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IBIS-IP Beschreibung der Dienste / Service description

Gemeinsame Datenstrukturen und Aufzählungstypen / Common Data Structures and Enumerations V2.2

Gesamtbearbeitung
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Gesamtbearbeitung
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Vorwort

Diese VDV-Schrift wurde aus der VDV-301-2 separiert, um Anpassungen an einzelnen IBIS-IP-Diensten unabhängig von anderen IBIS-IP-Diensten vornehmen zu können.

In der VDV-301-2 werden die technischen Grundlagen wie auch die Basisdienste, welche die Grundlagen eines IBIS-IP-Systems bilden, beschrieben.

Die VDV-Schrift 301-2-1 beschreibt die gemeinsamen Datenstrukturen und Aufzählungstypen.

Foreword

This VDV-requirement document has been separated from the VDV-301-2 in order to make adjustments to individual IBIS IP services independent from other IBIS IP services.

The technical basics as well as the basic services of the IBIS-IP systems are described in the VDV-301-2.

The VDV 301-2-1 describes the common data structures and enumerations.

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1 IBIS-IP datatypes

1.1 IBIS-IP.anyURI

IBIS-IP.anyURI			*+Structure*	**IBIS IP structure for describing an address value**
	Value	**1:1**	*xs:anyURI*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 1 Description of IBIS-IP.anyURI

1.2 IBIS-IP.boolean

IBIS-IP.boolean			*+Structure*	**IBIS IP structure for describing a boolean value**
	Value	**1:1**	*xs:boolean*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 2 Description of IBIS-IP.boolean

1.3 IBIS-IP.byte

IBIS-IP.byte			*+Structure*	**IBIS IP structure for describing a byte value**
	Value	**1:1**	*xs:byte*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 3 Description of IBIS-IP.byte

1.4 IBIS-IP.date

IBIS-IP.date			*+Structure*	**IBIS IP structure for describing a date value**
	Value	**1:1**	*xs:date*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 4 Description of IBIS-IP.date

1.5 IBIS-IP.dateTime

IBIS-IP.dateTime			*+Structure*	**IBIS IP structure for describing a date value with time**
	Value	**1:1**	*xs:dateTime*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 5 Description of IBIS-IP.dateTime

1.6 IBIS-IP.double

IBIS-IP.double			*+Structure*	**IBIS IP structure for describing a floating point value**
	Value	**1:1**	*xs:double*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 6 Description of IBIS-IP.double

1.7 IBIS-IP.duration

IBIS-IP.duration			*+Structure*	**IBIS IP structure for describing a duration**
	Value	**1:1**	*xs:duration*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 7 Description of IBIS-IP.duration

1.8 IBIS-IP.int

IBIS-IP.int			*+Structure*	**IBIS IP structure for describing an integer**
	Value	**1:1**	*xs:int*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 8 Description of IBIS-IP.int

1.9 IBIS-IP.language

IBIS-IP.language			*+Structure*	**IBIS IP structure for describing a language specification**
	Value	**1:1**	*xs:language*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 9 Description of IBIS-IP.language

1.10 IBIS-IP.NMTOKEN

IBIS-IP.NMTOKEN			*+Structure*	**IBIS IP structure for describing a Token Value**
	Value	**1:1**	*xs:NMTOKEN*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 10 Description of IBIS-IP.NMTOKEN

1.11 IBIS-IP.nonNegativeInteger

IBIS-IP.nonNegativeInteger			*+Structure*	**IBIS IP structure for describing a non-negative integer**
	Value	**1:1**	*xs:nonNegativeInteger*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 11 Description of IBIS-IP.nonNegativeInteger

1.12 IBIS-IP.normalizedString

IBIS-IP.normalizedString			*+Structure*	**IBIS IP structure for describing a normalised string value**
	Value	**1:1**	*xs:normalizedString*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 12 Description of IBIS-IP.normalizedString

1.13 IBIS-IP.string

IBIS-IP.string			*+Structure*	**IBIS IP structure for describing a string value**
	Value	**1:1**	*xs:string*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 13 Description of IBIS-IP.string

1.14 IBIS-IP.time

IBIS-IP.time			*+Structure*	**IBIS IP structure for describing a time value**
	Value	**1:1**	*xs:time*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 14 Description of IBIS-IP.time

1.15 IBIS-IP.unsignedInt

IBIS-IP.unsignedInt			*+Structure*	**IBIS IP structure for describing an unsigned integer**
	Value	**1:1**	*xs:unsignedInt*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 15 Description of IBIS-IP.unsignedInt

1.16 IBIS-IP.unsignedLong

IBIS-IP.unsignedLong			*+Structure*	**IBIS IP structure for describing an unsigned long integer**
	Value	**1:1**	*xs:unsignedLong*	Specification of the actual value
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 16 Description of IBIS-IP.unsignedLong

1.17 InternationalTextType

InternationalTextType			*+Structure*	**IBIS IP structure for describing of a foreign-language text**
	Value	**1:1**	*IBIS-IP.string*	Specification of the actual value
	Language	**1:1**	*IBIS-IP.language*	Specification of language
	ErrorCode	0:1	*ErrorCodeEnumeration*	Value for an error that has occurred

Table 17 Description of InternationalTextType

Value:

Support of inline formatting:

The text inserted to the element *Value* can contain inline formatting instructions using XML based syntax. XML elements for inline formatting that are unknown to a device have to be ignored, but the content of the element has to be displayed. In this way it is not necessary that each device implements all available inline formatting elements and the backwards compatibility is ensured for future extensions.

Example:

```
Westend <icon type="P+R">[P+R]</icon>
```

Devices that support icons will show the P+R-Icon.
If a device doesn't support the inline formatting element <icon> it has to delete both xml tags but not the content between the tags, so the device shows "Westend [P+R]" instead.

The following formatting elements are defined:

XML Element	Description
*** ***	Bold text.
<narrow> </narrow>	Text with narrow chars (opposite to bold text).
*** ***	Italic text.
<blink timeMs="150" duty="70"> </blink>	Blinking text that blinks every 150ms and is visible 70% the time.
*** ***	Text with a special font selected by type.
<invert> </invert>	Inverted text.
<color fg="#ff0000" bg="#00aaaa"> </color>	Color of the text with fg as foreground color and bg as background color noted as #rrggbb value.
<icon type="P+R">[P+R]</icon>	Insertion of a special icon. The type will specify the icon that has to be displayed (see list below). The text between the icon-tags is an alternative text that has to be displayed if <icon> is not supported or the icon addressed by type is unknown.

Table 18 List of possible elements for inline formatting

For element icon the following types are defined:

Icon type	Description
P+R	Park and Ride-Symbol
school	School bus („Hänsel und Gretel“)
coffee	Coffee cup
U	Symbol for underground lines
S	Symbol for suburban lines
company	Company logo of the owner of the car
airplane	Symbol for the airport
football	Symbol for the football stadium
fair	Logo of the fairground
coach	Symbol to use beside a coach number

Table 19 List of possible icons

It is also allowed to use custom project specific icons. To avoid collisions with the standardized icons all custom icons have to be prefixed with c_.

Example:
If a symbol for a shopping mall shall be displayed a custom icon c_shopping can be introduced.

Inline formatting elements can be nested.

Example:

To get an inverted P+R-Symbol the following sequence can be used:

```
Westend <invert><icon type="P+R">[P+R]</icon><invert>
```

Using the fallback rules defined above the following will happen if a device doesn't support all formatting sequences:

- *Devices that don't support inverted text have to show a non-inverted P+R-Symbol because of the rule that all unknown formatting tags have to be removed.*
- *Devices that don't support the icon type "P+R" have to show the alternative text [P+R] between the icon tags because of the rule that in case of an unknown icon type the alternative text between the icon tags has to be used.*
- *Devices that don't support icons have to show the alternative text [P+R] because of the rule that all unknown formatting elements have to be removed.*

Encoding in XML

Before putting the text to the *Value* element of *InternationalTextType* all chars (including the tags of inline formatting) with special meaning in XML have to be masked. This is normally done by used XML library.

