



Foto: ÖBB/Börsen

## SUCCESS STORY

### ÖBB-INFRASTRUKTUR AG

#### AVS PROJECT

#### OVERVIEW OF THE ÖBB INFRA

**Route length  
(operating length):**  
4,846 km

**Turnouts:** 13,760  
(with 10,910 of these  
heated)

**Signals:** 25,361

**Operational manage-  
ment centres:** 5

**Railway stations:** 1,095

**Bridges:** 6,327

**Tunnels:** 246

**Railway crossings:** 3,398

**Hydropower stations:** 10

**Buildings:** 4,572

ÖBB-Infrastruktur AG is a wholly-owned subsidiary of ÖBB-Holding AG, which is itself wholly-owned by the Republic of Austria.

With around 18,000 employees the company plans, develops, maintains and operates the entire Austrian federal railway infrastructure, including: railway stations, routes, buildings, terminals, telecommunication systems, as well as the entire railway power supply, which includes hydropower stations for environmentally friendly power generation. It also manages the entire range of real estate assets, making it one of Austria's biggest property owners and real estate developers.

A large section of the ÖBB Group's apprenticeship system and railway-specific operational and technical training is also integrated within the company.

The company invests more than two billion euros in the Austrian rail network annually on behalf of the Austrian federal government and provides the latest in railway technology.

## CUSTOMER MOTIVATION

In order to meet the constant growth in the need for information and to make best use of the rapid growth in opportunities offered by modern information technology, ÖBB Infra has set itself an objective of harmonising its facility and asset master data which is located within the individual specialist departments.

The AVS project provides ÖBB Infra with an overview of homogeneous asset and facility information coordinated across all divisions. Asset Data Governance provides an ÖBB Infra wide mechanism for ongoing monitoring and provision of asset data via agreed data administration processes and data quality specifications. The project is subdivided into stages and is being completed in iterations. The railway infrastructure is being mapped as a uniform information structure in an intelligent route and track network including asset and facility components in the AVS. Information is presented in tabular and graphical format.

## CUSTOMER BENEFITS

Following implementation of the AVS project, ÖBB Infra will have an integrated information system which can be used operationally and strategically by all technical departments. Route and track network data can be provided across all divisions with ease, all network's components can be uniquely identified, and much more.

Overall AVS reduces the time and effort required for data entry and reporting and also results in a significant improvement in data quality. This in turn leads to an improvement in the ability to access information and to systematic mapping of technical railway knowledge and skills for ÖBB Infra within a forward-looking system.

## CORE FUNCTIONS

- Introduction of a net work model for all technical departments as a basis for mapping and locating the assets and facilities
- Asset register for railway infrastructure (LAM with dynamic segmentation)
- Display in maps and in "route map" (including options for editing the facility and asset data from these illustrations)
- Integration (GIS, DMS, SAP, Data Warehouse and reporting system)
- Data governance functions
- Introduction of continuous data history and status management

## OPERATION & TECHNOLOGY

- **Server:** MS SQL Server / Apache / Load-Balancer
- **Client:** Web-Application (HTML5 / RESTful / Single-Page Application)
- **Initial start-up:** 2016



3B infra offers consulting, planning, development and implementation of integrated information systems for infrastructure companies and transportation operation.

3B infra system solutions are based on the modular INFRALIFE-software-toolbox, which has been optimized in cooperation with leading railway experts.

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## SUCCESS STORY

### MAGYAR ÁLLAMVASUTAK ZRT

#### SYSTEM INFRA LIFE (INKA PROJECT)

OVERVIEW OF  
THE MAGYAR  
ÁLLAMVASUTAK  
ZRT (HUNGARIAN  
RAILWAYS PLC.)

**Route network  
(operating length):**  
7,275 km

**Turnouts:** 14,000  
(with 211 of these  
heated)

**Signals:** 12,661 (light),  
1,344 (mechanical)

**Operating and  
control centres:** 76

**Railway stations and  
stops:** 2,568

**Bridges:** 4,359

**Tunnels:** 18

**Level crossings:** 3,644

MÁV Magyar Államvasutak Zrt is a railway company owned by the Hungarian state. Looking back at more than 140 years of existence, the roughly 30 companies of the MÁV Group carry out diverse activities; standing out among them is our railway operation and passenger transportation provided under public service contracts signed with the Hungarian state. Additionally, the group of companies delivers various services to railway companies engaged in freight transport, as well as domestic and foreign business and railway companies.

#### INFRASTRUCTURE MANAGEMENT ACTIVITY

As the operator of the largest part of the Hungarian public railway network, MÁV Zrt supervises the operation of roughly 7,000 kilometres of railway and the related necessary infrastructure. The parent company's division dedicated to this activity, and with the greatest number of employees, carries out the complete scope of operation, traffic control and maintenance activities, as well as some of the renovation works. The special division performs a variety of activities using its own resources, while aiming to save on cost. MÁV's railway network is used by more than 30 railway companies, to whom the company provides its various services.



