



HRDF realisation guide – Swiss public transport system

Based on HAFAS raw data format 5.40.41

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Referenced documents

- [1] HaCon Ingenieurgesellschaft mbH, *HAFAS Rohdatenformat, Version 5.40.41*, HaCon, Hrsg., Lister Str. 15, 30163 Hannover.
- [2] HaCon Ingenieurgesellschaft mbH, *HAFAS Rohdatenformat, Version 5.20.39*, HaCon, Hrsg., Lister Str. 15, 30163 Hannover.
- [3] Systemaufgaben Kundeninformation, "Standards," [Online]. Available: <https://transportdatamanagement.ch/en/standards/>. [Accessed February 2020].
- [4] Systemaufgaben Kundeninformation, "Transport modes lists," [Online]. Available: <https://opentransportdata.swiss/en/dataset/verkehrsmittellisten>. [Accessed February 2020].



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2.0	24.10.2019	Approved and declared binding by SKI Mgmt Board
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1 Introduction

1.1 Initial situation

The KIDS target data working group has defined the extensions to the existing RV that are to be implemented with the aid of the "HAFAS raw data format" version 5.40.41 [1].

1.2 Basic format and deviations

The basis is document "HAFAS raw data format" version 5.40.41 [1]. HAFAS raw data format is hereinafter referred to by the acronym HRDF.

HRDF is a proprietary format from HaCon. If deviations from the specified format are necessary, it should be ensured that additions suit the framework conditions of the format.

The following variants are currently in use:

- a) Additions outside of existing raw data files: The data not defined in HAFAS raw data format is stored in additional files. For example, the file "FEIERTAGE". These additions are marked in this document as "outside of the HAFAS raw data format". The addition must be designed so that data recipients can distribute correct information without using additional files.
- b) Additions and changes to existing raw data files: There are two sub-variants here:
 - b1. Additions and changes can be inserted compatibly (e.g. using columns that are not (or no longer) in use): The corresponding raw data files can be extended accordingly after consulting HaCon. The feedback should ensure in particular that the function of existing HaCon programs is not affected by the addition. The addition must also be designed so that data recipients can distribute correct information without using additional data.
 - b2. Additions and changes cannot be inserted compatibly: In this case two files are to be created: one file that is compatible with the original definition but does not contain the addition, and a second file with the incompatible additions. For example, the files "UMSTEIGZ" and "UMSTEIGZ with transport days". In this case, too, the addition must be designed so that data recipients can distribute correct information without using the incompatible files.

1.3 Major deviations from the implementation specifications V 1.0

Significant additions:

- Account taken of new files `Linie`
- LV95 coordinates exchanged
- Stop `SLOID` exchanged
- Length of the attributes `Zugnummer` and `Hinweisnummer` extended
- Various adjustments to ensure conformity with the new format:
 - Track, attribute, etc.

2 Structure of the document

2.1 Document hierarchy and stakeholders

Based on the official HRDF STANDARD [1], this document describes the realisation guide for the Swiss public transport system, hereinafter referred to as the “RV HRDF”.

It contains specifics and deviations from the basis (HRDF STANDARD [1]), with the aim of achieving uniform application across the entire Swiss public transport system.

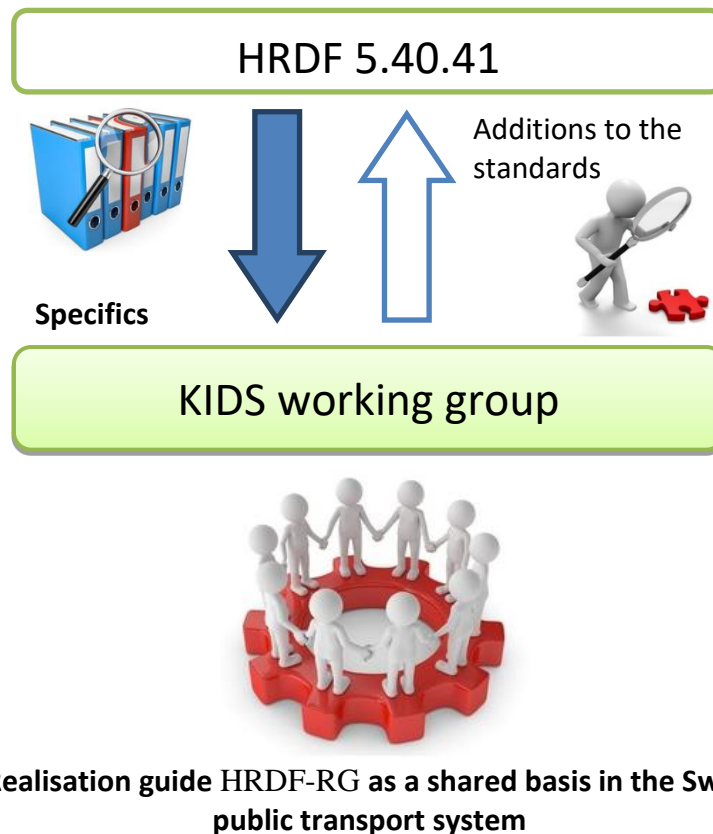


Figure 1: Interrelations between KIDS and HRDF

The realisation guide in this document have been agreed upon by the KIDS working group “Kundeninformationsdaten-Schnittstellen” (customer information data interface) in the Swiss public transport system. They are the result of a UAG target data standardisation process that concerns the uniform application of HRDF guidelines across the Swiss public transport system.

Implementation specifications are officially released by the MB (Management Board) SKI (system task customer information).