Example:

If a text with a bold part has to be displayed the following inline formatting code can be used:

```
Text with <b>bold</b> part
```

After inserting the text to the Value-Element of InternationalText the brackets of the bold tags have to be masked:

```
<Value>Text with &lt;b&gt;bold&lt;/b&gt; part</Value>
```

If one of the chars with special meaning in XML shall be displayed on the device it has to be escaped twice. To show the text

> Tierpark

on the display it has to be encoded in this way:

```
<Value>&amp;gt; Tierpark</Value>
```

Compatibility if no inline formatting is supported:

Implementation hint:

To be compatible with this version of VDV 301-2-1 without implementing inline formatting you have to do the following steps to strip off the formatting sequences:

1) Remove all XML-Tags from the string
2) Replace the following XML entity references with the corresponding char:
   a) <
   b) >
   c) &
   d) "
   e) '

1.18 NetexMode

	NetexMode				*+Structure*	**IBIS IP structure for describing ConnectionMode and MyOwnVehicle**
					choice	One of the choices below, gives a general classification: is it a public transport (PT) or a private transportation mode and which
	a		***PtMainMode***	**–1:1**	*PtSubModesEnumeration*	in case it is some kind of public transportation, the transportation type is mentioned here
	b		***PrivateMainMode***		*PrivateSubmodesEnumeration*	in case it is some kind of private transportation, the transportation type is mentioned here
					choice	one of the choices below, gives detailed Information on the sub mode of transportation
	a	*PtSubmodeChoiceGroup*				
		a	***AirSubmode***		*AirSubmodeEnumeration*	sub type of air transportation (cf. 3.36)
		b	***BusSubmode***		*BusSubmodeEnumeration*	sub type of bus transportation (cf. 3.33)
		c	***CoachSubmode***		*CoachSubmodeEnumeration*	sub type of coach transportation (cf. 3.31)
		d	***FunicularSubmode***		*FunicularSubmodeEnumeration*	sub type of funicular transportation (cf. 3.38)
		e	***MetroSubmode***		*MetroSubmodeEnumeration*	sub type of metro transportation (cf. 3.32)
		f	***TramSubmode***	**–1:1**	*TramSubmodeEnumeration*	sub type of tram transportation (cf. 3.34)
		g	***TelecabinSubmode***		*TelecabinSubmodeEnumeration*	sub type of telecabin transportation (cf. 3.37)
		h	***RailSubmode***		*RailSubmodeEnumeration*	sub type of rail transportation (cf. 3.30)
		i	***WaterSubmode***		*WaterSubmodeEnumeration*	sub type of water transportation (cf. 3.35)
	b	*PrivateSubModeChoiceGroup*				
		a	***TaxiSubmode***		*TaxiSubmodeEnumeration*	sub type of air transportation (cf. 3.39)
		b	***SelfDriveSubmode***		*SelfDriveSubmodeEnumeration*	sub type of air transportation (cf. 3.40)

Table 20 Description of NetexMode

2 Common data structure

2.1 AdditionalAnnouncement

AdditionalAnnouncement				*+Structure*	**Structure which describes the additional information for an announcement**
		AnnouncementRef	**1:1**	*IBIS-IP.NMTOKEN*	announcement reference
		AnnouncementText	0:*	*+International TextType*	Announcement text
		AnnouncementTTSText	0:*	*+International TextType*	Announcement text for text to speech engines
				choice	One of the choices below
	a	***ImmediateInformation***	**–1:1**	*IBIS-IP.boolean*	Immediate sending of the additional announcement
	b	***PeriodicalInformation***		*IBIS-IP.duration*	Periodical sending of the additional announcement
	c	***InformationAtSpecificPoint***		*+SpecificPoint*	Sending of an announcement at a specific (trip) point (point information cf. 2.35)

Table 1 Description of AdditionalAnnouncement

2.2 Announcement

Announcement			*+Structure*	**Structure with information which is needed for an announcement**
	AnnouncementRef	**1:1**	*IBIS-IP.NMTOKEN*	announcement reference
	AnnouncementText	0:*	*+International TextType*	Announcement text
	AnnouncementTTSText	0:*	*+International TextType*	Announcement text for text to speech engines

Table 2 Description of Announcement

2.3 BayArea

BayArea			*+Structure*	**Structure which describes the bay area (in relation to the stop sign)**
	BeforeBay	0:1	*IBIS-IP.double*	Bay begin, distance to the stop sign in meters in moving dirction
	BehindBay	0:1	*IBIS-IP.double*	Bay ending, distance after the stop sign in metersin moving direction

Table 3 Description of BayArea

2.4 BeaconPoint

BeaconPoint			*+Structure*	**Structure which describes a beacon point**
	PointRef	0:1	*IBIS-IP.NMTOKEN*	Reference at a point
	BeaconCode	**1:1**	*IBIS-IP.NMTOKEN*	Beacon code
	ShortName	0:*	*+International TextType*	Beacon short name
	Description	0:*	*+International TextType*	Description of the beacon

Table 4 Description of BeaconPoint

2.5 CardApplInformation

CardApplInformations			*+Structure*	**Structure for information of applications of a read card**
	CardApplInformationLength	**1:1**	*IBIS-IP.unsignedInt*	Length of the byte array from *CardApplInformationData*
	CardApplInformation-Data	**1:***	*IBIS-IP.byte*	Data array for application data

Table 5 Description of CardApplInformation

2.6 CardTicketData

CardTicketData			*+Structure*	**information of tariff data on card**
	CardTicketDataID	**1:1**	*IBIS-IP.unsigned-Long*	Card ID
	CardTicketDataLength	**1:1**	*IBIS-IP.unsignedInt*	Length of ticket data
	CardTicketData	**1:***	*IBIS-IP.byte*	Data array for ticket information

Table 6 Description of CardTicketData

2.7 CardType

CardType			*+Structure*	**Structure to describe a card type (ticket)**
	CardSerialNumber	**1:1**	*IBIS-IP.NMTOKEN*	Serial number of the card
	CardTypeID	**1:1**	*IBIS-IP.NMTOKEN*	Type ID of the card
	CardTypeText	0:*	*+International TextType*	Type ID of the card as string/text

Table 7 Description of CardType

2.8 Connection

Connection			*+Structure*	**Structure which describes a connection**
	StopRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at a stop point which the connection is concerning on
	ConnectionRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at the connection
	ConnectionType	**1:1**	*ConnectionTypeEnumeration*	Type of connection (cf. 3.2)
	DisplayContent	**0:1**	*+DisplayContent*	Display content of the distributor (cf. 2.19)
	Platform	0:1	*IBIS-IP.string*	Information about the platform for the interchange
	ConnectionState	0:1	*ConnectionStateEnumeration*	Description of the connection state in case of a ordered connection (cf. 3.1)
	TransportMode	0:*	*+Vehicle*	Information about the transport mode for the connection (cf.2.63). DEPRECATED! Please use ConnectionMode in future
	ConnectionMode	0:*	*NetexMode*	Information about the transport mode and transport sub mode of the pick-up vehicle of the connection (cf.1.18)
	ExpectedDepartureTime	0:1	*IBIS-IP.dateTime*	Information on the expected departure based on realtime information
	ScheduledDepartureTime	0:1	*IBIS-IP.dateTime*	Information on the planned departure

Table 8 Description of Connection

2.9 DataAcceptedResponse

DataAcceptedResponse			*+Structure*	**Struktur eines Dienstes zur Beantwortung einer Operation, welche Daten dem Dienst zur Verfügung stellt**
	DataAcceptedResponseData	**1:1**	*+DataAcceptedResponseDataStructure*	Ausführliche Antwortstruktur (siehe 2.10)
	OperationErrorMessage	**1:1**	*IBIS-IP.string*	Fehlermeldung

Table 9 Description of DataAcceptedResponse

2.10 DataAcceptedResponseData

DataAcceptedResponseData			*+Structure*	**Detailed response structure including data**
	TimeStamp	**1:1**	*IBIS-IP.dateTime*	Time stamp of the response
	DataAccepted	**1:1**	*IBIS-IP.boolean*	Data acknowledge
	ErrorCode	0:1	*ErrorCodeEnumeration*	Descriptive value for an error (cf. 3.11)
	ErrorInformation	0:1	*IBIS-IP.string*	Error code information (free text)

Table 10 Description of DataAcceptedResponseData

2.11 DataVersion

With the data version different versions of this XML-Scheme are possible in one system.

