bischofswerda 8.39 - Radeberg 8.29 - Dresden-Jüdische 8.22		15.56	OB 20 V	KubSchütz 15.51 - Pommitz 15.46 - Brielandorf 15.43 @ - Gerlitze 15.17		23.11	OB 3	Setschen 23.05 - Demitz-Thumitz 23.01 - Bischofswerda 22.96 @ - Dresden-Neustadt 22.20 - Dresden Hbf 22.13	
8.49	OB 3005	Dresden-Neustadt 8.14 @ - Dresden Hbf 8.08		16.03	OB 20	Setschen 15.58 - Demitz-Thumitz 15.53 - Bischofswerda 15.48 @		Legend to symbols			
9.10	OB 3	Löbau (Saachsen) 8.59 - Gerlitze 8.46 @		16.26	OB 3	Löbau (Saachsen) 16.17 - Gerlitze 16.03 @		Products			
9.11	OB 20	Setschen 9.05 - Demitz-Thumitz 9.01 - Bischofswerda 8.96 @		16.48	OB 20	KubSchütz 16.43 - Pommitz 16.38 - Brielandorf 16.35 @ - Gerlitze 16.09		Long distance passenger (LDB)			
9.33	EC 200	Dresden-Neustadt 9.02 - Dresden Hbf 8.55 @		16.48	OB 3	Bischofswerda 16.39 - Radeberg 16.29 - Dresden-Jüdische 16.22 - Dresden-Neustadt 16.14 @ - Dresden Hbf 16.08		EuroCity, International passenger (Int)			
9.56	OB 20 V	KubSchütz 9.51 - Pommitz 9.46 - Brielandorf 9.43 @ - Gerlitze 9.17		17.10	OB 3	Löbau (Saachsen) 16.59 - Gerlitze 16.46 @		Regional/Suburban passenger (RDB)			
10.03	OB 20204	Setschen 9.58 - Demitz-Thumitz 9.53 - Bischofswerda 9.48 @		17.11	OB 20	Setschen 17.05 - Demitz-Thumitz 17.01 - Bischofswerda 16.96 @ - Dresden-Neustadt 16.20 - Dresden Hbf 16.13		Overseas/Sea			
10.03	OB 20203	to Bischofswerda as OB 20 V OB 95003 from Dresden-Neustadt 9.15 - Dresden Hbf 9.08		17.32	EC 200	Dresden-Neustadt 17.02 - Dresden Hbf 16.55 @		OB			
10.27	EC 200	Gerlitze 10.03 @		17.56	OB 20 V	KubSchütz 17.51 - Pommitz 17.46 - Brielandorf 17.43 @ - Gerlitze 17.17		Operative days			
10.48	OB 20	KubSchütz 10.43 - Pommitz 10.38 - Brielandorf 10.35 @ - Gerlitze 10.09		<ul style="list-style-type: none"> @ runs Monday-Friday, not on holiday ! runs daily without special note public holiday are: 25.12.11.1.2.4.5.4.1.1.13.23.24.5.3.31.10.17.11. 							
10.49	OB 3	Bischofswerda 10.39 - Radeberg 10.29 - Dresden-Jüdische 10.22 - Dresden-Neustadt 10.14 @ - Dresden Hbf 10.08									
11.10	OB 3	Löbau (Saachsen) 10.59 - Gerlitze 10.46 @									
11.11	OB 20	Setschen 11.05 - Demitz-Thumitz 11.01 - Bischofswerda 10.96 @ - Dresden-Neustadt 10.20 - Dresden Hbf 10.13									
11.31	OB 3	Dresden-Neustadt 11.01 - Dresden Hbf 10.55 @									

The timetable is created, vehicles and tracks are fit for service and the passengers informed of the timings. But still, some internal documents are missing to make the service complete: timetables for the engine and train staff.

A complete driver`s timetable is created in an instant, which can be printed with standard printers quite easily, while particular functions facilitate, for example, making one A4 page out of two A5 pages.

With iPLAN driver`s timetables can be compiled and printed in different layouts.

Timetable documents are compiled with various files from the graphic timetable in a simple way. All the user has to do, is entering the used routes and the interconnection stations in the railway network:

iPLAN automatically arranges the necessary driver`s timetables by employing the train numbers. In these timetables, the programme independently detects and marks possible crossings and passings as well as the train sequence.

Moreover, manual modification along with adding information or footnotes can be performed comfortably (reference to expected interchanges or specific operating conditions), providing adaption to potential operating conditions, hence preserving flexibility.