Document hierarchy: In the course of clarifying a matter, documents shall take precedence in the following order, specifically:

1. Direct agreements between partners
2. “HRDF realisation guide – Swiss public transport system” (this document)
3. HRDF NORM (HAFAS raw data version 5.40.41 [1] or version 5.20.39 [2])

Stakeholders:

Suppliers to the national timetable collection:

- Transport companies

Recipients of data from the national timetable collection:

- Transport companies
- Industry (open)

Other stakeholders:

- Various committees

2.2 Information about this document

Starting with section 5, this document adopts the chapter structure of document [1]. A blank section in this document means that document [1] applies in full.

In all cases there may be different behaviour defined for import and export, import meaning the transfer of data into the national timetable collection and export meaning the extraction of data from the national timetable collection.

3 Overview of timetable publication

3.1 Roles and responsibilities

Different agencies are involved with timetable publication and have different roles and responsibilities. The following figure shows a rough overview of the interaction between the agencies involved.

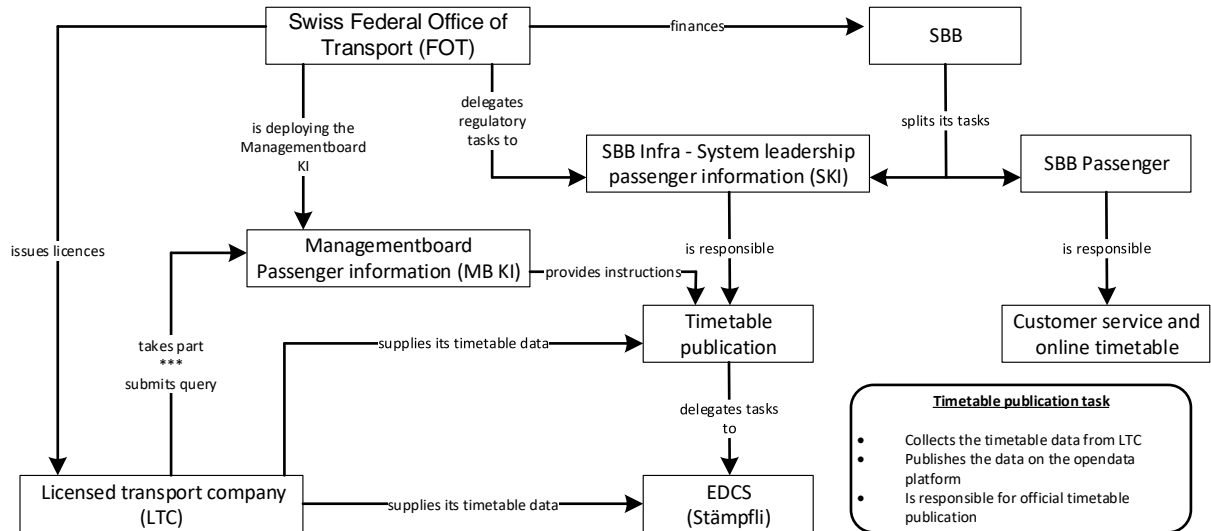


Figure 2: Overview of responsibilities

3.2 Data flow

Timetable data is exchanged in the course of publishing the timetables. The following figure shows a rough view of the data flow.

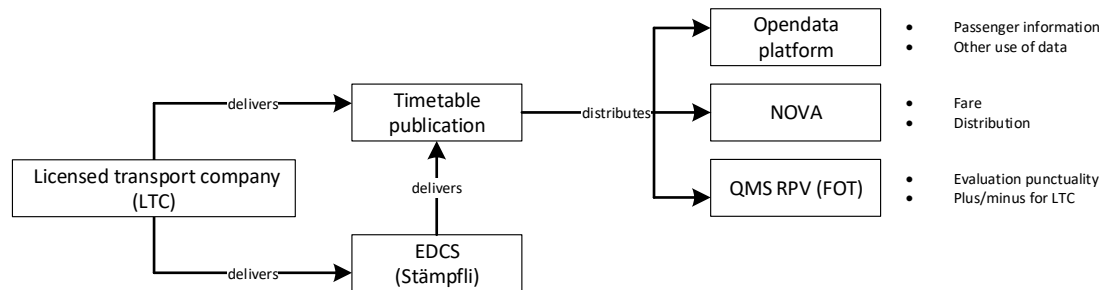


Figure 3: Overview of data flow

4 Superordinate topics

4.1 File names

File names are based on the suggested name of the specification (FPLAN, BAHNHOF, ATTRIBUT, etc.)
 The file ending can be freely selected. Changes must be mutually agreed upon.

4.2 Stop

Defining 9-digit stop numbers (in accordance with option HRDF 5.40) is not supported.

