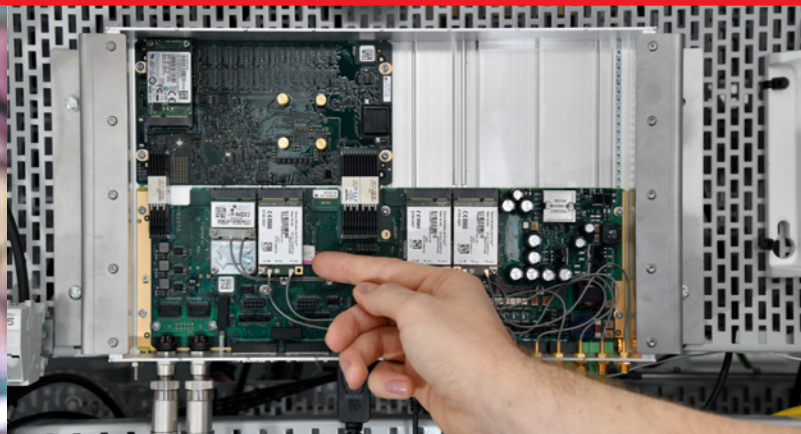


# **Colibri – innovative IT solution for the entire **travel chain****

With Colibri (Coach Link for Broadband Information exchange) DB Fahrzeuginstandhaltung offers IT products and services along the entire travel chain – for all rail and road vehicles and all stations. The modular structure of the Colibri products means they can be configured exactly to customer needs.



Diagnosis



Host computer

## The Colibri product diversity

### Colibri-N – the foundation of the Colibri IT solutions

Colibri-N is the cross-coach basic network. It consists of switches that act as coupling elements between the various Colibri applications. These are executed by a host computer which forms the heart of the platform. The size of the network scales with the number of applications. It is configured on a project-specific basis and adapted to the current state of the art with regard to IT security and IT safety.

### Colibri-M – for constant communication

Colibri-M provides the vehicle-land connection and has channels in the network, which can be used by other Colibri applications, such as vehicle location and diagnosis. The Colibri applications interact via the Colibri-N network. A broadband mobile connection between vehicle and land supports optimum send and receive characteristics, guaranteed by external antennas on the rail vehicles. The number of modems and the antenna set-up are geared to the customer requirements.

### Colibri-W – reliable connection with the Colibri customer Wi-Fi

Colibri-W is integrated into the vehicle in conjunction with Colibri-M and connected to the internet via the internal antenna. This is controlled from the access point, which provides the interface between the Wi-Fi and host computer. Passengers can set up access via the Wi-Fi modem in their device. A Colibri app provides additional access options. A landing page, which features the operator's look & feel is used as the customer front-end. It features a range of content, such as films, music, digital newspapers and audio books. The media data is cached locally on the host computers so that the data transfer via the train/land connection is reduced.

### Colibri-D – diagnosis data that is quick to access

Colibri-D enables process values and fault messages to be read out and displayed, for instance

- Room air temperature and outside temperature
- Final temperature of the air conditioning system
- Temperature of the three phase inverter
- Oil pressure of the air conditioning systems
- Level of fresh and wastewater tanks

- Error message with disrupted power supply, with defective door or faults in the WCs
- Diagnosis of digital input signals to monitor the battery charge status

Colibri-D can be integrated via any analogue or digital sensors – through new installation, but also by using existing sensors or diagnosis interfaces. The final diagnosis data can be read out on on-board monitors with touch display or via the service laptop. To do so there is a uniform front-end - Colibri Connect. The collected data is provided to the host computer and transferred to the land-side Colibri back end. From here the data can be used for maintenance planning or provided to the client.

### Colibri-RIS – passenger information for status updates in real time

Colibri-RIS provides up-to-date passenger information on the external displays and within the vehicles. They inform travellers in real time about the progress of the journey and possible connections. Furthermore, there is the option of offering specific content for passengers or displaying the vehicle utilisation in conjunction with the automatic passenger counting system Colibri-AFZ. The layout of the displays can be tailored to customer requirements and also used as a digital advertising space. The operator's information back end provides the required data on the progress of the journey. Subsequently the host computer processes the data which is provided straight to the Colibri applications RIS, AFZ and Video.