RB 7712 Angerapp Hbf. - Heilsberg nur 21.3. - 18.9.									
Tfz. 253		Last 350 t				Brh. min 98 R+Mg			
Hg. 100 km/h						Brh. soll 140 R+Mg			
1	2	3a	3b	4	5	6	7	8	9
Betriebsstellen									
Zulässige Geschwindigkeiten		Tunnelanfang und -ende, verkürzter Vorsignalabstand ▼ von 40 km/h abweichende Geschwindigkeiten auf Signal Hfz, Zugfunk		Vor der Trapeztafel hält Zug	Ankunft	Abfahrt	Kreuzung mit Zug	überholt wfrd überholt durch Zug	Zuglaufmeldung durch Art
ab km	km/h	Lage in km							
	40	Angerapp Hbf.		-0,3		8 03			Edt En
	1,0	- ZF E65 -		1,0					
	100	Angerapp Bbf. Ah		2,0					
	5,1			5,1					
	5,6	Beynuhen		5,6					
	100			7,0					
		Avanst. Sodehnen		7,0					
		Spirokeln		11,0					
				13,0					
		Friedrichsruh (Nadr)		14,0					
		Launingken		18,0					
		Klimken		21,0					
		Avanst. Schirwindt Stadt		22,0					
		Schirwindt West Gbf		25,0					

Train 12 Friday Lilloot - Seton									
Max. speed 40 mph Engine RDC-1									
1	2	3	4	5	6	7	8	9	10
Position of station	Permitted speed	Station, Position of speed change	Arrival	Departure or run through	Crossing with train	overtakes train is overtaken by train	Entering station track	Stop before entering station	Report by
157,6	40	Lilloot.....		1552					
	25	154,5							
		153,6							
152,3	40	MacNeill.....		1609					
	25	152,1							
		151,8							
	40	150,9							
	25	150,6							
149,2	40	Retaskit.....		19					
	35	147,7							
		146,8							
143,6	40	Ohin.....		1635					
139,5		Seton.....	1648						

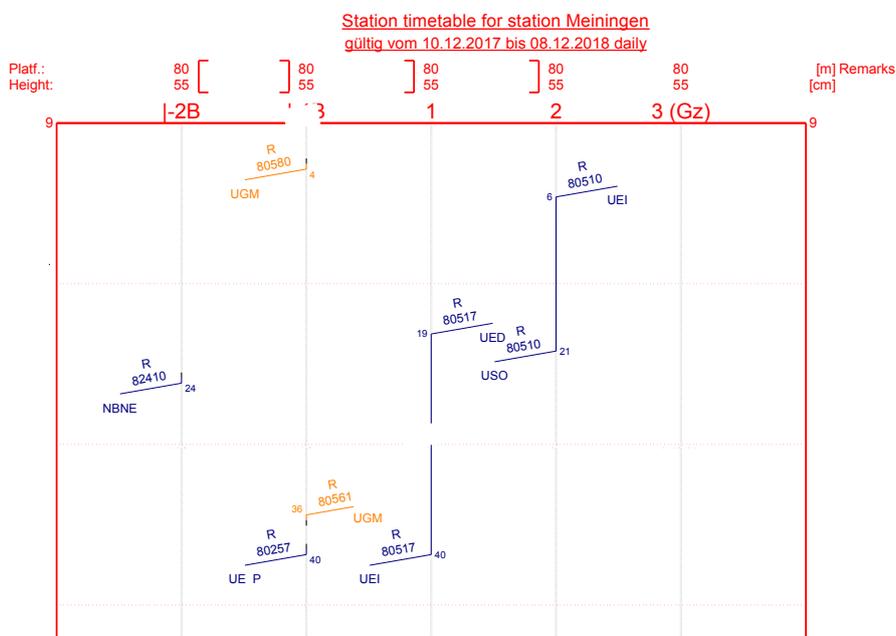
It is quite easy to keep an overview of a station with two tracks, usually, there is one direction running or there are simple rules for the use of tracks. On the other hand, a variety of timetable documents to secure track occupation are used at larger stations.

The module station timetable provides these documents by importing train data from the graphic timetable train diagram files. In case these files are not complete, train data may also be entered manually. Besides that, the module is capable of independently assigning trains according to a defined rule for the use of tracks. This proves that modern and clear timetable documents need not to be reserved to the main stations. The programme creates train sequence tables and track-occupation charts within minutes!

Track-occupation charts used in the initial planning process may be shown according to the local conditions either vertically or horizontally by a click of the mouse.

The familiar train sequence tables are illustrated in colour for the staff in signal boxes or signalling centres. By doing so, subordinated locations may be assigned, either jointly or separately. The station timetable module facilitates the compilation of additions or changes to the station timetable or to an entire special operation orders.

The module carries out troubleshooting, for example if a track has been assigned for two trains on a certain day or if platform or track lengths are insufficient. By doing so, problems can be detected far in advance.