4.3 Display of stop codes

Table 1: HRDF designates the following stop codes

Designation	Example
Regular stop (no negative time, shows a missing arrival or departure time at the start and end)	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 8500010 Basel SBB 01515 8500023 Liestal 01526 01527 8500026 Sissach 01532
Drop-off only stop (negative time for boarding)	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 8500010 Basel SBB 01515 8500023 Liestal 01526 -01527 8500026 Sissach 01532
Pick-up only stop (negative time for disembarking)	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 8500010 Basel SBB 01515 8500023 Liestal -01526 01527 8500026 Sissach 01532
Transit (negative, identical times) Via (tourist route information) is also displayed in this way (e.g. Gotthard, Neubaustrecke, etc.)	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 8500010 Basel SBB 01515 8500023 Liestal -01526 -01526 8500026 Sissach 01532
Service stop (negative, different times)	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 8500010 Basel SBB 01515 8500023 Liestal -01526 -01527 8500026 Sissach 01532
Request stop	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 *A X 8500023 8500023 8500010 Basel SBB 01515 8500023 Liestal 01526 01527 8500026 Sissach 01532
Seasonal stop (an *SH line is inserted for the affected BP)	*Z 02471 85_____ 01 *G IR 8500010 8500026 *A VE 8500010 8500026 000000 *SH 8500023 165258 8500010 Basel SBB 01515 8500023 Liestal 01526 01527 8500026 Sissach 01532

4.4 Optional fields

If an optional field is not specified, this means that no information is available for this object. If this statement is not sufficient, the documents in the hierarchy must be consulted (see section 2.1).

4.5 Comments

Text that is added after the comment sign (% , percent sign) must not contain any relevant information. Comments are used to add clarifications if a file is inspected or edited manually. It must be assumed that comments (including the comment sign) may be lost or changed in import or export processes.

5 Necessary files

5.1 Key data for timetable period ECKDATEN

Lines 1 and 2 are required for the import in order to determine the timetable period. The remaining information is not interpreted. The same applies to the recipient, which can determine the timetable period using this information.

Table 2: ECKDATEN

Line	Column	Type	Meaning	Note
1	1-10	CHAR	Timetable start in format DD.MM.YYYY	
2	1-10	CHAR	Timetable end in format DD.MM.YYYY	
3	1ff	CHAR	Timetable designation	
			Timetable period (version)	
			Time and date of file generation. Format DD.MM.YYYY HH:mm:ss	
			HRDF format	
			Supplier	

Example:

09.12.2018

14.12.2019

Fahrplan \$2019\$01.03.2019 09:37:54\$5.40.41\$INFO+<

Note:

- The start and end dates of the timetable period correspond to the official dates of the timetable period.

5.2 Journey operating days BITFELD

Not supported.

Table 3: BITFELD

Column	Type	Meaning	Note
1-6	INT32	Bit field number	Not consecutively numbered.
8-103	CHAR	Bit field, consisting of 96 (ASCII-readable) hexadecimal digits	The bit fields correspond to the timetable period stored in the ECKDATEN file.

Example:

000001 DF3E3C79F3E7CF9F3E7CF9F3E7CF9E1E7CF9F3E74F8F3E7CF9F3E7CF9F367CF9F3E7CF9F3E7CF9F3E7CF9F3E7CFB0000

000002 DF3E3C79F3E7CF9F3E7CF9F3E7CF9E1E7CF9F3E74F8F3E7CF9F3E7CF9F367CF9F3E7CF8F3E7CF9F3E7CF9F3E7CFB0000

Note:

- By way of derogation from the document [1] the specifications in BITFIELD apply for a single timetable period.
- As regards the structure of the bit field, compliance with the documentation in document [1] is essential!

- Number range of bit field number: INFO+ only uses bit field numbers 1 to 799,999 in the export. The remaining numbers can be used freely. The complete number range can be used for the INFO+ import.

5.3 Sorts SORTKEYS

Format does not match the standard [1].

5.4 Sorts SORTMAPS

Not supported.

5.5 Attributes and meta-attributes ATTRIBUT

There will be a transition phase during which attributes will be delivered in two different formats:

- According to the rules of RV 1.n
- According to the rules of RV 2.n

The technical content of the two formats is identical.

5.5.1 Simple journey and walk attributes

Line format attribute definition:

Format matches the standard [1].

Line format attribute output:

Format matches the standard [1].

Example:

```
B1 1 100 10 Halt nur bei Bedarf#  
LW 0 300 10 Liegewagen#  
# B1 -- B1  
# LW LW LW
```

5.5.2 Meta-attributes

Not supported.

5.5.3 Meta-attributes with a special meaning

Not supported.

5.5.4 Language-dependent definition of attribute texts

Format matches the standard [1].

Example:

```
BE 0 0 0 Bahnersatz#  
BH 3 2 2 Bedarfshalt nur auf telefonische Voranmeldung#  
<text>  
<deu>  
BE Bahnersatz  
BR BUS: Weitere Busse auf Anfrage  
<fra>  
BE Service de substitution  
BR BUS: Autres bus sur demande
```

Note:

- In German, the attribute BE is assigned the text Bahnersatz, whereas in French it is assigned the text Service de substitution.

5.5.5 Combination of attributes and information texts

Not supported.

5.6 Train information texts INFOTEXT

5.6.1 Simple information texts

Format matches the standard [1].

Languages: By way of derogation from document [1], information texts are exported for different languages. For identification purposes the file name has the language code added to it: INFOTEXT_DE, INFOTEXT_FR, INFOTEXT_EN, etc.; however, not all information texts are translated into all languages. In order to ensure the completeness of the individual files, the information text is also output in its original language in the files for the other languages accordingly. Example: Information text in German: Hallo in German or Hello in English; does not have a French or Italian translation. For this reason, the information text in the original language (German) is also used in the French and Italian files.

Example:

```
000000001 GlacierExpress
```

```
000000002 2105
```

5.6.2 Advanced train information text

Not supported.

5.7 Regions REGION

Not supported.

6 Stop data

6.1 List of stations/stops BAHNHOF

Format matches the standard [1].