by DB Fahrzeuginstandhaltung



Detail switch



Service laptop with Colibri Connect

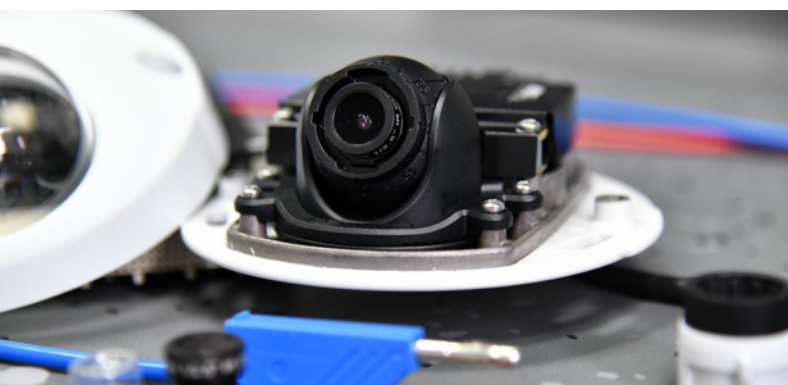
### **Colibri-AFZ – useful passenger guidance thanks to automatic passenger counting**

Colibri-AFZ supports automatic passenger counting. Boarding and alighting passengers as well as bicycles are counted by sensors on the doors. Using automatic passenger counting the respective boarding and alighting times for each stop can be measured and useful passenger guidance provided. In real time the determined information is transferred to the Colibri back end and from here to the client's back end. Via monitors in the external and internal door area of the vehicle, passengers can clearly see how full the train is. The collected empirical data also allows forecast data on special events, such as football matches to be recorded and provided to passengers beforehand to plan their journeys. In this way the usage capacity of the vehicles can be increased.

### **Colibri-V – for enhanced safety on the train**

Colibri-V records streams from the on-board cameras and backs them up to network storage (NAS). The stream includes the vehicle number, camera number as well as time and date. Storage and retrieval of data via LTE or Wi-Fi can be performed by an authorised body only.

The video surveillance system is used to record investigation-relevant events as well as to provide documentary evidence for insurers. The video data is stored in encrypted format in the NAS, making it much more difficult to misuse this data. In accordance with the German Data Protection Act (BDSG), the video data is overwritten cyclically every 72 hours.



Camera

### **Colibri-RCS – the right tool for important events**

Colibri-RCS is a user interface for the vehicle owner. It features a ticketing system and an error detector function, i.e. reports errors in vehicle systems and helps report and analyse faults as well as manage master data (user, provider, type information). This maps the operational management. Colibri-RCS supports the following functions:

- Monitoring of system information and reporting
- Ticketing system for error tracking and processing
- Remote access to the vehicles for parametrisation and updating of systems
- System information in real time
- Bandwidth restriction
- SIM management
- Signal tracking/vehicle location
- Display of diagnosis data
- Display of software and hardware lists
- Technical documentation and access to system description

### **The Colibri cloud back end**

The host computer provides channels in the network for other Colibri applications. These are separated from each other via VPN tunnels. It also provides the connection to the Cassandra database, which is set up in the Colibri cloud back end. Via a configurable interface to the data lake, downstream functions are implemented and can be provided to the client:

- Provisioning of system and diagnosis data
- Management of software, storage of metadata from hardware and software components
- Creation and updating of Colibri applications
- Control of publications, updates and deletions
- Processing of location data
- Reading out of stored videos
- Receipt and processing of help calls
- Provisioning of maintenance back-end functions
- Transfer of data to business intelligence systems

## Other services

### Content management system

The landing page and its content, in other words text, image, video, etc., is structured according to customer requirements and can be changed via the content management system (CMS). It helps with the joint creation, processing and organisation of content. An author with access rights can use our system with minimal programming or HTML knowledge since it features a graphical user interface that is easy to use.

### Quality of Service (QoS)

When booking the Quality of Service, 24/5 repair and maintenance measures are processed on the customer's premises within 72 hours of the fault occurring. A mobile team from DB Fahrzeuginstandhaltung can rectify problems on-site.

### Warranty extension

The Colibri warranty extension ensures that the warranty period of the hardware components active at the time of the signature, such as access points and host computer, is extended from two years to a total of six years from commissioning. That provides you with peace of mind for your transportation contract.

### Reporting

The customer receives once a month reporting on the operated vehicles and systems. The use of the landing page and the used data volume are listed with the aid of hotspots and internet (broken down into providers) as well as occurred errors.

### Colibri API

Colibri API (application programming interface) calls data from the cloud back end, which was sent from the host computer, etc. It supports queries and data exports, such as:

- Hardware and software versions
- Location data
- Reports for errors and data consumption
- Usage behaviour of end users
- System information and statuses
- Parametrisations of components

Furthermore, a data import and connection of the client back-offices can be made via the API.



Operations management



Train lab in Wittenberge

### Contact

DB Fahrzeuginstandhaltung GmbH  
Weilburger Strasse 22  
60326 Frankfurt am Main  
GERMANY

[www.db-fzi.com](http://www.db-fzi.com)  
[www.db-fzi.com/colibri](http://www.db-fzi.com/colibri)  
[sales-fzi@deutschebahn.com](mailto:sales-fzi@deutschebahn.com)

Questions regarding Colibri  
[colibri@deutschebahn.com](mailto:colibri@deutschebahn.com)

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