Station timetable for station Meiningen - valid from 10.12.2017 until 08.12.2018 daily

Station	Arrival	Departure	Train	Track	From	To	Trainset switchover	Engine switchover	Remarks
UM		9.04	R 80580	-1B	Meiningen	Grimmenthal			Engine 650
UM	9.06	(9.21)	R 80510	2	Eisenach	Sonneberg (Thüringen) Hbf.			Engine 3x650/2x650
UM	9.19	(9.40)	R 80517	1	Eisfeld	Eisenach			Engine 650/2x650
UM	(9.06)	9.21	R 80510	2	Eisenach	Sonneberg (Thüringen) Hbf.			Engine 3x650/2x650
UM		9.24	R 82410	-2B	Meiningen	Bad Neustadt (Saale)			Engine 642
UM	9.36		R 80561	-1B	Grimmenthal	Meiningen			Engine 650
UM	(9.19)	9.40	R 80517	1	Eisfeld	Eisenach			Engine 650/2x650
UM		9.40	R 80257	-1B	Meiningen	Erfurt Pbf.			Engine 650

With interfaces a further use of the data out of the timetables created with FBS becomes possible:

Here we recommend the usage of the common RailML®-interface, which is supported by FBS in version 2.0 and 2.2 and whose development is attended intensively by iRFP.

An import of the thereby exported data can be made in every RailML®-compatible programme, for example:

- Personnel-/vehicle management *IVU.plan*
- Timetable simulation *OpenTrack*
- Personnel-/vehicle management *Trapeze*
- Demand simulation *VISUM*
- Customer information *PSIttraffic*

FBS also supports the user in case of special interface conditions:

- Train paths portal of DB Netz: TPN
- Train paths portal of ÖBB Infra: M-AMA
- Microsoft Excel®
- Infrastructure / timetable data bases

Compatibility is guaranteed – making it easier for you to switch!

System requirements:

- Core i5 processor or compatible
- 2GByte RAM; 64 Mbyte HDD
- XVGA graphic card (1440x900); if applicable graphic card for two monitors
- Operating system Windows XP oder 7
- USB or ExpressCard connection for the license plug
- A3 printer or colour plotter

FBS is available in different languages (German, English, French, Czech). Further localizations are possible, therefore please contact us.

The delivery of FBS usually includes:

- Programme iPLAN in seven modules
- Editors for train types and operation points
- FBS file management programme *Dispatcher*
- Manual in German and English
- Motive power unit data of various international manufacturers
- Example Operating points directory (D)
- Extensive exemplar data

We provide technology guarantees for FBS for the duration of one year and also updates for trouble shooting within the legal limits. These services may be expanded by an additional maintenance contract, including prompt help via phone or email.

Furthermore we offer:

- Regular FBS user conferences and trainings
- Courses for introduction into the timetable construction and for creation of operating concepts in the public transport
- Engineer studies, e.g. for transport and operating concepts for conventional and tilting trains, infrastructure and travel time investigations, construction of integral interval timetables
- Supply of route data files as basis for the timetable construction
- Conception and creation of railway-related software
- programming and maintenance of interfaces to third systems



Projekte in Deutschland



Projekte außerhalb Deutschland



Transport authorities in the local transport

Bayerische Eisenbahngesellschaft
Landesnahverkehrsges. Niedersachsen
Verkehrsserviceges. Schleswig-Holstein
Nahverkehrsservice Sachsen-Anhalt
Nahverkehrsserviceges. Thüringen
Verkehrsverbund Berlin-Brandenburg
Mitteldeutscher Verkehrsverbund
Verkehrsverbund Mittelsachsen
Verkehrsverbund Oberl.-Niederschlesien
Zweckverband Verkehrsverbund Vogtland
Niederösterreichische Verkehrsorg.ges.
KORDIS JMK, a.s., Brno
SALZBURGER VERKEHRSVERBUND GmbH

Engineering and planning offices

Albrecht & Partner AG, Luzern
Bombardier Transportation,
Derby/Hennigsdorf/Aachen/Västerås
IPE GmbH, Wien
SCETAUROUTE S.A., Paris
SNCF International S.A., Paris
SYSTRA S.A., Paris
DE Consult GmbH, Berlin
ETC Transport Consultants GmbH, Berlin
Obermeyer Planen + Beraten GmbH, Munich
Rail Consult GmbH, Cologne
Railistics GmbH, Wiesbaden/Dessau
RegioRail GmbH, Mannheim
TransportTechnologie-Consult, Karlsruhe
Jaakko Pöyry Infra BPI-Consult, Hannover
VerkehrsConsult D-B GmbH, Dresden
Ernst Basler + Partner AG

Teaching and research institutions

Tschechische Technische Hochschule, Prague
Eidgenössische Technische Hochschule Zürich
DLR – Verkehrsforschung, Braunschweig
Fachschule Bau, Wirtschaft & Verkehr, Gotha
Fraunhofer-Gesellschaft – IVI, Dresden
Technische Universität Berlin
Technische Universität Braunschweig
Technische Universität Dresden
Universität Hannover
Technische Hochschule Wildau
Universität Stuttgart