## MOTIVE

In order to meet the constant growth in the need for information MÁV Zrt has set itself an objective of harmonizing its facility and asset master data which is located within the individual specialist departments. Key aspects has been set up to achieve higher availability of the railway asset capacities, a more accurate maintenance planning process support, including the capability to forecast capacity limitations' schedule up to 3 years in advance. In addition to that, an optimized and more transparent process control has been targeted with an effective cost control in the areas of daily operations, regular maintenance, and new investments' implementation as well.

The INKA INFRALIFE system provides MÁV Zrt with an overview of homogeneous asset and facility information coordinated across all divisions. Asset Data Governance provides a MÁV ZRT - wide mechanism for ongoing monitoring and provision of asset data via agreed data administration processes and data quality specifications.

The project is part of the INKA Project and has been completed in iterations. The railway infrastructure is being mapped as a uniform information structure in an intelligent route and track network including asset and facility components in the INFRALIFE system. Information is presented in tabular and graphical format.

To efficiently support maintenance planning and daily operations, INFRALIFE has been implemented in close integration with MÁV's ERP system.

## BENEFITS

Following implementation of the INKA INFRALIFE system, MÁV Zrt established an integrated information system which can be used by all technical specialist departments. So e.g. route and track network data can be provided across all divisions and all network's components can be uniquely identified in different ways.

A wide range of pre-built railway assets categories in INFRALIFE are customized according to hierarchies defined by technical railway experts, and the registry is arranged along these hierarchies as well as organizational units throughout all regions.

INFRALIFE railway network and asset registry serves as the primary authentic master database for all railway infrastructure technical data, and provides accurate information for experts and engineers during their daily operational work as well as services for MÁV's ERP system to ensure integrity of maintenance process flow and control enabling a more accurate capacity planning.

Overall the INFRALIFE system reduces the time and effort required for data entry and reporting and also results in a clear improvement in data quality.

## CORE FUNCTIONS

- Introduction of a network model for all technical specialist departments as a joint basis for mapping and locating the assets and facilities
- Register of facilities for railway infrastructure (LAM with dynamic segmentation)
- Display on maps and in route bands (including options for editing the facility and asset data from these illustrations)
- Integration with enterprise ERP system to support maintenance activities, resource allocation, cost control processes
- Data governance functions to control asset data management functions in a primary master asset database
- Introduction of continuous data history and status management

## OPERATION & TECHNOLOGY

- **Server:** MS SQL Server / Apache / Load-Balancer
- **Client:** Web-Application (HTML5 / RESTful / Single-Page Application)
- Integration into a middle-ware based architecture through SOAP/XML protocol
- **Initial start-up:** January 2017



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## SUCCESS STORY

### GRAZ-KÖFLACHER-BAHN (GKB)

SYSTEM INFRALIFE@GKB

#### OVERVIEW OF GKB

**Route length:** 92 km  
**Track length:** 135 km  
**Stations:** 34  
**Turnouts and crossings:** 204  
**Level crossings:** 129  
**Interlockings:** 16  
**Bridges, tunnels:** 248  
**Passengers:** 11.5 mil.

GKB is a company owned by the Republic of Austria and is legally a private company. The company has national and international shares and subsidiaries (LTE, Adria Transport) and provides rail services in Europe.

GKB is the most important transport service company of Western Styria and is mainly used by commuters and students. The annual transport figures are approximately 5.5 million passengers in rail transport and at about 6 million passengers in bus transport.

Since December 2007, the routes of GKB are part of Styria's S-Bahn. Furthermore since 2010, the S6 line circulates between Graz and Wies-Eibiswald via the "Südbahn" and "Koralmbahn" lines.

Due to the process of liberalization of rail transport, GKB has obtained a European license and thus operates cargo business within Austria and beyond.



### CUSTOMER MOTIVATION

GKB has implemented a SAP based ERP system to track and support the important core processes in the company. However, this system does not cover the extensive and complex requirements from a technical perspective.

After an extensive phase of evaluation of technical IT systems on the market, GKB has decided in May 2013 to go for the system INFRALIFE of 3B infra. The contract included the management of all relevant master data (lines, stations and stops, tracks) as well as the entire track construction, the civil engineering structures, signal and electrical engineering and facility management for buildings.

Maintenance processes, such as defect and incident management and the monitoring of scheduled maintenance measures, were implemented according to all this asset data. All systems and functions can be accessed through conventional lists, in a twodimensional map and also along the track.