DataVersion			*+Structure*	**Structure with information of the data version**
	DataType	**1:1**	*IBIS-IP.string*	Free text description of the data type
	VersionRef	**1:1**	*IBIS-IP.NMTOKEN*	Version information

Table 11 Description of DataVersion

2.12 DataVersionList

DataVersionList			*+Structure*	**Structure with which several data versions can be listed**
	DataVersion	**1:***	*+DataVersion*	Data Structure for the description of data types (cf. 2.11)

Table 12 Description of DataVersionList

2.13 Destination

Destination			*+Structure*	**Structure with information about the destination**
	DestinationRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at the display destination text
	DestinationName	0:*	*+International TextType*	Text which is published at the display
	DestinationShortName	0:*	*+International TextType*	Short text which is published at the display

Table 13 Description of Destination

DestinationName:

To provide a *DestinationName* which consists of more than one line the element *DestinationName* may occur several times per language. All *DestinationName* elements with the same *Language* will be interpreted as the lines of a multiline destination with the first element as the first line of the destination. If the device can only show one line, it has to show the first line.

2.14 DeviceInformation

DeviceInformation			*+Structure*	**Structure with non changeable device configuration data**
DeviceInformationGroup	***DeviceName***	**1:1**	*IBIS-IP.string*	Device name
	Manufacturer	**1:1**	*IBIS-IP.string*	Manufacturer of the device
	SerialNumber	**1:1**	*IBIS-IP.NMTOKEN*	Serial number of the device
	DeviceClass	**1:1**	*+DeviceClass Enumeration*	One of the possible device class (cf. 3.3)
	DataVersionList	0:1	*+DataVersion List*	List with the data versions (cf. 2.12)
	WebInterfaceAddress	0:1	*IBIS-IP.anyURI*	URI for a optional web interface for maintenance

Table 14 Description of DeviceInformation

2.15 DeviceSpecification

DeviceSpecification			*+Structure*	**Structure which describes a device**
	DeviceClass	**1:1**	*DeviceClassEnumeration*	One of the available device classes (cf. 3.3)
	DeviceID	**1:1**	*IBIS-IP.NMTOKEN*	Device-ID

Table 15 Description of DeviceSpecification

2.16 DeviceSpecificationList

DeviceSpecificationList			*+Structure*	**Structure with the device specification list**
	DeviceSpecification	**1:***	*+DeviceSpecification*	Device information (cf. 2.15)

Table 16 Description of DeviceSpecificationList

2.17 DeviceSpecificationWithState

DeviceSpecificationWithState			*+Structure*	**Structure with the device specification including the current working states**
	DeviceSpecification	**1:1**	*+DeviceSpecification*	Structure which describes a device (cf. 2.15)
	DeviceState	**1:1**	*DeviceStateEnumeration*	possible states of the device (cf. 3.5)

Table 17 Description of DeviceSpecificationWithState

2.18 DeviceSpecificationWithStateList

DeviceSpecificationWithStateList			*+Structure*	**List of objects of with device specifications and their states**
	DeviceSpecificationWithState	**1:***	*+DeviceSpecificationWithState*	Structure with the device specification including the current working states

Table 18 Description of DeviceSpecificationWithStateList

2.19 DisplayContent

DisplayContent			*+Structure*	**Structure with the complete display content**
	DisplayContentRef	0:1	*IBIS-IP.NMTOKEN*	Reference at the display content
	LineInformation	**1:1**	*+LineInformation*	information about the line, which has to be displayed (cf. 2.31)
	Destination	**1:1**	*+Destination*	Information about the destination, which has to be displayed (cf. 2.13)
	ViaPoint	0:*	*+ViaPoint*	Information about the via points, which have to be displayed (cf. 2.64)
	AdditionalInformation	0:*	*+InternationalTextType*	Information about the additional information like express bus, additional bus etc. , which has to be displayed
Display Policy	*Priority*	0:1	*IBIS-IP.nonNegativeInteger*	Information about the display priority
	PeriodDuration	0:1	*IBIS-IP.duration*	Information about the period duration
	Duration	0:1	*IBIS-IP.duration*	Duration of a display turn

Table 19 Description of DisplayContent

DisplayContentRef:

The *DisplayContentRef* can be used to distinguish different contents for different display types and positions. For each received *DisplayContent* the display compares the *DisplayContentRef* with an internal configuration and selects the *DisplayContent* in case of a match.

If the display doesn't have a *DisplayContentRef* configured or cannot find a *DisplayContent* that matches to its configuration, it picks the first *DisplayContent* where the *DisplayContentRef* is empty.

The used names for the *DisplayContentRef* can be selected project specific. As best practice the following structure is suggested:
<display position>_<display type>-<display number>. The display position is mandatory, the display type and display number are optional.

Suggested display positions:

- Front
- Side
- Interior
- Rear

Suggested display types:

- LED
- TFT

Example:

Using this scheme it is possible to create a flexible system to provide the display specific information. Examples:

- *Interior_LED-3: Interior display number 3 with type LED*
- *Interior_LED: All interior displays with type LED*
- *Side-4: The side display with number 4*
- *Side: All side displays*
- *<Empty DisplayContentRef>: All displays*

To get a flexible system a device can have a prioritized list of DisplayContentRefs it uses to select the correct content.

Example for the interior display number 3 (the first entry has highest priority):

- *Interior_LED-3*
- *Interior_LED*
- *Interior*
- *<Empty DisplayContentRef>*

Using this list the display would use the DisplayContent that addresses this single interior display 3 with the highest priority. If this is not found it would use the group names Interior_LED or Interior.

If no correct group is found it will fall back to the generic DisplayContent with empty DisplayContentRef.

*DisplayContentRef*s can be project dependent. In most situations it is sufficient to use only the groupname (Front, Interior, …) and the fallback to the <Empty DisplayContentRef>.

2.20 DoorCounting

DoorCounting			*+Structure*	**Counting data of a door**
	ObjectClass	**1:1**	*DoorCounting ObjectClassEnumeration*	Value with the detailed description of the counted object (cf. chapter 3.6)
	In	**1:1**	*+IBIS-IP.int*	Number of boarded passengers
	Out	**1:1**	*+IBIS-IP.int*	Number of escaped passengers
	CountQuality	0:1	*DoorCounting QualityEnumeration*	Textstring with information on the quality of counting (cf. 3.8)

Table 20 Description of DoorCounting

2.21 DoorCountingList

DoorCountingList			*+Structure*	**Structure for a list of door with for which values are set**
	DoorID	**1:1**	*IBIS-IP.NMTOKEN*	ID for identification of the door
	CountSet	**1:***	*+DoorCounting*	Structure with counting values (cf. chapter 2.20)

Table 21 Description of DoorCountingList

2.22 DoorInformation

DoorInformation			*+Structure*	**Structure with information about the counting at a specific door**
	DoorID	**1:1**	*IBIS-IP.NMTOKEN*	ID for identification of the door
	Count	**1:***	*+DoorCounting*	structure for the counting data (cf. 2.20)
	State	0:1	*+DoorState*	Structure with door states (cf. 2.25)

Table 22 Description of DoorInformation

2.23 DoorOpenState

DoorOpenState			*+Structure*	**Door state**
	Value	**1:1**	*DoorOpenStateEnumeration*	Description value of the opening state of a door (cf. 3.9)
	ErrorCode	0:1	*ErrorCodeEnumeration*	Descriptive value for an error (cf. 3.11)

Table 23 Description of DoorOpenState

2.24 DoorOperationState

DoorOperationState			*+Structure*	**Door operation state**
	Value	**1:1**	*DoorOperationStateEnumeration*	Description value of the operation state (cf. chapter 3.10)
	ErrorCode	0:1	*ErrorCodeEnumeration*	Descriptive value for an error (cf. chapter 3.11)

Table 24 Description of DoorOperationState

2.25 DoorState

DoorState			*+Structure*	**Structure for description of the door state**
	OpenState	**1:1**	*+DoorOpenState*	Structure for description of door opening state (cf. 2.23)
	OperationState	0:1	*+DoorOperationState*	Structure for description of the door operation state (cf. 2.24)