Table 4: Clarification BAHNHOF

Column	Type	Meaning	Note
1-7	INT32	The number of the stop	DiDok no.
9-11	CHAR	Blank	
13-62	CHAR	Stop name	Export: Stop names are delivered with a type (type in angle brackets following the item): <1> Name (max. 30 characters) <2> Long name (max. 50 characters) <3> Abbreviation <4> Synonym/alias Language-dependent names are not supported.

Example:

```
8507000 Bern$<1>$BN$<3>
```

```
8507002 Ostermundigen$<1>
```

```
8501026 Genève-Aéroport$<1>$GEAP$<3>$Geneva Airport$<4>$Genf Flughafen$<4>$Ginevra Aeroporto$<4>
```

Comments:

- DiDok 3 is the master system for stop names and numbers.
- DiDok numbers (meaning the seven-digit numbers beginning with country code 85): Stops at which passengers can board or disembark must have a valid DiDok no. Tourist “via” information (fictional via’s), meta-BP and border points are excluded from this rule, but application of this rule is recommended even for these objects.
- Stop aliases: Do not come from DiDok, but are entered in INFO+.

6.2 Stop coordinates BFKOORD

6.2.1 General

Two BFKOORD files are written during INFO+ export: one in LV95 format and one in WGS84 format. For differentiation purposes, file names are formed as follows:

- BFKOORD_LV95: Coordinates in Swissgrid format LV95.
- BFKOORD_WGS: Coordinates in WGS84 format. Valid worldwide. See section 6.2.3 for information on format

Comments:

- Import coordinates: No coordinates are imported. DiDok is the master.
- Validity of LV95 coordinates: Only valid for stops and stations in Switzerland and in areas close to the Swiss border.
- WGS84 coordinates: If regions outside Switzerland or outside areas close to the Swiss border are to be included, the WGS84 coordinate data must be used.
- Coordinates in Swissgrid format LV03 are no longer provided.
- LV95 is a Cartesian coordinate system, while WGS84 is a geographic coordinate system.

6.2.2 BFKOORD_LV95

Format matches the standard [1].

Table 5: The following clarifications apply to BFKOORD_LV95

Column	Type	Meaning	Note
1-7	INT32	The number of the stop	
9-18	FLOAT	Y-coordinate*	LV95 Accuracy to the meter NNNNNNNN
20-29	FLOAT	X-coordinate*	LV95 Accuracy to the meter NNNNNNNN
31-36	INT16	Z-coordinate	Altitude in metres, left-aligned, optional (can be blank).
38ff	CHAR	Stop name	Optional. <i>For easier reading only</i>

Example:

```
8570203    2538684    1165776 622    % Echallens, place Emile Gardaz
8570204    2539014    1165808 617    % Echallens, La Robellaz
8570238    2538283    1165706 617    % Echallens, gare
```

6.2.3 BFKOORD_WGS

Format matches the standard [1].

Table 6: The following clarifications apply to BFKOORD_WGS

Column	Type	Meaning	Note
1-7	INT32	The number of the stop	
9-18	FLOAT	X-coordinate, longitude	WGS84 format, [-]NNN.nnnnnn, right-aligned
20-29	FLOAT	Y-coordinate, latitude	WGS84 format, [-]NN.nnnnnn, right-aligned
31-36	INT16	Z-coordinate	Altitude in metres, left-aligned (can be blank).
38ff	CHAR	Stop name	Optional. <i>For easier reading only</i>

Example:

```
8570203    6.637803    46.640402 622    % Echallens, place Emile Gardaz
8570204    6.642109    46.640720 617    % Echallens, La Robellaz
8570238    6.632576    46.639735 617    % Echallens, gare
```

Note:

- WGS84 is a coordinate system with degrees of longitude and latitude.

6.3 Stop description BHFART

Format matches the standard [1].

6.3.1 Examples

Not supported.

6.3.2 Stop properties

Attribute

Not supported.

Selection and routing restrictions

Format matches the standard [1].

Example:

8504419 B 3 3 Biel Mett

8000122 B 0 0 Bietingen

Note:

- File is not imported into INFO+.

National or fare zone borders

Not supported.

Display

Not supported.

Stop property

Not supported.

GlobalID

Table 7: The following clarifications apply to GlobalID

Column	Type	Meaning	Note
1-7	INT32	The number of the stop	
9-9	CHAR	G	
11-11	CHAR	Type designator	
13ff	CHAR	Global ID	

Example:

8504419 G a ch:1:4419

8704419 G a ch:1:8704419

Note:

- The length of the Global ID field does not match the document definition [1]. The precise structure of Global ID is defined in SKI's documents on the Swiss ID for public transport [3]
- The identification is adopted from DiDok 3.

Other properties

Not supported.

6.4 Station attributes and meta-attributes BHFATTR

Not supported.

6.5 Station changing priorities BFPRIOS

Format matches the standard [1].

Example:

```
8504419 8 Biel Mett
```

```
8504300 4 Biel/Bienne
```

Comments:

- Source system: Station changing priorities come from INFO+.
- Import: File is not imported into INFO+.

6.6 Stop weightings BHFGEW

Not supported.

6.7 List of changing points KMINFO

Format matches the standard [1].

Example:

```
8000105 30000 Frankfurt (Main) Hbf
```

```
8000150 0 Hanau Hbf
```

```
8000152 30000 Hannover Hbf
```

Comments:

- Source system: The values come from INFO+.
- Import: File is not imported into INFO+.

6.8 Border point information GRENZHLT

Format matches the standard [1].

Example:

```
01111111 Grenzpunkt Passau
```

Comments:

- Source system: The values come from INFO+.
- Import: File is not imported into INFO+.