### CUSTOMER BENEFITS

GKB, with the system INFRALIFE, operates today an integrated information system that is used operationally and strategically in all technical fields. The intuitive and easy to use interface is a guarantee of high user acceptance and thus for the automatic updating of master but also condition data.

These data are closely integrated with the maintenance activities, thus all operational processes will be well controlled and monitored. Reports and evaluations to the highest quality and safety standards are available for the management at any time.

### CORE FUNCTIONS

- Asset register for railway infrastructure
- Dynamic segmentation for linear objects
- Geographic information (GIS)
- Track geometry
- Time based maintenance
- Condition based maintenance
- Replacement strategy and budget forecast
- Key performance indicators for management

### OPERATION & TECHNOLOGIE

- **Server:**  
MS SQL Server / Windows
- **Client:** Windows PC
- **Number of users:** 50
- **Start of operation:** 2014



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## SUCCESS STORY

### BASELLAND TRANSPORT AG (BLT)

#### SYSTEM INFRASYS

Baselland Transport AG (BLT) is a Swiss transport company which operates in the cantons of Baselland, Basel-Stadt, Solothurn and in France.

The corporation is legally a railway infrastructure enterprise on the lines Basel-Aesch, Basel-Dornach, Basel-Pratteln and Basel-Rodersdorf. With the exception of the line to Pratteln, which is operated by "Basler Verkehrs-Betriebe" on behalf of BLT, BLT is legally also a traffic operations company.

Conversely BLT lines operate within the city of Basel on the network of BVB Basel tram network. BLT operates a licensed narrow gauge railway (meter gauge) according to the Railway Act.

In 2013, 52 million passengers in the yellow and red trams and buses were conveyed. This is, compared to the previous year, an increase of about 1 million passengers or 1.9% respectively. Responsible for growth remains the tram division and mainly the line 10, which carried 700.000 or 4% more passengers.

#### OVERVIEW OF BLT

**Route length:** 35 km

**Track length:** 61 km

**Stations:** 52

**Turnouts and  
crossings:** 146

**Level crossings:** 136

**Interlockings:** 19

**Bridges:** 10

**Passengers:** 52 mil.



## CUSTOMER MOTIVATION

The increasing demand for transport services requires both renewal and development activities on various sections in BLT network. Project processing results in a large amount of plant and project documentation. Moreover, the entire railway infrastructure and operation must be maintained. Maintenance management needs and also produces a large amount of information as well as many documents as the basis for sustainable and optimal management of railway infrastructure. The processes of project management and maintenance management were up to now to a low extent supported by IT.

After an extensive phase of evaluation of IT systems on the market, BLT has decided in July 2013 to implement the system INFRALIFE of 3B infra for the Infrasyss project. The contract included the management of all relevant master data (lines, stations and stops, tracks) as well as the entire track construction, the civil engineering structures, signal and electrical engineering and facility management for buildings. All systems and functions can be accessed through conventional lists, in a two-dimensional map and also along the track.

## CUSTOMER BENEFITS

BLT, with the system Infrasyss, operates today an integrated information system that is used operationally and strategically in all technical fields. The intuitive and easy to use interface is a guarantee of high user acceptance and thus for the automatic updating of master but also condition data.

These data are closely integrated with the maintenance activities, thus all operational processes will be well controlled and monitored. Reports and evaluations to the highest quality and safety standards are available for the management at any time.

## CORE FUNCTIONS

- Asset register for railway and tram infrastructure
- Dynamic segmentation for linear objects
- Geographic information (GIS)
- Track geometry
- Time based maintenance
- Condition based maintenance
- Replacement strategy and budget forecast
- Key performance indicators for management

## OPERATION & TECHNOLOGIE

- **Server:**  
MS SQL Server / Windows
- **Client:** Windows PC
- **Number of users:** 50
- **Start of operation:** 2014



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## SUCCESS STORY

### NÖVOG

#### SYSTEM INFRA LIFE@NÖVOG

NÖVOG (Niederösterreichische Verkehrsorganisationsgesellschaft) was founded in 1993 as a legal entity of Lower Austria to organize the regional public transport in its area.

In the following years, some local train services were reactivated for tourist purposes and in 1996, the rapid bus transit “Wieselbus” was put into operation. In 2010, NÖVOG took over regional railway lines of the ÖBB, Austria’s national railway operator. Thus, NÖVOG was converted to an operating transport enterprise.

Today, the operation comprises eleven express bus lines, five railway lines and three mountain lines, including two chair lifts. The “Wachaubahn” and “Reblaus Express” lines operate on standard gauge, “Waldviertelbahn”, “Citybahn Waidhofen” and “Mariazellerbahn” are narrow gauge railways with a gauge of 760 mm.