Table 25 Description of DoorState

2.26 FareZoneInformation

FareZoneInformation			*+Structure*	**Structure for the description of information for tariffs and fare zones**
Fare-Zone-Information	***FarezoneID***	**1:1**	*IBIS-IP.NMTOKEN*	Index of afare zone
	FarezoneType	0:1	*+ZoneType*	Information about the fare zone type (cf. 2.65)
	FarezoneLongName	0:*	*+InternationalTextType*	Fare zone long name
	FarezoneShortName	0:*	*+InternationalTextType*	Fare zone short name

Table 26 Description of FareZoneInformation

2.27 GlobalCardStatus

GlobalCardStatus			*+Structure*	**Global card status**
	GlobalCardStatusID	**1:1**	*IBIS-IP.unsignedInt*	ID of Card status based on the EN 1545
	GlobalCardStatusText	0:*	*IBIS-IP.string*	Text of global card status based on the EN 1545

Table 27 Description of GlobalCardStatus

2.28 GNSSPoint

GNSSPoint			*+Structure*	**Structure which describes a point where coordinates are used for locating the point**
	PointRef	0:1	*IBIS-IP.NMTOKEN*	Reference at a GNSS point
	Longitude	**1:1**	*+GNSSCoordinate*	Structure for geographical longitude (cf. 2.29)
	Latitude	**1:1**	*+GNSSCoordinate*	Structure for geographical latitude (cf. 2.29)
	Altitude	0:1	*IBIS-IP.double*	Geographical Altitude

Table 28 Description of GNSSPoint

2.29 GNSSCoordinate

GNSSCoordinate			*+Structure*	**Structure for describing coordinates on the surface**
	Degree	**1:1**	*IBIS-IP.double*	Coordinate in degree
	Direction	**1:1**	*IBIS-IP.string*	geographical direction

Table 29 Description of GNSSCoordinate

2.30 JourneyStopInformation

JourneyStopInformation			*+Structure*	**Structure to describe a stop point by the Journey Information Determination**
	StopRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at the stop point
	StopName	**1:***	*+InternationalTextType*	Name of stop point
	StopAlternativeName	0:*	*+InternationalTextType*	Alternative name of stop point
	Platform	0:1	*IBIS-IP.string*	Name of the plattform
	DisplayContent	1:*	*+DisplayContent*	Information about display content (cf. 2.19)
	Announcement	0:*	*+Announcement*	Information for announcement (cf. 2.2)
	ArrivalScheduled	0:1	*IBIS-IP.dateTime*	Scheduled arrival
	DepartureScheduled	0:1	*IBIS-IP.dateTime*	Scheduled departure
	Connection	0:*	*+Connection*	Information about the connections (cf. 2.8)
	BayArea	0:1	*+BayArea*	Information about the size of the Bay Area (cf. 2.3)
	GNSSPoint	0:1	*+GNSSPoint*	Information for the Geo-Coordinates of the stop point (cf. 2.28)
	FareZone	0:*	*IBIS-IP.NMTOKEN*	Valid fare zone at the current stop point

Table 30 Description of JourneyStopInformation

2.31 LineInformation

LineInformation			*+Structure*	**Structure for description of the line information**
	LineRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at the line
	LineName	0:*	*+InternationalTextType*	name of line
	LineShortName	0:*	*+InternationalTextType*	short name of line
	LineNumber	0:1	*IBIS-IP.int*	number of line
	LineCode	0:1	*IBIS-IP.int*	Code for special lines

Table 31 Description of LineInformation

2.32 LogMessage

LogMessage			*+Structure*	**Structure for logging message**
	MessageProvider	**1:1**	*+DeviceSpecification*	Massage provider (cf. 2.15)
	MessageBody	**1:1**	*+Message*	Message content (cf. 2.33)

Table 32 Description of LogMessage

2.33 Message

Message			*+Structure*	**Structure for describing a message**
	Message-ID	**1:1**	*IBIS-IP.int*	index of message
	TimeStamp	**1:1**	*IBIS-IP.dateTime*	time stamp, when the message was created
	MessageType	**1:1**	*MessageType Enumeration*	kind of message (cf. chapter 3.18)
	MessageText	**1:1**	*IBIS-IP.string*	Message text

Table 33 Description of Message

2.34 NetexMode

A combined Mode and SubMode information in accordance with Netex.

Message			*+Structure*	**Structure for describing a message**
	Message-ID	**1:1**	*IBIS-IP.int*	index of message
	TimeStamp	**1:1**	*IBIS-IP.dateTime*	time stamp, when the message was created
	MessageType	**1:1**	*MessageType Enumeration*	kind of message (cf. chapter 3.18)
	MessageText	**1:1**	*IBIS-IP.string*	Message text

Table 34 Description of NetexMode

2.35 Point

Point			*+Structure*	**Structure with (logical) point description**
	PointIndex	**1:1**	*IBIS-IP.int*	Point index
	PointType	**1:1**	*+PointType*	Type of the point (cf. chapter 2.37)
	DistanceToPreviousPoint	**1:1**	*IBIS-IP.int*	Distance to the previous point in [m]

Table 35 Description of Point

2.36 PointSequence

PointSequence			*+Structure*	**Structure for describing a sequence of points**
	Point	**2:***	*+Point*	Description of points (cf. 2.35)

Table 36 Description of PointSequence

2.37 PointType

PointType				*+Structure*	**Structure for choosing a specific point type**
				choice	One of the structures below
	a	***StopPoint***	**–1:1**	*+JourneyStopInformation*	Stop point (cf. chapter 2.30)
	b	***BeaconPoint***		*+BeaconPoint*	Beacon point (cf. chapter 2.4)
	c	***GNSSLocationPoint***		*+GNSSPoint*	Point, location described in coordinates (cf. chapter 2.28)
	d	***TimingPoint***		*+TimingPoint*	Point where a schedule comparison should take place (cf. chapter 2.57)
	e	***TSPPoint***		*+TSPPoint*	Point for traffic light priorisation (cf. chapter 2.60)

Table 37 Description of PointType

2.38 ServiceIdentification

The ServiceIdentification structure allows identifying a service in the system. Contrary to the ServiceSpecification (cf. 2.43) this structure is additionally including the information about the device where the service is running.

ServiceIdentification			*+Structure*	**Structure for the unique identification of a service in the system**
	ServiceName	**1:1**	*+ServiceSpecification*	Structure for the service description
	Device	**1:1**	*+DeviceSpecification*	Structure for device description

Table 38 Description of ServiceIdentification

2.39 ServiceIdentificationWithState

ServiceIdentificationWithState			*+Structure*	**Structure for unique identification of a service in the whole system including its state**
	ServiceIdentification	**1:1**	*+ServiceIdentification*	Structure for unique identification of a service in the whole system (cf. 2.38)
	ServiceState	**1:1**	*ServiceStateEnumeration*	Information about the state of the service

Table 39 Description of ServiceIdentificationWithState

2.40 ServiceIdentificationWithStateList

ServiceIdentificationWithStateList			*+Structure*	**Structure with a list of all unique services and their state in the system**
	ServiceIdentificationWithState	**1:***	*+ServiceSpecificationWithState*	Structure for the unique identification of a service including its state (cf. 2.44)

Table 40 Description of ServiceIdentificationWithStateList

2.41 ServiceInformation

ServiceInformation			*+Structure*	**Structure for description of the services which are available on a device**
	Service	**1:1**	*+ServiceSpecification*	Structure for description of a service (cf. 2.43)
	Autostart	**1:1**	*IBIS-IP.boolean*	Information whether a service has to be started automatically by the DeviceManagement (and not by the SystemManagementService), especially relevant for the vehicle operation functionalities

Table 41 Description of ServiceInformation

2.42 ServiceInformationList

ServiceInformationList			*+Structure*	**Structure for describing a list of services which are available on a device**
	ServiceInformation	**1:***	*+ServiceInformation*	Structure for describing available services (cf. 2.41)

Table 42 Description of ServiceInformationList

2.43 ServiceSpecification

Die ServiceSpecification beschreibt einen Dienst geräteweit eindeutig durch Angabe des ServiceNamens und der IBIS-IP-Version. Eine systemweit eindeutige Identifikation erfordert zusätzlich die Kenntnis des Gerätes, auf dem ein Dienst läuft. Die entsprechende Datenstruktur ist die ServiceIdentification (vgl. 2.38)