Railway companies

Griechische Staatsbahn [OSE], Athen
Lettische Staatsbahn [LDZ], Riga
Matterhorn-Gotthard-Bahn, Brig
Österreichische Bundesbahnen [ÖBB] – PV,
Wien and other locations
Régie autonome des transports Parisiens [RATP]
Réseau Ferré France [RFF], Paris
Saudi Railways Organisation, Dammam
DB Regio AG, various regional areas
Zentrale Netzentwicklung
Regionalbahn Westfalen GmbH
RegioNetz Verkehrs GmbH
S-Bahn München GmbH
Usedomer Bäderbahn GmbH
Dehli Metro Rail Corporation

KEOLIS S.A.

Eurobahn Verkehrsgesellschaft mbH
Freiberger Eisenbahngesellschaft mbH
Graz-Köflacher Eisenbahn GmbH
Raab Ödenburg Ebenfurter Eisenbahn AG
Salzburger Lokalbahn
Stern & Haffnerl Verkehrsgesellschaft mbH
Voest-Alpine Stahl – Logistikservice GmbH
AG der Wiener Lokalbahnen

Abellio GmbH

Abellio Rail NRW GmbH
Abellio Rail Baden-Württemberg GmbH
Abellio Rail Mitteldeutschland GmbH

Albtal-Verkehrs-Gesellschaft mbH

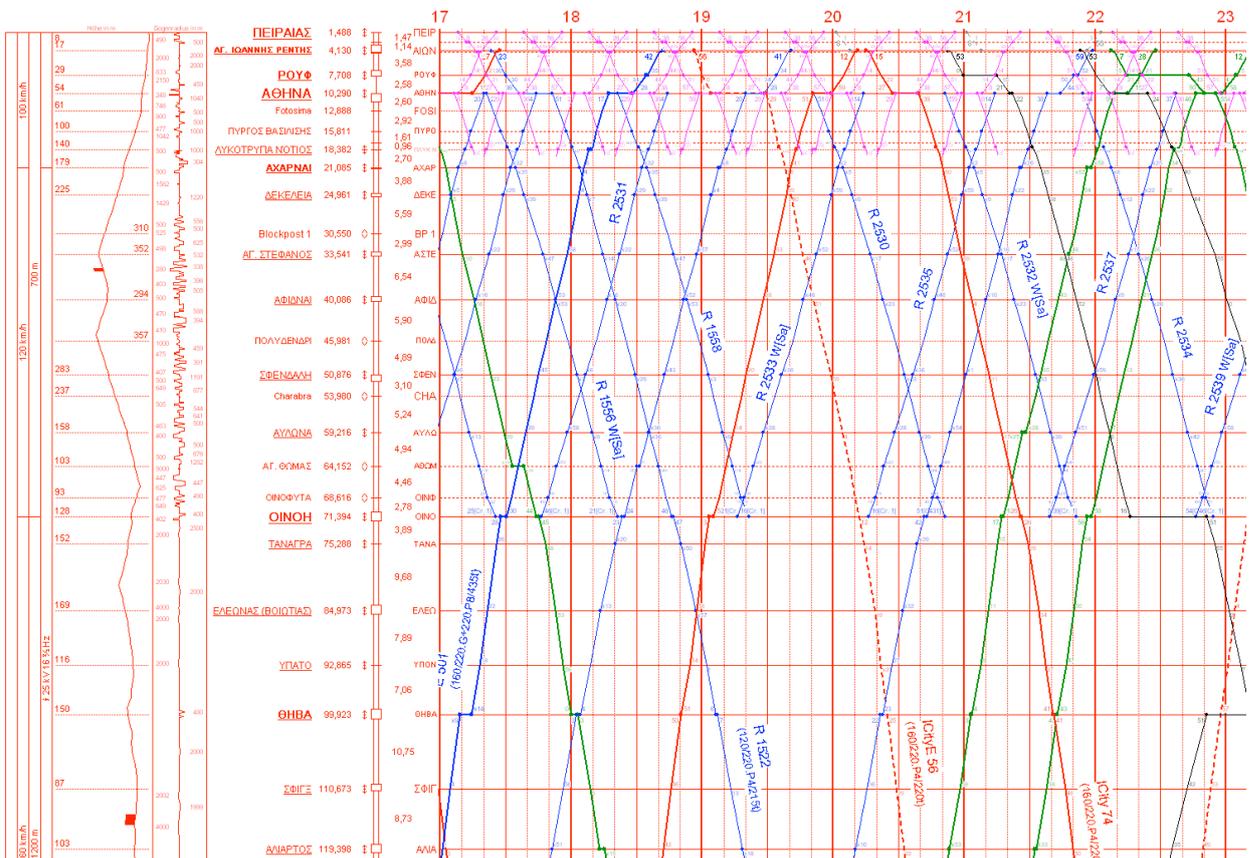
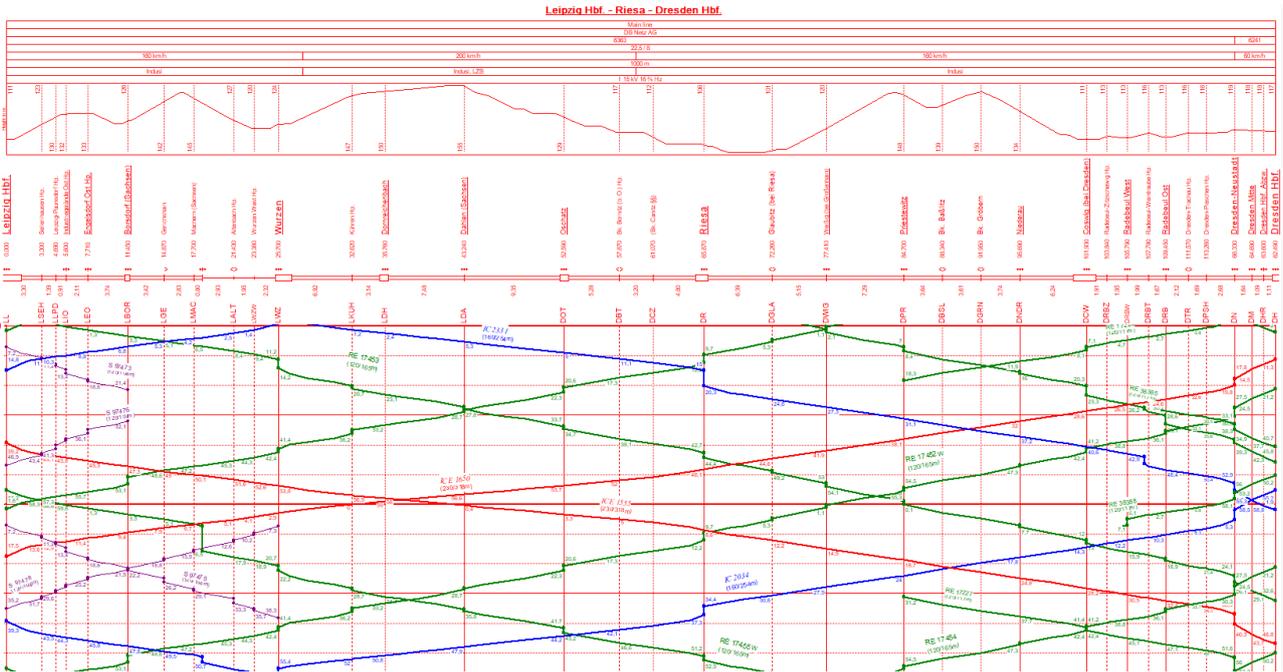
AKN Eisenbahn AG
NETINERA Deutschland GmbH
metronom Eisenbahngesellschaft GmbH
Ostdeutsche Eisenbahn Gesellschaft
Die Länderbahn GmbH DLB
Regentalbahn AG
Berchtesgadener Land Bahn GmbH
VLEXX GmbH
ERIXX GmbH
TRILEX
Vogtlandbahn