The NÖVOG network also contains the “Schneebergbahn” and the “Schneeberg” chair lift, which is a subsidiary of “Schneebergbahn” with a 91% share. 1.7 million passengers were transported over the entire network in 2013.

#### OVERVIEW OF NÖVOG

**Route length:**

232 km (currently  
under operation)

**Track length:** 329 km

**Turnouts:** appr. 250

**Interlockings:** 54

**Bridges, tunnels:**  
appr. 650

**Passengers:** 1.7 mil.



## CUSTOMER MOTIVATION

NÖVOG operates different railway systems in its railway network on its own infrastructure. The infrastructure division is divided into track management and management of energy and signaling. For these two areas, it is imperative to capture all infrastructural facilities for maintenance as well as quick and effective replacement procedures.

To meet this request, a proven IT system was tendered 2013 by NÖVOG. The system was featured to detect all the assets with all the important parameters and attributes, collected in an appropriate data structure. A proven standard solution was defined as a mandatory prerequisite.

The system INFRALIFE of 3B infra was selected by means of a Europe-wide tendering procedure. Based on the foundation of a master asset register, maintenance processes such as fault and defect management and the monitoring of scheduled maintenance measures were implemented. All systems and functions can be accessed through conventional lists, in a twodimensional map and also along the track.

## CUSTOMER BENEFITS

NÖVOG, with the system INFRALIFE, operates today an integrated information system that is used operationally and strategically in all technical fields. The intuitive and easy to use interface is a guarantee of high user acceptance and thus for the automatic updating of master but also condition data.

These data are closely integrated with the maintenance activities, thus all operational processes will be well controlled and monitored. Reports and evaluations to the highest quality and safety standards are available for the management at any time.

## CORE FUNCTIONS

- Asset register for railway infrastructure
- Dynamic segmentation for linear objects
- Geographic information (GIS)
- Track geometry
- Time based maintenance
- Condition based maintenance
- Replacement strategy and budget forecast
- Key performance indicators for management

## OPERATION & TECHNOLOGIE

- **Server:**  
MS SQL Server / Windows
- **Client:** Windows PC, mobile clients
- **Number of users:** 60
- **Start of operation:** 2014



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## SUCCESS STORY

### WIENER LOKALBAHNEN AG (WLB)

SYSTEM INFRALIFE@WLB

#### OVERVIEW OF WLB

**Route Length:** 30 km

**Track Length:** 50 km

**Turnouts and  
Crossings:** 200

**Stations:** 34

**Power Substations:** 15

**Interlockings:** 5

**Masts:** 1015

**Passengers:** 12 mil.

The Wiener Lokalbahnen (WLB) operates a double tracked and completely electrified railway, the so-called „Badner Bahn“, as well as some bus lines. The 30 km long railway operates between the Vienna State Opera and the city of Baden. In the inner-city routes WLB uses the tram network of Wiener Linien. On the remaining route the train operates as a heavy rail train. WLB handles thousands of people every day, bringing them to work, school, shopping centers along the line.

On the other hand WLB is engaged for more than 100 years in the cargo business. The subsidiary Wiener Lokalbahnen Cargo (WLC) provides rail-bound cargo transportation services throughout Europe.

In March 2001 WLB received a safety certification for cargo business on the ÖBB rail network and thus is able to operate also on third-party infrastructure. WLC holds licenses for operating its own rail-based cargo services in Austria, Germany and Hungary. Actually the transport of more than 3,2 mil. tonnes of goods will be arranged throughout Europe.

### CUSTOMER MOTIVATION

In 2004 the WLB faced the challenge of implementing a Safety and Quality Management System (SMS/QMS). This requirement had to be fulfilled in order to obtain the obligatory Safety Certification according to the directives of the European Union.

Instead of establishing a paper-based management system, the WLB decided to introduce an electronic data based solution. The system should fulfill the requirements of the infrastructure departments as well as those of the operating staff.

### CUSTOMER BENEFITS

Today WLB operates an integrated information system for railway technicians, which is used for operational and strategical purposes. All key performance indicators concerning quality and safety are available at one glance. Infralife covers infrastructural issues as well as operational tasks such as train monitoring and incident management. Due to the easy-to-understand graphical interface the system was accepted by all users in a short time.

### CORE FUNCTIONS

- Asset Register for Railway & Tram Infrastructure
- Dynamic Segmentation for Linear Objects
- Geographic Information (GIS)
- Track Geometry
- Time Based Maintenance
- Condition Based Maintenance
- Replacement Strategy and Budget Forecast
- Key Performance Indicators for Management

### BETRIEB & TECHNOLOGIE

- **Server:**  
MS SQL Server / Windows
- **Client:** Windows PC
- **Number of users:** 50
- **Start of operation:** 2006



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