6.9 Additional stop information BFINFO

Not supported.

6.10 Connections between stops METABHF

Format matches the standard [1].

Comments:

- Source system: The source system for walks is INFO+. The meta-station information is not imported into INFO+.
- Granularity: Walks are defined at the stop level.

6.10.1 Transition relationships

Format matches the standard [1].

*A lines (optional)

Format matches the standard [1].

Example:

```
0012105 0100020 005
```

```
*A B1
```

***V line (optional)**

Not supported.

***O line (optional)**

Not supported.

***U line (optional)**

Not supported.

***C line (optional)**

Not supported.

***I lines (optional)**

Not supported.

***B lines (optional)**

Not supported.

***G lines (optional)**

Not supported.

***L lines (optional)**

Not supported.

***E lines (optional)**

Not supported.

6.10.2 Stop groups

Format matches the standard [1].

Table 8: Clarification for stop groups

Column	Type	Meaning	Note
1-7	INT32	The number for the collective term.	
8-8	CHAR	Fixed character “.”.	
10-10	CHAR	The type of the 1st equivalence: S, B, F, V, H or blank space.	Currently a blank space is delivered
11-17	INT32	The number of the 1st equivalence.	
19-19	CHAR	The type of the 2nd equivalence: S, B, F, V, H or blank space.	Currently a blank space is delivered
20-26	INT32	The number of the 2nd equivalence.	
28ff		<i>Type</i> and number of the next equivalence ... etc.	

Example:

8512105: 8512105 8500020

Comments:

- Source system: The source system for equivalences is INFO+.
- Equivalence types: Direct equivalences and walk equivalences are supported.
- Granularity: Equivalences are defined at the stop level.

6.11 Exchange EXCHANGE

Not supported.

6.12 Time differences ZEITVS

Format does not match the standard.

Table 9: ZEITVS type 1

Column	Type	Meaning	Note
1-7	INT32	Train station number	
9-13	INT32	Postponement in relation to GMT (→ this is the time zone) Characteristics: +SSMM or-SSMM)	
15-19	INT32	Postponement in relation to the following timeframe (→ defines summer/winter times)	
21-28	INT32	From date (DDMMYYYY)	
30-33	INT16	Related time (SSMM)	
35-42	INT32	To date (DDMMYYYY)	
44-47	INT16	Related time (SSMM)	
49ff	CHAR	Comment (with leading %)	

Example:

```
0000000 +0100 +0200 25032012 0200 28102012 0300 % Nahverkehrsdaten; MEZ=GMT+1
1000000 +0200 +0300 25032012 0300 28102012 0400 % Finnland
```

Table 10: ZEITVS type 2

Column	Type	Meaning	Note
1-7	INT32	Train station number	
9-15	INT32	Train station number	
16ff	CHAR	Comment (with leading %)	

Example:

```
8100000 0000000
```

Note:

- Import/export: The file ZEITVS is imported from the ETC only and is provided to all recipients.

7 Journey-related data

7.1 The timetable FPLAN

7.1.1 Journey description

Structure FPLAN: A journey begins with a *Z line. Then all * lines follow – except *KW and *KWZ – in no particular order. Then come the route lines, which must be in chronological order. Finally the *KW or *KWZ lines, if any, come at the end.

7.1.2 Definition of a journey

Line format *Z

Format does not match the standard.

Table 11: The following clarifications and derogations apply in line format *Z

Column	Type	Meaning	Note
1-2	CHAR	*Z	
4-8	INT32	Journey number	In NAV the train number/journey number is a unique number – per delivery – within an administration. Interpretations of the journey number in NAV that go beyond that are strongly discouraged.
10-15	CHAR	Administration	As per DiDok for Swiss administration. As per master data INFO+ for international administration
16-18	Leer	Blank	
19-21	INT16	Option	Number of transport option. (Not a standard HRDF field). Does not have any technical importance
23-25	INT16	(optional) Number of cycles; indicates the number of cycles still to follow	
27-29	INT16	(optional) Cycle time in minutes (distance between two journeys)	

Example:

```
*Z 000511 000011 101 % -- 9482102882 --
*Z 000001 000133 001 030 030 % -- 4386808318 --
*Z 000007 000133 001 % -- 7316802872 --
```

Note:

- Journeys with 6-digit journey numbers are not supplied with the format deliveries [2].

Line format *T

Not supported.

7.1.3 Other line formats

Line format *G

Format matches the standard [1].

In future, the offer category abbreviations from the list managed by SKI will be used as categories. The list is available at [4].

Example:

```
*G S 8503000 8501026 %
```

Line format *A VE

Format matches the standard [1].

Daily: If the transport days are to be communicated as daily, the *A VE field remains blank (i.e. bit field number equal to empty or 000000).

Example:

```
*A VE 8010085 8010097 %
```

Line format *A

Format matches the standard [1].



External attributes: Impermissible attributes are mapped to permissible attributes during the INFO+ import as far as this is practical. Unmapped external attributes are deleted during the INFO+ import. INFO+ exports permissible attributes only.

Example:

*A BB 8010366 8010097 002000

⌘

Line format *I

Format matches the standard [1].

Table 12: The following clarifications apply to line format *I

Column	Type	Meaning	Note
1-2	CHAR	*I	
4-5	CHAR	Informational text code	XI (XML) is not supported.
7-13	[#]INT32	(optional) Stop number from which the informational text applies.	
15-21	[#]INT32	(optional) Stop number up to which the informational text applies.	
23-28	INT16	Bit field number for the days on which the informational text applies.	If this information is missing, the informational text always applies.
30-38	INT32	Informational text number.	Reference to entry/line in INFOTEXT file.
40-45	[#]INT32	(optional) Departure time.	
47-52	[#]INT32	(optional) Arrival time.	