BeNex GmbH

Cantus Verkehrsgesellschaft mbH
Agilis Verkehrsgesellschaft mbH & Co. KG
BVO Verkehrsbetriebe Erzgebirge GmbH
CityBahn Chemnitz GmbH
Rurtalbahn GmbH
Erfurter Bahn GmbH
Südthüringenbahn
EVB Elbe Weser GmbH
Go-Ahead Verkehrsgesellschaft Deutschland GmbH
Häfen und Güterverkehr Köln AG
Hamburger Hochbahn AG / BeNEX GmbH
Regio Infra Nord-Ost GmbH & Co. KG
Regio Infra Service Sachsen GmbH
Sächsisch-Oberlausitzer Eisenbahn GmbH
Städtebahn Sachsen GmbH
Südwestdeutsche Verkehrs-AG
Ortenau S-Bahn GmbH
Breisgau S-Bahn GmbH
Thüringer Eisenbahn GmbH
Transdev group (früher Veolia Deutschland GmbH)
CONNEX Zentrale Betriebsplanung
Trans Regio Dt. Regionalbahn GmbH
NordWestBahn GmbH
LausitzBahn GmbH
Ostmecklenburgische Eisenbahn GmbH

We would be pleased to send you contact information about contact persons in the companies using FBS.

Graphic timetables horizontal and vertical



Station's timetable

Fahrplan für Zugmeldestelle Pleinfeld - gültig vom 30.05.1999 bis 27.05.2000

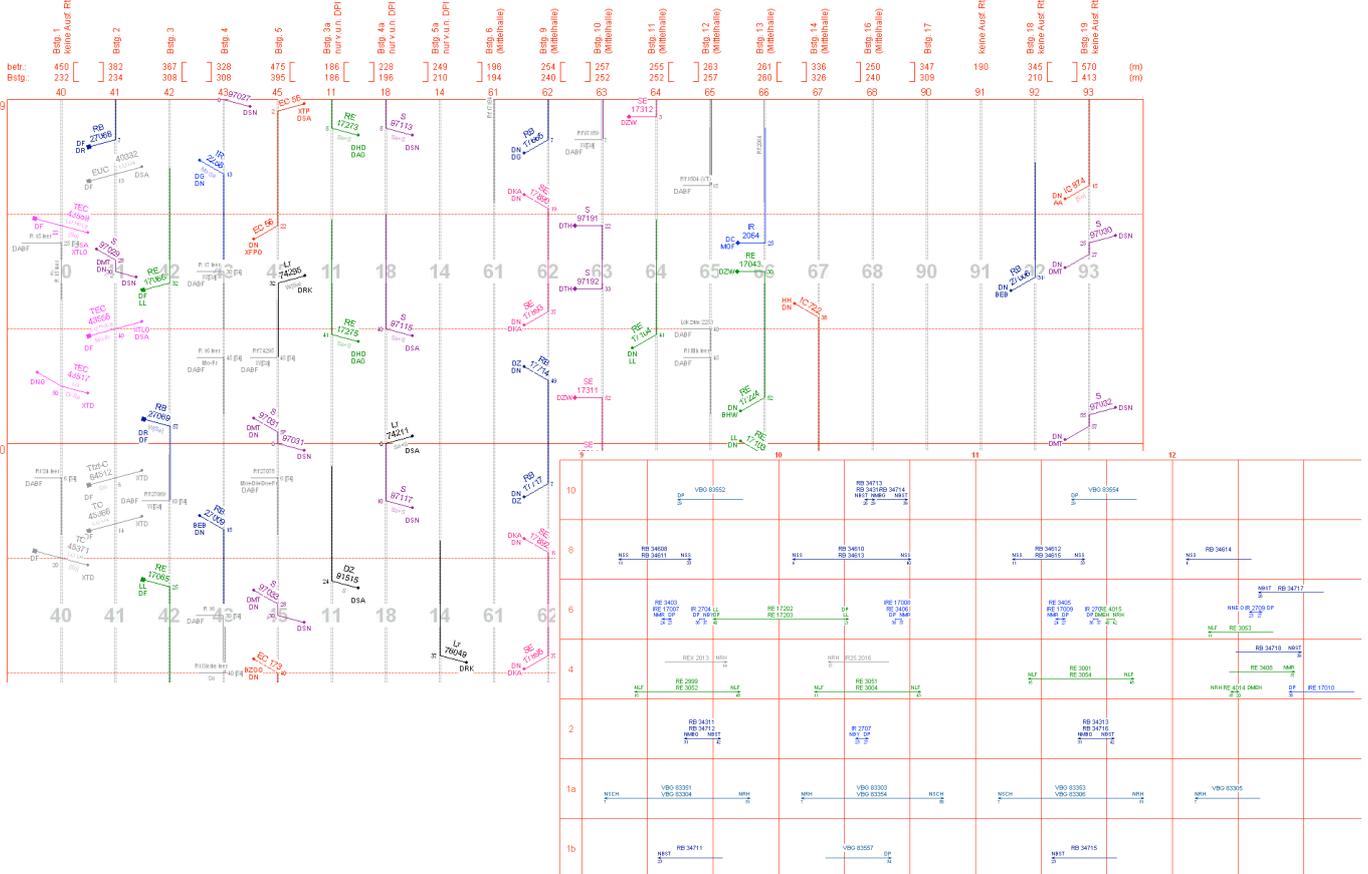
	Ankunft	Abfahrt	Zug	Gleis	von	nach	Wgz.-Übergang	Tfz.-Übergang	Bemerkungen
NGE	7.23	7.24	RB 5147	203	Leipzig Hbf.	Weißenburg (Bay)	5148	5148	
NPLF	7.29	7.30	W[Sa]	3	über Nürnberg Hbf.				
NWG	7.35			104					
NPLF	7.25	(7.30)	RE 4184	5	Roth	Georgensgmünd	4185	4185	ähnlich nicht 13 9 -
NGE	7.35		VT	202					