ServiceSpecification			*+Structure*	**Structure for the unique service identification on a device**
	ServiceName	**1:1**	*ServiceNameEnumeration*	A possible service (cf. 0)
	IBIS-IP-Version	**1:1**	*IBIS-IP.NMTOKEN*	Version information of the used protocol (this is especially necessary for the SystemMonitoringService to know which service (version) are started)

Table 43 Description of ServiceSpecification

2.44 ServiceSpecificationWithState

ServiceSpecificationWithState			*+Structure*	**Structure for the unique identification of a service at the device including its status**
	ServiceSpecification	**1:1**	*+ServiceSpecification*	Structure which describes a service (cf. 2.43)
	ServiceState	**1:1**	*ServiceStateEnumeration*	Information about the operation state of the service

Table 44 Description of ServiceSpecificationWithState

2.45 ServiceSpecificationWithStateList

ServiceSpecificationWithStateList			*+Structure*	**Structure with a list of the service specifications including the operation states**
	ServiceSpecificationWithState	**1:***	*+ServiceSpecificationWithState*	Description structure of a service including the operation state (cf 2.44)

Table 45 Description of ServiceSpecificationWithStateList

2.46 ServiceStart

ServiceStart			*+Structure*	**Structure with services that are available at one device**
	ServiceIdentification	**1:1**	*+ServiceIdentification*	Structure with all available services (cf. 2.38)
	Autostart	**1:1**	*+IBIS-IP.boolean*	Autostart flag (true or false)

Table 46 Description of ServiceStart

2.47 ServiceStartList

ServiceStartList			*+Structure*	**Structure with services that are available at one device**
	ServiceIdentification	**1:***	*+ServiceIdentification*	Structure with all available services (cf. 2.38)

Table 47 Description of ServiceStartList

2.48 ShortTripStop

ShortTripStop			*+Structure*	**Structure with a list of all possible short trips**
	JourneyStopInformation	**1:1**	*+JourneyStopInformation*	Structure which describes a journey stop (cf. 2.30)
	FareZoneInformation	**1:1**	*+FareZoneInformation*	Structure which describes a fare zone (cf. 2.53)

Table 48 Description of ShortTripStop

2.49 ShortTripStopList

ShortTripStopList			*+Structure*	**Structure with a list of all possible short trips**
	ShortTripStopList	**1:***	*+ShortTripStop*	Structure which describes one short trip (cf. 2.48)

Table 49 Description of ShortTripStopList

2.50 SpecificPoint

SpecificPoint			*+Structure*	**Structure with a specific point**
	PointRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at a point
	DistanceToPreviousPoint	**1:1**	*IBIS-IP.double*	Distance to the previous point in [m]

Table 50 Description of SpecificPoint

2.51 StopInformation

StopInformation			*+Structure*	**Structure for description of a stop point**
	StopIndex	**1:1**	*IBIS-IP.int*	Index of this stop point in a list of stop point
	StopRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at a stop point
	StopName	**1:***	*+InternationalTextType*	name of stop point
	StopAlternativeName	0:*	*+InternationalTextType*	alternative name of stop point
	Platform	0:1	*IBIS-IP.string*	Name of the platform
	DisplayContent	**1:***	*+DisplayContent*	Information about the display content (cf. chapter 2.19)
	StopAnnouncement	0:*	*+Announcement*	Information about the announcement (cf. chapter 2.2)
	ArrivalScheduled	0:1	*IBIS-IP.dateTime*	Scheduled arrival
	DepartureScheduled	0:1	*IBIS-IP.dateTime*	Scheduled departure
	RecordedArrivalTime	0:1	*IBIS-IP.dateTime*	Recorded arrival time
	DistanceToNextStop	0:1	*IBIS-IP.int*	Distance to the next stop point
	Connection	0:*	*+Connection*	Information about the connections (cf. chapter 2.8)
	FareZone	0:*	*IBIS-IP.NMTOKEN*	Valid fare zone at this stop point

Table 51 Description of StopInformation

2.52 StopInformationRequest

StopInformationRequest			*+Structure*	**Structure for description of a stop point**
	StopIndex	0:1	*IBIS-IP.int*	Index of this stop point in a list of stop point
	StopRef	0:1	*IBIS-IP.NMTOKEN*	Reference at a stop point
	StopName	0:1	*+International TextType*	name of stop point
	DisplayContent	**1:***	*+DisplayContent*	Information about the display content (cf. chapter 2.19)
	StopAnnouncement	0:*	*+Announcement*	Information about the announcement (cf. chapter 2.2)
	ArrivalScheduled	0:1	*IBIS-IP.dateTime*	Scheduled arrival
	DepartureScheduled	0:1	*IBIS-IP.dateTime*	Scheduled departure
	RecordedArrivalTime	0:1	*IBIS-IP.dateTime*	Recorded arrival time
	DistanceToNextStop	0:1	*IBIS-IP.int*	Distance to the next stop point
	Connection	0:*	*+Connection*	Information about the connections (cf. chapter 2.8)
	FareZone	0:*	*IBIS-IP.NMTOKEN*	Valid fare zone at this stop point

Table 52 Description of StopInformationRequest

2.53 StopPointTariffInformation

StopPointTariffInformationStructure			*+Structure*	**Structure with tariff information for a stop point**
Stop-Point-Tariff-Information	***JourneyStopInformation***	**1:1**	*+Journey-StopInformationStructure*	Information about the requested stop point (cf. 2.30)
	FareZoneInformation	**1:1**	*+FareZone-Information-Structure*	Information about the fare zone for this stop point (cf. 2.26)

Table 53 Description of StopInformation

2.54 StopSequence

StopSequence			*+Structure*	**Structure for describing a sequence of stop points**
	StopPoint	**2:***	*+StopInformation*	Stop point information (cf. 2.51)

Table 54 Description of StopSequence

2.55 SubscribeRequest

SubscribeRequest			*+Structure*	**Structure with a subscription request**
	Client-IP-Address	**1:1**	*IBIS-IP.string*	IP address of the client for which subscription
	ReplyPort	0:1	*IBIS-IP.int*	Reply port for the subscription
	Reply-Path	0:1	*IBIS-IP.string*	Reply path for the subscriptions

Table 55 Description of SubscribeRequest

2.56 SubscribeResponse

SubscribeResponse			*+Structure*	**Structure for the subscription response**
	Active	0:1	*IBIS-IP.boolean*	Information about the subscription acknowledgement
	Heartbeat	0:1	IBIS-IP.duration	Info about service heartbeat - description see 301-2
	OperationErrorMessage	0:1	*IBIS-IP.string*	Error message – if error message is not set at least Active should be set

Table 56 Description of SubscribeResponse

2.57 TimingPoint

TimingPoint			*+Structure*	**Structure for describing a point, where a schedule comparison should take place**
	TimingPointRef	0:1	*IBIS-IP.NMTOKEN*	Reference at a point
	ScheduleTime	**1:1**	*IBIS-IP.dateTime*	Scheduled departure time
	GNSSPoint	**1:1**	*+GNSSPoint*	GNSS information (cf. 2.28)

Table 57 Description of TimingPoint

2.58 TripInformation

TripInformation			*+Structure*	**Structure with trip information**
	TripRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at the trip ID
	StopSequence	**1:1**	*+StopSequence*	Description of a stop sequence (cf. 2.54)
	LocationState	0:1	*LocationStateEnumeration*	Rough information for the current position between two stop point (cf. 3.17)
	TimetableDelay	0:1	*IBIS-IP.int*	Timetable delay in seconds. Early times are shown as negative values.
	AdditionalTextMessage	0:*	*+InternationalTextType*	Additional text information (possibly multilingual)
	AdditionalAnnouncement	0:*	*+AdditionalAnnouncement*	Additional announcement (cf. 2.1)
	RouteDirection	0:1	*+RouteDirectionEnumeration*	Information on the directiona a route is served (cf. 3.20)