Example:

*I ZN 8010366 8010097

000002905

⌘

Comments:

- Import in INFO+: Delivered information text is imported in INFO+ if a valid code is used. Impermissible information text codes are mapped to available codes, as far as this is practical; otherwise they are omitted. INFO+ exports permissible `INFOTEXT` codes only.
- Notes as information text: Notes for which there are no suitable attributes can be defined as purely information text. The code "hi" must be used for this purpose. These notes are imported into INFO+.
- Number range for information text numbers: INFO+ uses the information text number range 1 to 899,999,999. The remaining numbers can be used freely by recipients which mix in additional data.

Line format *L

Format matches the standard [1].

Example:

*L 7 8501169 8501173

⌘

*L #1234567 8501169 8501173

⌘

Line format *R

Format matches the standard [1].

Example:

*R

⌘

*R R000001

⌘

Comments:

- Direction standard: INFO+ inserts the value “*R” (without further information) during an export if no explicit direction information is available. The value “*R” causes the last stop in the journey to be displayed as the direction:
- IDs recognised at the moment: {*R H, *R R}
- Direction numbers: INFO+ has the direction number range with the prefix “R”. The remaining numbers can be used freely by recipients.

Line format *VR

Not supported.

Line format *GR

Format matches the standard [1].

Example:

*GR 8507000 8507001 8507002 %

Comments:

- Importing of border points is currently not supported.
- Export anticipated from 2018.

Line format *SH

Format matches the standard [1].

Example:

*SH 8010097 023562 %

Line format *NP

Not supported.

Line format *NH

Not supported.

Line format *CI- and *CO

Format matches the standard [1].

Example:

*CI 0005 8010366 8010097 %

Comments:

- The *CO lines are used in NAV for line buffer time. Systems that process exports from INFO+ (e.g. timetable information systems) should use them when searching for connections, but not display them in the information. Similarly, when searching for connections on the basis of the current traffic situation, the line buffer time should be excluded from the connection calculation if real-time data is available.

Line format *VV

Not supported.

Line format *U

Not supported.

Line format *UN

Not supported.

7.1.4 Through carriage (*KW, *KWZ and *B:)

Format matches the standard [1].

Note:

- *A and *A VE are also supported. The format in this case is based on section 7.1.3.

Line format *KW

Format matches the standard [1].

Line format *KWZ

Format matches the standard [1].

Example:

```
*KW 000037
*KWZ 000472 80____ 8500200 Zuerich HB          8000026 Basel Bad Bf          02215 02319
*KWZ 000470 80____ 8000026 Basel Bad Bf          8000152 Hannover Hbf          02340 00612
*KWZ 002746 80____ 8000152 Hannover Hbf          8000050 Bremen Hbf           00644 00754
*A VE 8500200 8000050 001339
*A SL 8500200 8000050
```

Line format *B

Not supported.

7.1.5 Route lines

Line format for route lines

Format matches the standard [1].

Example:

```
0053301 S Wannsee DB          02014          %
0053291 Wannseebrücke          02015 02015 052344 80____ %
0053202 Am Kl. Wannsee/Am Gr 02016 02016          %
```

Line format *E

Not supported.

7.2 Mode or type of transport ZUGART

Format matches the standard [1].

ZUGART is not imported into INFO+. Delivered data is mapped to INFO+ master data.

Note:

- Only values according to the offer category as defined in the list managed by SKI may be used (also applies to the whole of section 5.5). The list is available at [4].

The file contains multiple line types. The first part defines the actual ZUGART (train type). Specifics for the export from INFO+ are provided here.

Table 13: ZUGART

Column	Type	Meaning	Note
1-3	CHAR	Short designation of category code in the data	
5-6	INT16	Product class (0–13). Required in order to restrict a search to specific categories (e.g. no ICE).	
8-8	CHAR	Tariff group A–H	Currently always: A
10-10	INT16	Output control	Currently always: 0
12-19	CHAR	Category designation that is output.	
21-21	INT16	Surcharge	Currently always: 0

Column	Type	Meaning	Note
23-23	CHAR	Flag N: Local transport category B: Journey is boat	
25-28	[\$]INT32	Category image names	Not used.
30-33	[#]INT32	Number for language-dependent category long names.	Reference to designation in second part of file: Category.

7.2.1 Further information in the ZUGART file

The second part of the ZUGART file contains classes (for grouping types), options (search) and categories (names of types). The entire thing is output in different languages.

PRODUKTKLASSE

Format matches the standard [1].

OPTION

Format matches the standard [1].

Table 14: Clarification for OPTION

Column	Type	Meaning	Note
1-8		Option definition (10–14)	Number range differs from HRDF 5.40.41
10ff	CHAR	Option text	

KATEGORIE

Format matches the standard [1].