Fahrplan für Zugmeldestelle Dresden Hbf. - gültig vom 30.05.1999 bis 27.05.2000

	Ankunft	Abfahrt	Regelzug	Bedarfszug	Gleis	von	nach	Wgz.-Übergang	Tfz.-Übergang	Bemerkungen
	7.16		Lr 74299		14	Dresden-Reick	Dresden Hbf.	97111	97111	bis 31. X und ab 01. IV.
			Sa+S							
	7.16		S 97020		18	Pirna	Dresden Hbf.	Rf nach DA	Rf nach DA	nicht am 17. XI. Tfz. 143
			W[Sa]							
	7.18		S 97184		63	Dresden Hbf.	Tharandt	97179	97179	nicht am 17. XI.
			W[Sa]							
	7.19		SE 17886		62	Kamenz (Sachsen) über Dresden-Neustadt	Dresden Hbf.	17889	17889	Tfz. 234
	7.21		TEC 43557		40	Dresden-Friedrichstadt	Lovosice über Bad Schandau			
			B+Mo-Do							
			LU RoLa							
	7.21		TEC 43557		40	Dresden-Friedrichstadt	Lovosice über Bad Schandau			
			Fr+Sa							
			LU RoLa							
	7.22		IC 556		93	Dresden Hbf.	Frankfurt (Main) Hbf. über Dresden-Neustadt	Rf von DGBF	620	"GOTTFRIED SEMPER"
	7.22		S 97181		63	Tharandt	Dresden Hbf.	97188	97188	nicht am 25. XII. und 01. I.
	7.25		IR 2668		65	Dresden Hbf.	Karlsruhe Hbf. über Chemnitz Hbf.	Rf von DGBF	69468 von DN	"Vogland"

9 Uhr

Gleisbesetzungsplan Bahnhof Dresden Hbf.
gültig vom 30.05.1999 bis 27.05.2000



Driver's timetable

STB 82845 Zella-Mehlis - Wernshausen
Tfz. 650
Hg. 60 km/h

Last 0 t

Brh. min 79 R+Mg
Brh. soll 165 R+Mg

1	2	3a	3b	4	5	6	7	8	9		
		Betriebsstellen									
Zulässige Geschwindigkeiten		Tunnelanfang und -ende, verkürzter Vorsignalabstand ☹, von 40 km/h abweichende Geschwindigkeiten auf Signal HfZ, Zugfunk			Vor der Trapeztafel hält Zug		Ankunft	Abfahrt	Kreuzung mit Zug	Überholt wird Überholt durch durch Zug	Zuglaufmeldung durch Art
ab km	km/h	Lage in km									
	60	Zella-Mehlis				20.10				Fdl Fe	
		- kein ZF -									
		¥									
1,2	20										
1,3	60	Zella-Mehlis West			20.13	14					
		Benshausen			X	18					
		Viernau			23	23					
12,7	40	Steinbach-Hallenberg				27	30	W[Sa]		Fdl Ak Fe	
								82664			
13,3	20										
13,5	60	Altersbach				X	33				
20,3	50										
21,3	20										

3353, 3355
Tfz. 2x612

Mbr 215 R+Mg

160 km/h

3c	4/5	4/5
Betriebsstelle, Hinweis auf GeH und Mbr	3353	3355
	Ank.	Abf.

Erfurt Hbf.

Erfurt-Bischleben
Neudietendorf

Neudietendorf Ds
Süßenbrücken
Haarhausen
Arnstadt Hbf.

Arnstadt Süd
Plaue (Thüringen)

Gräfenroda

Dörrberg
Ült. Gehlberg
Gehlberg
Oberhof (Thüringen)

Zella-Mehlis

Suhl

Suhl-Heinrichs
Dietzhausen Bstg. 2
Dietzhausen
Rohr (Thüringen)
Grimmenthal

Ritschenhausen
Völfershausen
Eibira
Rentwertshausen

Mellrichstadt
Bahnhof

Erfurt Hbf. - Grimmenthal - Ritschenhausen - Schweinfurt Hbf.

Mg. 160 km/h

Mbr 215 R+Mg

1	2	3a	3b
		Betriebsstellen	
Zulässige Geschwindigkeiten		Tunnelanfang und -ende, verkürzter Vorsignalabstand ☹, von 40 km/h abweichende Geschwindigkeiten auf Signal HfZ, Zugfunk	
ab km	km/h	Lage in km	
	40	Erfurt Hbf.	
	108,7	60	
	109,4	160	
	113,3	130	
	114,2	140	
	121,3	80	
	121,7	0,6	
	121,0	0,8	
	121,0	1,5	
	121,0	1,5	
	120	3,4	