Table 58 Description of TripInformation

2.59 TripSequence

TripSequence			*+Structure*	**Structure with a trip sequence**
	TripRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at the trip ID
	TripIndex	0:1	*IBIS-IP.int*	Index at the current trip
	TripStart	0:1	*IBIS-IP.time*	Scheduled trip start
	CurrentStopIndex	0:1	*IBIS-IP.int*	Information about the index of the current stop point
	JourneyMode	0:1	*JourneyModeEnumeration*	Information about the mode of the journey (cf. chapter 3.16)
	PointSequence	**1:1**	*+PointSequence*	Description of a sequence of points (cf. chapter 2.36)

Table 59 Description of TripSequence

2.60 TSPPoint

TSPPoint			*+Structure*	**Structure with description of a point for traffic light priorisation**
	TSPPointRef	0:1	*IBIS-IP.NMTOKEN*	Reference at a TSP point
	TSPCode	**1:1**	*IBIS-IP.NMTOKEN*	TSP content
	ShortName	0:*	*+InternationalTextType*	TSP short name
	Description	0:*	*+InternationalTextType*	TSP description

Table 60 Description of TSPPoint

2.61 UnsubscribeRequest

UnsubscribeRequest			*+Structure*	**Structure for the request of termination of a subscription**
	Client-IP-Address	**1:1**	*IBIS-IP.string*	Information about the IP address where the subscription has to be terminated
	ReplyPort	0:1	*IBIS-IP.int*	Information about the reply port where the subscription has to be terminated
	Reply-Path	0:1	*IBIS-IP.string*	Information about the reply path where the subscription has to be terminated

Table 61 Description of UnsubscribeRequest

2.62 UnsubscribeResponse

UnsubscribeResponse			*+Structure*	**Structure for the response to a request of termination of a subscription**
	Active	0:1	*IBIS-IP.boolean*	Information about the termination
	OperationErrorMessage	0:1	*IBIS-IP.string*	Error message

Table 62 Description of UnsubscribeResponse

2.63 Vehicle

Vehicle			*+Structure*	**Structure with information about the vehicle**
	VehicleTypeRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at a vehicle type
	Name	0:*	*+International TextType*	Vehicle name

Table 63 Description of Vehicle

2.64 ViaPoint

ViaPoint			*+Structure*	**Structure which describes a via point**
	ViaPointRef	**1:1**	*IBIS-IP.NMTOKEN*	Reference at a via stop point
	PlaceRef	0:1	*IBIS-IP.NMTOKEN*	Reference at the associated stop place
	PlaceName	0:*	*+International TextType*	name of the via point
	PlaceShortName	0:*	*+International TextType*	short name of the via point
	ViaPointDisplayPriority	0:1	*IBIS-IP.int*	Information about the display priority of the via point

Table 64 Description of ViaPoint

2.65 ZoneType

ZoneType			*+Structure*	**Structure for description of a zone type**
	FarezoneTypeID	**1:1**	*IBIS-IP.NMTOKEN*	Index at the fare zone type
	FarezoneTypeName	0:*	*+International TextType*	Fare zone type name

Table 65 Description of ZoneType

3 Common enumerations

The following chapter describes the enumerations used in IBIS-IP, which must be applied depending on the context in data exchange.

3.1 ConnectionStateEnumeration

Enumeration Name	Possible Values	Description
ConnectionStateEnumeration	ConnectionBroken ConnectionOK NoInformationAvailable	Information about the status of the connection

Table 66 Description of ConnectionStateEnumeration

3.2 ConnectionTypeEnumeration

Enumeration Name	Possible Values	Description
ConnectionTypeEnumeration	Interchange ProtectedConnection	Information about the type of the connection

Table 67 Description of ConnectionTypeEnumeration

3.3 DataIntervalEnumeration

Enumeration Name	Possible Values	Description
DataIntervalEnumeration	DistanceData GNSSData Heartbeat NetworkLocationData	Information about the type of cyclic data

Table 68 Description of DataIntervalEnumeration

3.4 DeviceClassEnumeration

Enumeration Name	Possible Values	Description
DeviceClassEnumeration	OnBoardUnit SideDisplay FrontDisplay InteriorDisplay Validator TicketVendingMachine AnnouncementSystem MMI VideoSystem APC MobileInterface Other TestDevice MultiFunctionalDisplay CombiDevice	Information about the device class according to VDV 301-2

Table 69 Description of DeviceClassEnumeration

3.5 DeviceStateEnumeration

Enumeration Name	Possible Values	Description
DeviceStateEnumeration	defective notavailable running readyForShutdown	Information about the device state

Table 70 Description of DeviceStateEnumeration

3.6 DeviceTaskEnumeration

Enumeration Name	Possible Values	Description
DeviceTaskEnumeration	restart start_standby stop_standby	Information about the device tasks according to VDV 301-2

Table 71 Description of DeviceTaskEnumeration

3.7 DoorCountingObjectClassEnumeration

Enumeration Name	Possible Values	Description
DoorCountingObjectClassEnumeration	Adult Bike Child Pram Wheelchair Unidentified Others	Information about the counted objects at the counting of passengers

Table 72 Description of DoorCountingObjectClassEnumeration

3.8 DoorCountingQualityEnumeration

Enumeration Name	Possible Values	Description
DoorCountingQualityEnumeration	Defect Other Regular Sabotage	Information about the counting quality

Table 73 Description of DoorCountingQualityEnumeration

3.9 DoorOpenStateEnumeration

Enumeration Name	Possible Values	Description
DoorOpenStateEnumeration	DoorsOpen AllDoorsClosed SingleDoorOpen SingleDoorClosed	Information about the opening state of a door

Table 74 Description of DoorOpenStateEnumeration

3.10 DoorOperationStateEnumeration

Enumeration Name	Possible Values	Description
DoorOperationStateEnumeration	Locked Normal EmergencyRelease	Information about the dorr operation state of a door

Table 75 Description of DoorOperationStateEnumeration

3.11 ErrorCodeEnumeration

Enumeration Name	Possible Values	Description
ErrorCodeEnumeration	DataEstimated FaultData NoScheduleDataAvailable DeviceMissing NoServiceResponse ImportantDataNotAvailable DataNotValid OperationNotSupported	Descriptive Information about the error reason

Table 76 Description of ErrorCodeEnumeration

3.12 ExitSideEnumeration

Enumeration Name	Possible Values	Description
ExitSideEnumeration	both left right unknown	Information about the exit side

Table 77 Description of ExitSideEnumeration

3.13 GNSSCoordinateSystemEnumeration

Enumeration Name	Possible Values	Description
GNSSCoordinateSystemsEnumeration	CH1903 ETSR89 IERS NAD27 NAD83 WGS84 WGS72 SGS85 P90	Information about the coordinate system used by the GNSS system

Table 78 Description of GNSSCoordinateSystemsEnumeration

3.14 GNSSQualityEnumeration

Enumeration Name	Possible Values	Description
GNSSQualityEnumeration	dGPS Estimated GPS NotValid Unknown	Infromation about the GNSS quality

Table 79 Description of GNSSQualityEnumeration

3.15 GNSSTypeEnumeration

Enumeration Name	Possible Values	Description
GNSSTypeEnumeration	GPS Glonass Galileo Beidou IRNSS Other DeadReckoning MixedGNSSTypes	Information about the GNSS type

Table 80 Description of GNSSTypeEnumeration

3.16 JourneyModeEnumeration

Enumeration Name	Possible Values	Description of
JourneyModeEnumeration	NoTrip AdditionalTrip ServiceTrip	Information about the journey mode

Table 81 Description of JourneyModeEnumeration

3.17 LocationStateEnumeration

Enumeration Name	Possible Values	Description
LocationStateEnumeration	AfterStop AtStop BetweenStop BeforeStop	Information about the location state relative to the subsequent stop point

Table 82 Description of LocationStateEnumeration

3.18 MessageTypeEnumeration

Enumeration Name	Possible Values	Description
MessageTypeEnumeration	Status Warning Error	Information about a message type

Table 83 Description of MessageTypeEnumeration

3.19 RouteDeviationEnumeration

Enumeration Name	Possible Values	Description
RouteDeviationEnumeration	onroute offroute unknown	Information about the route deviation

Table 84 Description of RouteDeviationEnumeration

3.20 RouteDirectionEnumeration

Enumeration Name	Possible Values	Description
RouteDirectionEnumeration	Forward Backward Clockwise Counterclockwise Other	Information on the general direction of a route

Table 85 Description of RouteDirectionEnumeration

3.21 ServiceNameEnumeration

Enumeration Name	Possible Values	Description
ServiceNameEnumeration	BeaconLocationService CustomerInformationService DeviceManagementService DistanceLocationService GNSSLocationService JourneyInformationService NetworkLocationService PassengerCountingService ~~SystemDocumentationService~~ ~~SystemManagementService~~ TicketingService TimeService TestService VideoLiveService VideoRecordingService VideoDisplayService DoorStateService TrainSetDataService TrainSetInformationService TrainSetManagementService TicketValidationService HTMLDisplayService SystemMonitoringService	Information about the service names in VDV 301-2

Table 86 Description of ServiceNameEnumeration

Remark: In Version 1.0 of the ServiceNameEnumeration the PassengerCountingService is missing. If needed add this entry by youself.