Example:

```
CNL 0 A 0 CNL      0      #001
EC   1 A 0 EC       0      #002
UUU 0 A 0         - 0      #014
```

<text>

<Deutsch>

class00 ICE/EN/CNL/CIS/ES/MET/NZ/PEN/TGV/THA/X2

class01 EuroCity/InterCity/ICN/InterCityNight/SuperCity

class02 InterRegio

...

option10 nur Direktverbindungen

option11 Direkt mit Schlafwagen*

...

category001 CityNightLine

category002 EuroCity

category014 Unbekannte Art

<Englisch>

class00 ICE/EN/CNL/CIS/ES/MET/NZ/PEN/TGV/THA/X2

...


```

option10 direct connections only
...
category001 CityNightLine
...
<Franzoesisch>
class00 ICE/EN/CNL/CIS/ES/MET/NZ/PEN/TGV/THA/X2
...
option10 Correspondances directes
...
category001 CityNightLine
...
<Italienisch>
class00 ICE/EN/CNL/CIS/ES/MET/NZ/PEN/TGV/THA/X2
...
option10 Collegamenti diretti
...
category001 CityNightLine
...

```

7.3 Associations VEREINIG

Not supported.

7.4 Through services DURCHBI

Format matches the standard [1].

Example:

```

008844 DB0003 8500010 031920 DB0002 000001          % Basel SBB
020180 889___ 8593382 010702 889___ 000000 8593382 % %Biel/Bienne, Vorhölzli/Bois-Dv

```

Comments:

- Max. cascading: No more than five through services can be engaged one after the other (cascaded). The plan data creation for HAFAS rejects the excess through services in long cascades.
- Restrictive use: Through services should only be used where this results in relevant information for the passenger.

7.5 File with line definitions LINIE

7.5.1 Line property

The following properties are supported:

- Line type K : Line code
- Line type W : Internal line designation
- Line type N T : Short line name
- Line type L T : Long line name
- Line type R : Region name of line (reserved for FOT ID)
- Line type D : Description of line
- Line type F : Line colour
- Line type B : Line background colour
- Line type H : Main line

- Line type I : Line info texts

Example:

```
0000001 K ch:1:SLNID:33:1
0000001 W interne Bezeichnung
0000001 N T Kurzname
0000001 L T Langname
0000001 D Description
0000001 F 001 002 003
0000001 B 001 002 003
0000001 H 0000002
0000001 I ZN 000000001
```

Comments:

- It is mandatory to supply the following line information types: K, N T
- Line type K is used to exchange the Swiss Line ID (SLNID→ TBD).
- Line type R is reserved for the FOT line definition.
- Only one hierarchical level (line type H) is supported.
- The exact composition of the SLNID is published at [3].
- The use of the fields Line ID (#), Colour (F), Background colour (B), Main line (H), Icon, Drawing style and Symbol shape is predefined by HRDF. All other fields can be freely assigned.
- At present (2019) however, HAFAS can only use fields K, N or L for matching, which is why information relevant to matching should preferably be stored in these fields.

7.6 Transport company information **BETRIEB**

Format matches the standard [1].

Example:

```
00001 K "DB" L "DB AG" V "Deutsche Bahn AG"
00001 : 80____ 80a____ 80b____
00002 K "SBB" L "SBB AG" V "Schweizerische Bundesbahnen AG"
00002 : 000085 000085 000085
```

Comments:

- Import/export: The information is not imported through INFO+, instead the administrations are mapped to the transport companies recognised in INFO+.
- Language: By way of derogation from the standard [2] *Betrieb* is supplied for different languages. For identification purposes the file name has the language code added to it: *INFOTEXT_DE*, *INFOTEXT_FR*, *INFOTEXT_EN*, etc.

7.7 File with journey sequence information **FAHRTFLG**

Not supported.

7.8 File with direction information **DIRECTION**

Format matches the standard [2].

Note:

- The entries with prefix R are reserved for INFO+.

7.9 Track/bus bay information **GLEISE**

Line format track text assignment

Format matches the standard [1].

Example:

```
8503000 000511 000011 #0000001
```

Comments:

- Operating days: It must be ensured that the bit fields for the track data match the bit fields for the corresponding journey (tracks should only be defined on the days on which the journey also takes place)
- General track assignment * per BP is not supported.
- In NAV, boarding area information is supplied in the element `Gleisbezeichnung (G)`. Section designation (A) is left blank.
- Current (2019) status regarding field-filling:
 - Track designation:
 - Rail: Track number
 - NAV: Boarding area designation
 - Boat: Landing stage number
 - Section designation:
 - Rail: Sector(s)
 - NAV: Not used
 - Boat: Not used
 - Separator:
 - Rail: According to the provisions in V580
 - NAV: Not used
 - Boat: Not used

Line format track text definition

Format matches the standard [1].

Example:

```
8500207 #0000001 G '1' A 'AB'
```

```
8503000 #0000001 G '13'
```

```
8504200 #0000001 G '1'
```

7.10 Specials SONDERZG

Not supported.

8 Changing information

8.1 Stop-related changing times UMSTEIGB

Format matches the standard [1].

Example:

```
9999999 05 05 STANDARD
```

```
5800010 04 04 Basel SBB
```

Note:

- Import/export: Only exported and not imported.

8.2 Changing times between administrations UMSTEIGV

Format matches the standard [1].

Example:

```
@@@@@@@ 85 ____ 80 ____ 02
```

```
8501234 75 ____ 56 ____ 04
```

Note:

- Source system: The `umsteigv` values come from DiDok

8.3 Line and direction-related changing times UMSTEIGL

Format matches the standard [1].

Example:

```
8500010 87_____ TE2 *          * 000011 ICE *          * 011 Basel SBB
8500010 87_____ TE2 #0000521 * 000011 ICN #0000090 * 011 Basel SBB
8500852 000879 NFB 91          * 000879 NFB 91          * 000 Reigoldswil, Dorfplatz
```

8.4 Guaranteed interchanges for lines UMSTFWL

Not supported.