STB 82921

Sonneberg (Thür.) Hbf. - Eisenach

Hg. 100 km/h
Tfz. 650

Last 0 t

Brh. min 105 R+Mg
Brh. soll 165 R+Mg

1	2	3	4	5	6	7	8	9	10
Lage der Betriebsstelle (km)	Be-schränkung der Höchstgeschwindigkeit (km/h)	Betriebsstellen, ständige Langsamfahrstellen	vor Trapeztafel hält Zug	An-kunft	Ab-fahrt oder Durch-fahrt	Kreuzung mit Zug	überholt Zug wird überholt von Zug	Ein-fahrt in Gleis	Zug-lauf-meldung durch
32,9	40	Sonneberg (Thür.) Hbf. - kein ZF -			1003	82908			
	60	32,60							
	20	31,27							
		31,18							
30,5		Sonneberg (Thür.) West		1006	07				
26,9	60	Mengersger.-Hämmern Ost		11	11				
26,55		25,70							
25,4	40	Mengersgereuth-Hämmern							
		25,01							
21,5	60	Effelder (Thüringen)							
		20,29							
20,2	20	Seltendorf							
	60	20,19							
		16,54							
15,9	40	Rauenstein (Thüringen)							
		15,45							
13,7		(Grümpen) §§							
11,2		Schalkau Mitte							
11,15									
11,14									

ICity 23 "ΟΛΥΜΠΙΑ" ΠΥΡΓΟΣ - ΚΙΑΤΟ (K)

Κινητήριο 8501
Μέγιστη ταχύτητα 90 χλμ./ωρ.



Ελάχισ. πείδη 93 P
Πραγμ. πείδη 125 P

1	2	3a	3b	4	5	6	7	8	9		
Επιτεταμένη Ταχύτητα	Θέσεις Κυκλοφορίας	από χθ	χλμ/ώρα	Βραχεία προήγηση ☹	Χιλο-μετρική βέση	αποθ-μείνι προ-αχμίων	Αφίξη	Ανα-χώρηση	διασταύ-ρωση με σιμαξ.	Υπερ-βαίνει από σιμαξ	διατε-πύσεις από είδος
98,0	30	ΠΥΡΓΟΣ	>1	0,0				12.57			
	90	ΛΑΣΤΕΙΚΑ		94,9				13.01			
91,4	50	ΣΚΟΥΡΟΧΩΡΙ		91,2				04			
91,1	60										
89,8	90	ΜΥΡΤΙΑ		89,3				05			
88,0	70										
	90	ΜΙΡΑΜΑΡΕ		87,8				07			
				86,4				08			
				86,1				10			
				83,4				12			
				80,5				13.15			
				77,7				15			
				77,4				19			
				67,0				23	24	1352	
				64,6				26	26		
				61,1				30	30		
				57,8				33	33		
				51,3				13.38			

Train 12 Friday Lilloet - Seton									
Max. speed 40 mph Engine RDC-1									
1	2	3	4	5	6	7	8	9	10
Position of station	Permitted speed	Station, Position of speed change	Arrival	Departure or run through	Crossing with train	overtakes train as overtaken by train	Entering station track	Stop before entering station	Report by
157,6	40	Lilloet.....		1552					
	25	154,5							
		153,6							
152,3	40	MacNeill.....		1609					
	25	152,1							
	40	151,8							
	25	150,9							
		150,6							
149,2	40	Retaskit.....		19					
	35	147,7							
		146,8							
143,6	40	Ohm.....		1635					
139,5		Seton.....		1648					

Customer's timetable and arrival and departure posters

8/9B ΚΑΛΑΜΑΤΑ - ΖΕΥΓΟΛΑΤΙΟ - ΚΥΠΑΡΙΣΣΙΑ - ΠΥΡΓΟΣ - ΠΑΤΡΑ - ΚΙΑΤΟ. Timetable with columns for station, time, and train type.

570 Erfurt - Arnstadt - Ilmenau. Timetable with columns for station, time, and train type.

N11 Angerapp - Treuburg - Cranz - Darkehmen - Eylau. Timetable with columns for station, time, and train type.

ΠΥΡΓΟΣ

Αναχώρηση

ισχύει από 9/12/2007 μέχρι 13/12/2008

Table with columns: Χρόνος, Αμαξία, Τροχιά, σε. It lists train routes and departure times for the Pyrgos area.

Departure Dresden Hbf, 8.00 - 11.00 hours. Large departure schedule with columns for time, train, to, track, time, train, to, track.

Circulation plan

Mon	Railway of Nadraua Depot Angerapp Site: Cranz, Osterode, Darkehmen		Circulation plan Engine BR 646		FBS So macht man Fahrpläne!		Current state: 17.08.2018 number of vehicles: 9 Running performance per week: 34.997,2 km av. running performance per vehicle and days: 573,7 km																			
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
1																										1
Sun 9 OA 997,1 km																										Tue 1 OC 997,1 km
2																										2
Fri 1 OC 414,1 km																										Tue 2 OOO 414,1 km
3																										3
Sun 2 OA 602,8 km																										Tue 3 OD 602,8 km
4																										4
Sun 3 OOO 323,5 km																										Tue 4 OOO 323,5 km
5																										5
Sun 4 OD 697,4 km																										Tue 5 OA 697,4 km
6																										6
Sun 5 OC 953,4 km																										Tue 6 OA 953,4 km

interval graphics