3.22 ServiceStateEnumeration

Enumeration Name	Possible Values	Description
ServiceStateEnumeration	defective notrunning running starting standby	Information about the service status

Table 87 Description of ServiceStateEnumeration

3.23 SystemDocumentationInformationEnumeration

Enumeration Name	Possible Values	Description
SystemDocumentationInformationEnumeration	ErrorMessage StatusMessage WarningMessage All	Information about the message type

Table 88 Description of SystemDocumentationInformationEnumeration

3.24 TicketRazziaInformationEnumeration

Enumeration Name	Possible Values	Description
TicketRazziaInformationEnumeration	razzia norazzia	Information whether a razzia takes place

Table 89 Description of TicketRazziaInformationEnumeration

3.25 TicketValidationEnumeration

Enumeration Name	Possible Values	Description
TicketValidationEnumeration	Valid notvalid NoCard	Validation result

Table 90 Description of TicketValidationEnumeration

3.26 VehicleModeEnumeration

Enumeration Name	Possible Values	Description
VehicleModeEnumeration	Air bus coach ferry metro rail tram underground	Vehicle mode information

Table 91 Description of VehicleModeEnumeration

3.27 TripStateEnumeration

Enumeration Name	Possible Values	Description
TripStateEnumeration	EmptyRun OnTrip OffTrip TripBreak OffDuty unknown	trip state information to choose which display content is active to use, GlobalDisplayContent or TripInformation

Table 92 Description of TripStateEnumeration

3.28 PtSubModesEnumeration

On passenger information devices inside a vehicle information concerning a connection to other vehicles at subsequent stops can be shown. If the type of vehicle shall be shown there as well, the information has two levels of accuracy.

1st: just the mode of the connected vehicle, i.e . whether it is a bus, a tram, a metro, a taxi etc. For that purpose PtSubModesEnumeration (3.28) and PrivateSubModesEnumeration (3.29) are used.

2nd: a more accurate description of the vehicle type. I.e. while the mode is just “RailSubmode”, here the rail sub mode is described in more detail, as a “highSpeedRail”, “suburbanRailway”, “regionalRail”, “interregionalRail” etc. For this more detailed purpose the various SubmodeEnumerations (3.30 to 3.40) are used.

In the same manner this information can be used to indicate the status of MyOwnVehicle, e.g. to show a “localBus” or “regional Bus” icon on a passenger information screen inside a bus.

Enumeration Name	Possible Values	Description
PtSubModesEnumeration	unknown undefined AirSubmode BusSubmode CoachSubmode FunicularSubmode MetroSubmode TramSubmode TelecabinSubmode RailSubmode WaterSubmode	To choose the submode to define the vehicle type in public transport (PT). It shall give information on the type of transport mode of a connected vehicle or my own vehicle.

Table 93 Description of PtSubModesEnumeration

3.29 PrivateSubModesEnumeration

Enumeration Name	Possible Values	Description
PrivateSubModesEnumeration	unknown undefined SelfDriveSubmode TaxiSubmode	To choose the submode to define the vehicle type in private transport

Table 94 Description of PrivateSubModesEnumeration

3.30 RailSubmodeEnumeration

Enumeration Name	Possible Values	Description
RailSubmodeEnumeration	unknown local highSpeedRail suburbanRailway regionalRail interregionalRail longDistance international sleeperRailService nightRail carTransportRailService touristRailway airportLinkRail railShuttle replacementRailService specialRail crossCountryRail rackAndPinionRailway	To choose the vehicle type if PtSubModes = RailSubmode

Table 95 Description of RailSubmodeEnumeration

3.31 CoachSubmodeEnumeration

Enumeration Name	Possible Values	Description
CoachSubmodeEnumeration	unknown undefined internationalCoach nationalCoach shuttleCoach regionalCoach specialCoach schoolCoach sightseeingCoach touristCoach commuterCoach	To choose the vehicle type if PtSubModes = CoachSubmode

Table 96 Description of CoachSubmodeEnumeration

3.32 MetroSubmodeEnumeration

Enumeration Name	Possible Values	Description
MetroSubmodeEnumeration	unknown undefined metro tube urbanRailway	To choose the vehicle type if PtSubModes = MetroSubmode

Table 97 Description of MetroSubmodeEnumeration

3.33 BusSubmodeEnumeration

Enumeration Name	Possible Values	Description
BusSubmodeEnumeration	unknown undefined localBus regionalBus expressBus nightBus postBus specialNeedsBus mobilityBus mobilityBusForRegisteredDisabled sightseeingBus shuttleBus highFrequencyBus dedicatedLaneBus schoolBus schoolAndPublicServiceBus railReplacementBus demandAndResponseBus airportLinkBus	To choose the vehicle type if PtSubModes = BusSubmode

Table 98 Description of BusSubmodeEnumeration

3.34 TramSubmodeEnumeration

Enumeration Name	Possible Values	Description
TramSubmodeEnumeration	unknown undefined cityTram localTram regionalTram sightseeingTram shuttleTram trainTram	To choose the vehicle type if PtSubModes = TramSubmode

Table 99 Description of TramSubmodeEnumeration

3.35 WaterSubmodeEnumeration

Enumeration Name	Possible Values	Description
WaterSubmodeEnumeration	unknown undefined internationalCarFerry nationalCarFerry regionalCarFerry localCarFerry internationalPassengerFerry nationalPassengerFerry regionalPassengerFerry localPassengerFerry postBoat trainFerry roadFerryLink airportBoatLink highSpeedVehicleService highSpeedPassengerService sightseeingService schoolBoat cableFerry riverBus scheduledFerry shuttleFerryService	To choose the vehicle type if PtSubModes = WateSubmode

Table 100 Description of WaterSubmodeEnumeration

3.36 AirSubmodeEnumeration

Enumeration Name	Possible Values	Description
AirSubmodeEnumeration	unknown undefined internationalFlight domesticFlight intercontinentalFlight domesticScheduledFlight shuttleFlight intercontinentalCharterFlight internationalCharterFlight roundTripCharterFlight sightseeingFlight helicopterService domesticCharterFlight SchengenAreaFlight airshipService shortHaulInternationalFlight	To choose the vehicle type if PtSubModes = AirSubmode

Table 101 Description of AirSubmodeEnumeration

3.37 TelecabinSubmodeEnumeration

Enumeration Name	Possible Values	Description
TelecabinSubmodeEnumeration	unknown undefined telecabin cableCar lift chairLift dragLift telecabinLink	To choose the vehicle type if PtSubModes = TelecabinSubmode

Table 102 Description of TelecabinSubmodeEnumeration

3.38 FunicularSubmodeEnumeration

Enumeration Name	Possible Values	Description
FunicularSubmodeEnumeration	Unknown funicular streetCableCar allFunicularServices undefinedFunicular	To choose the vehicle type if PtSubModes = FunicularSubmode

Table 103 Description of FunicularSubmodeEnumeration

3.39 TaxiSubmodeEnumeration

Enumeration Name	Possible Values	Description
TaxiSubmodeEnumeration	Unknown Undefined communalTaxi charterTaxi waterTaxi railTaxi bikeTaxi blackCab minicab allTaxiServices	To choose the vehicle type if PrivateSubModes = TaxiSubmode