8.5 Journey pair-related changing times UMSTEIGZ

Format matches the standard [1].

Example:

```
8002010 003079 80_____ 003189 80_____ 002! 000001 Flieden
```

8.6 Guaranteed interchanges for journeys UMSTFWZ

Not supported.

8.7 Waiting times on journeys involving changes UMSTEIGW

Not supported.

9 Realgraph

Not supported.

10 Address information

Not supported.

11 Additional files

11.1 Feiertage

Format does not match the standard.

Table 15: Feiertage

Column	Field	Description
1-10	Holiday	FEIERTAG.DATUM Date of holiday in format DD.MM.YYYY
12ff.		Name of the holiday in 4 languages. Name in D< deu>name in FR< fra>name in IT< ita>name in EN< eng>

Example:

```
25.12.2015 Weihnachtstag< deu>Noël< fra>Natale< ita>Christmas Day< eng>
```

```
26.12.2015 Stephanstag< deu> Saint Etienne< fra> Santo Stefano< ita> Boxing Day< eng>
```

Note:



Direkter Verkehr Schweiz
Service direct suisse
Servizio diretto svizzero
Servetsch direct Svizra

-
- Content: Describes the general holidays for the timetable period.

12 Glossary

Term	Meaning
Equivalences	This is used to map the definition of “when stop X is entered as start/destination, then search also from/to Y” For HAFAS, these types of definitions are mapped in the form of stop groups in the HAFAS raw data file <code>metabhf</code> . Equivalences generally serve to aid the user, so that the user does not have to know precisely which stop should be searched from. Typical application is the connection of a train station and the bus stop directly adjacent to it.
Reserve transport	Refers to a method of operating transport whereby the transport option is only run or commissioned when needed. Reserve transport can also be mixed with scheduled timetable transport. Typical examples of reserve transport or mixed transport are short funiculars (e.g. Rigiblickbahn in Zurich, Mühleggbahn in St. Gallen).
CUS	Implementation of the →National Real-Time Data Platform. Client: FOT, system management: SBB
HaCon	Code for Hannover Consulting mbH: Leading software specialist for planning, dispatch and information systems for public transport. The most well-known product is →HAFAS. HaCon has been a member of the Siemens family since 2017.
HAFAS	HaCon timetable information
HRDF	Short designation for HAFAS raw data format. Version 5.20.30 is meant unless otherwise stated. See [1]. Identified with an added version number (e.g. HDRF 5.40). For HRDF 5.40 see [2]
INFO+	Implementation of the National Timetable Collection. Client: FOT, system management: SBB
KIDS	KIDS working group (KIDS = “Kunden-Informationen-Daten-Schnittstelle” or customer information data interface for Swiss public transport system). KIDS aims to standardise customer information. [...] Basing the information on VDV standards with minimal Swiss-specific changes reduces procurement costs. What Swiss-specific details are necessary are actively introduced to the VDV standard. With a uniform Swiss-wide standard, the prospects of adoption in the VDV standard increase (quote from ch-direkt website).
KIT	Committee for IT systems of ch-direkt: KIT works on further developing the central IT systems in the sale and distribution of public transport. It defines data exchange standards and ensures the optimal function of the interfaces, so that DV travel passes can be managed centrally but can be sold in a decentralised fashion. It also maintains jointly operated IT solutions. (quote from ch-direkt website)
LV03	LV stands for “land surveying”, 03 for the year in which land surveying was started or completed. The reference framework LV03 is based on measurements taken more than 100 years ago. Due to the surveying methods used at the time, LV03 differs drastically from WGS84 coordinates, which is why →LV95 was introduced. The coordinates have the familiar values as they have appeared on Swiss maps for decades (e.g. Bern with values 600 000/ 200 000). Land topography was used.
LV95	LV stands for “land surveying”, 95 for the year in which land surveying was started or completed. LV95 corrects the drastic differences to WGS84 coordinates and is therefore an equal counterpart to the WGS84 system. In order to differentiate between LV95 and LV03, 1 or 2 million have been added to the coordinates and the cardinal directions (E and N) have been added.



Term	Meaning
	LV95 coordinates for Bern are E=2,600,000 m (East) and N=1,200,000 m (North).
National Real-Time Data Platform	Integrates the real-time sources from different transport companies in Switzerland into one national real-time data platform. Current implementation of the National Real-Time Data Platform is →CUS
National Timetable Collection	Digital collection of timetables of all licensed transport companies in Switzerland. Current implementation of the National Timetable Collection is →INFO+.
VDV	The German Association of Transport Companies (VDV) comprises around 600 public passenger and freight transport companies in Germany. The association's stated aims are to advise its members and contribute to policy, cultivate the exchange of experiences and knowledge among its members and devise technical, operational, legal and commercial guidelines.
VDV453, actual data interface (VDV Guideline 453)	Defines the technical services and subscription procedure as communication infrastructure in the form of a standard interface. The following services are currently available: "Ensuring connections 'ANS'", "Dynamic passenger information 'DFI'", "Visualisation 'VIS'" and "General message service 'AND'".
VDV454, actual data interface (VDV Guideline 454)	The following services are defined based on the communication infrastructure set out in VDV Guideline 453 as additional services for more dynamic timetable information: Target data service "REF-AUS" with the day's current target timetables for medium-term information (reference) and the actual data service "AUS" with actual data from operational occurrences for short-term information.
WGS 84	The World Geodetic System 1984 (WGS84) is a geodetic reference system used as the uniform basis for position referencing on Earth and in Earth's nearby space.