Table 104 Description of TaxiSubmodeEnumeration

3.40 SelfDriveSubmodeEnumeration

Enumeration Name	Possible Values	Description
SelfDriveSubmodeEnumeration	unknown undefined hireCar hireVan hireMotorbike hireCycle allHireVehicles	To choose the vehicle type if PrivateSubModes=SelfDriveSubmode

Table 105 Description of SelfdriveSubmodeEnumeration

4 Versionshistorie / Version History

4.1 Version 1.1

4.1.1 Funktionale Erweiterungen
Functional Upgrade

- Neue Enumeration *RouteDirectionEnumeration* ergänzt
  New enumeration *RouteDirectionEnumeration* added

4.1.2 Technische Ergänzungen/Korrekturen
Technical Upgrade/Corrections

- *Connection*-Struktur, neues Element *ScheduledDepartureTime* ergänzt, Min:Max-Angaben korrigiert
  *Connection s*tructure, new element *ScheduledDepartureTime* added, Min:Max information corrected

- *TripInformation*: Typ der *AdditionalTextMessage* von IBIS-IP.string auf +InternationalTextType geändert, neues Element *RouteDirection* ergänzt
  TripInformation: Type of *AdditionalTextMessage* of IBIS-IP.string changed to +InternationalTextType, new element *RouteDirection* added

4.1.3 Textliche Korrekturen
Textual Corrections

- *DeviceSpecification*: typo korrigiert
  DeviceSpecification: typo corrected

4.2 Version 2.0

4.2.1 Funktionale Erweiterungen
Functional Upgrade

- *ServiceNameEnumeration* aktualisiert*, PassengerCountingService*, *VideoLiveService*, *VideoRecordingService* and *VideoDisplayService* ergänzt (vgl. 3.21)
  ServiceNameEnumeration updated*, PassengerCountingService*, *VideoLiveService*, *VideoRecordingService* and *VideoDisplayService* added (cf. 3.21)

4.2.2 Technische Ergänzungen/Korrekturen
Technical Upgrade/Corrections

- Struktur *IBIS-IP-VersionEnumeration* wegen fehlenden Bedarfs entfernt
  Structure *IBIS-IP-VersionEnumeration* removed because there is no need for it

- *DeviceStateEnumeration*: Wert *readyForShutdown* hinzugefügt
  DeviceStateEnumeration: value *readyForShutdown* added

- In *ConnectionStructure*: *DisplayContentStructure*: minOccurs = “0” aktualisiert (vgl. 2.8)
  In *ConnectionStructure*: *DisplayContentStructure*: minOccurs = “0” updated (cf. 2.8)

- *TripInformation* structure: *AdditionalTextMessage*: maxOccurs=”unbounded” aktualisiert (vgl. 2.58)
  TripInformation structure: *AdditionalTextMessage*: maxOccurs=”unbounded” updated (cf. 2.58)

4.2.3 Textliche Korrekturen
Textual Corrections

- Beachte: Ein Schreibfehler in den XSD-Versionen 1.0 and 1.1 (*ExpectedDepatureTime* anstatt *ExpectedDepartureTime*) in der *Connection*-Struktur ist nun in “IBIS-IP_common_2.0.xsd” entfernt worden.
  Please note that a typo in the XSDs of version 1.0 and 1.1 (*ExpectedDepatureTime* instead of *ExpectedDepartureTime*) in the *Connection* structure is now removed in “IBIS-IP_common_2.0.xsd”

- Titel der Kapitel in Englisch
  Title of chapters in English

4.3 Version 2.1

4.3.1 Funktionale Erweiterungen
Functional Upgrade

- DeviceClassEnumeration aktualisiert*, MultiFunctionalDisplay* ergänzt (vgl. 3.4)
  DeviceClassEnumeration updated*, MultiFunctionalDisplay* added (cf. 3.4)

- ErrorCodeEnumeration aktualisiert*, OperationNotSupported* ergänzt (vgl. 3.11)
  ErrorCodeEnumeration updated*, OperationNotSupported* added (cf. 3.11)

- *ServiceNameEnumeration* aktualisiert*, DoorStateService, TrainSetDataService, TrainSetInformationService, TrainSetManagementService, TicketValidationService, HTMLDisplayService* ergänzt (vgl. 3.21)
  ServiceNameEnumeration updated*, DoorStateService, TrainSetDataService, TrainSetInformationService, TrainSetManagementService, TicketValidationService, HTMLDisplayService* added (cf. 3.21)

4.3.2 Technische Ergänzungen/Korrekturen
Technical Upgrade/Corrections

- InternationalTextType um die Definition von Inline-Formatierungen erweitert (vgl. 1.17)
  InternationalTextType with definitions for inline formatting elements extended (cf. 1.17)

- DestinationStructure: Mehrzeilige Texte definiert (vgl. 2.13)
  DestinationStructure: Multiline texts defined (cf. 2.13)

- DisplayContent: Versorgung unterschiedlicher Anzeiger mit verschiedenen Inhalten definiert (vgl. 2.19)
  DisplayContent: Supply of separate contents to different displays defined (cf. 2.19)

4.3.3 Textliche Korrekturen
Textual Corrections

4.4 Version 2.2

4.4.1 Funktionale Erweiterungen
Functional Upgrade

- LineCode neu im DisplayContent eingefügt (2.31)
  LineCode new integrated into DisplayContent (2.31)

- TripStateEnumeration neu (3.27)
  TripStateEnumeration new (3.27)

- ConnectionMode neu integriert (2.8) inklusive NetexMode (1.18) und den ensprechenden Enumerations (3.28bis 3.40)
  ConnectionMode new integrated (2.8) inclusive NetexMode (1.18) and the corresponding Enumerations ((3.28 up to 3.40)

- NetexMode als neuen Datentyp eingefügt (1.18)
  NetexMode added as new data type (1.18)

- NetexMode als neues Element in der Connection-Struktur eingefügt. TransportMode ist künftig nicht mehr zur Verwendung der Modal-Auskunft empfohlen (2.8)
  NetexMode added as a new element in the Connection structure. TransportMode is considered as deprecated from now on. It is no longer recommended to be used for a modal information (2.8).

- Abschnitte 3.28 bis 3.40 eingefügt. Darin sind sämtliche Enumerations für Modes und Sub-Modes definiert. Sie werden für den Datentyp NetexMode (1.18) benötigt.
  Sections 3.28 to 3.40 added. All Enumerations for the Modes and SubModes are defined there. They are used by the data type NetexMode (1.18).

- CombiDevice als neue DeviceClass eingefügt (3.4)
  CombiDevice added as a new DeviceClass (3.4)

- SystemDocumentationService, SystemManagementService gelöscht
  SystemMonitoringService eingefügt in ServiceNameEnumeration (3.21)
  SystemDocumentationService, SystemManagementService deleted
  SystemMonitoringService added in ServiceNameEnumeration (3.21)

4.4.2 Technische Ergänzungen/Korrekturen
Technical Upgrade/Corrections

- Info bei TransportMode um stattdessen ConnectionMode zu verwenden. (2.8)
  Info at TransportMode to use ConnectionMode instead. (2.8)

- Heartbeat (2.55; 2.61)

Regelwerke – Normen und Empfehlungen / References

(1) CEN/TS 13149-7 Öffentlicher Verkehr - Planungs- und Steuerungssysteme für Straßenfahrzeuge - Teil 7: System- und Netzwerkarchitektur; Englische Fassung CEN/TS 13149-7:2015 /

Public transport - Road vehicle scheduling and control systems - Part 7: System and Network Architecture

(2) CEN/TS 13149-8 Öffentlicher Verkehr - Planungs- und Steuerungssysteme für Straßenfahrzeuge - Teil 8: Physikalische Schicht für IP-Kommunikation; Englische Fassung CEN/TS 13149-8:2013 /

Public transport - Road vehicle scheduling and control systems - Part 8: Physical layer for IP communication

(3) VDV 301-1 Internetprotokoll basiertes integriertes Bordinformationssystem IBIS-IP - Teil 1: Systemarchitektur

VDV 301-1: IBIS-IP, Part 1: System architecture

(4) VDV 301-2 Internetprotokoll basiertes integriertes Bordinformationssystem IBIS-IP - Teil 2: Schnitstellenspezifikation V1.0

VDV 301-2: IBIS-IP, Part 2: Interface Specification V1.0

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