

A solid database enabling sound decisions

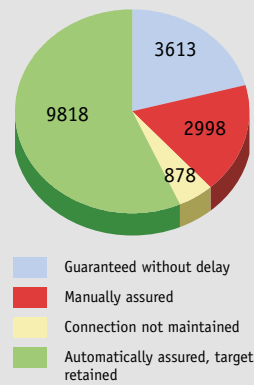
Accurate data analyses and report templates which can be directly applied make the Trapeze ITS Business Intelligence (BI) module a tool of first choice for public transport companies. It allows the benefits of our ITCS system to be utilized to the maximum and operations to be further optimized to a decisive extent.

Reliable operating data are a valuable information source for any public transport company, for they are the key to improving a company's level of service. BI generates extensive data from the operations control system and additionally offers a precise overview of developments and processes to date. User-friendly reporting tools provide a reliable basis for further fine-tuning day-to-day operations, which – among other things – ensures higher schedule accuracy and possibilities of more precise planning. This allows public transport companies to enhance the efficiency of their operations and their services while at the same time achieving a sustainable increase in the number of passengers that they transport.

The potential of BI reporting technology lies in the precise and efficient gathering of large volumes of detailed data. The reporting service of our system enables users to extract all the relevant information from the extensive data pool. BI allows the saved information to be easily analyzed. The analysis tool automatically summarizes reports, providing an accurate picture of operations. All BI users can thus obtain more extensive and precise data than before.

These novel, unrestricted, and open communications enable companies to draw maximum benefit from the data generated.

Result of connection assurance



BI supports the joint dynamic analysis of data received from different system components. Users select the data categories to be visualized and the required level of data detailing interactively by “zooming in” or “zooming out”. The dynamic analysis supplies approaches to solutions for current operations-specific challenges and supports the development of future strategies. BI makes high-quality data available. With the aid of numerous report types, it is possible to reliably measure and analyze the key quality and performance criteria in day-to-day operations.

Reporting tool

The integrated reporting tool allows easy creation of different reports. On the basis of just a few self-explanatory steps, users can create individually designed reports in the form of charts or graphs in a matter of minutes. The preview function allows reports to be checked and then to be added to the standard reports. Web-based interfaces allow direct access to databases and related analyses.

The databases can be integrated through different interfaces in order to ensure consistent access to the information received via the internet, extranet, and intranet. Integration of the reporting tool allows access to information in numerous different formats – at reasonable costs. As a consequence, monitoring tools such as the Business Scorecard contribute through strategic decision-making to optimizing business activities. Insight into the relevant operating factors supplies users with meaningful information. The BI databases supply managers, analysts, and experienced users alike with multidimensional data analyses which are not possible using conventional reporting tools. Through so-called pivot charts, complex

Business Intelligence

matters can be easily visualized, making even non-obvious correlations clear.

Interfaces

Numerous integrated interfaces allow the recorded data of various other systems to be made available. They can be exported to Excel, TIF, XML, LIObus, and CSV. If report results are intended for forwarding or for a presentation, they can be downloaded in the PDF format.

Interfaces with analysis services for Excel have a positive impact on the productivity of a company: Employees can quickly identify, analyze, and respond to a need in order to fine-tune operations with the aid of free-form reports and extended analysis functions in Excel. The interface with the Excel add-in for analysis services offers a flexible method to apply data in an Excel file for integrated analysis and reporting.

Web-based operation

The web interface is characterized by its ease of use and its user-friendly access to documents and predefined reports. With the appropriate access authorizations, evaluations can be displayed on any PC without requiring any additional installation. The individual users can only view those documents and reports for which they have authorization. For example, workshop personnel can access device malfunction messages, or operations planners can analyze trips completed in order to optimize schedules.

Standard reports

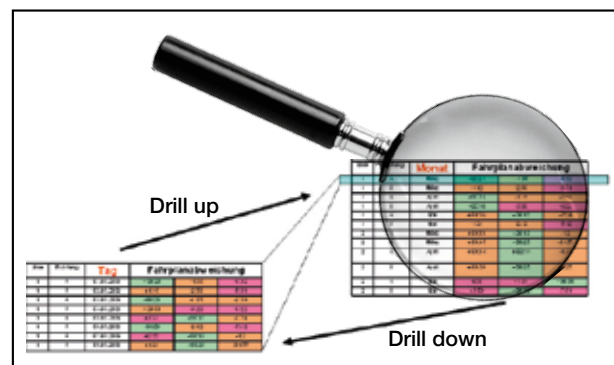
Business Intelligence provides ready-to-use, standardized reports. But reports can also be generated for a given operator, route, vehicle, or even circuit, depending on the inquiry parameters. Each report contains a header section with factual information plus a footer with pagination and printing date. Many of the reports also comprise so-called drill-down functions, where the different characteristics of existing information objects are used for gradually refining the analysis. Higher data compression is possible, on the other hand, with the drill-up function.

Automatic creation and emailing

BI allows reports to be automatically generated. On the basis of the integrated calendar function and different filter options, it is possible to cyclically create individual reports in freely definable intervals. The result is made available to the user or automatically emailed. This option is particularly suited to the creation and mailing of regular reports or daily statistics.

Scalability on the basis of modern system architecture

BI is based on an MS-SQL server database. The MS-SQL Enterprise Edition allows any desired expansion of the database so that even large data volumes can be easily processed.



Drill-down/Drill-up function

Business Intelligence

Data sources

The standard data sources of the ITCS system are automatically integrated. The data of the master computer are available for evaluation within a matter of minutes. As soon as a vehicle is located within a WLAN area, the depot data manager will automatically trigger a transmission to the BI database. When a new data version is released, it is immediately available in the BI database.

Operations-specific data warehouse

The import function allows data to be transferred to the BI database from any third-party system. During import, a report model is automatically generated for the data transferred, which is linked up with the existing data. This simple method allows external data to be shown in individual reports together with ITCS data. As a result, any company can build its own individual data warehouse with all the data available to it. The BI database thus serves as a management tool that can be applied company-wide.

Flexible access control

The administrator level allows flexible access control. Thus, reports or subject areas can be released for selected user groups. For example, the creation of reports may be reserved for defined users, or sensitive data can be blocked for certain user groups. This access control feature allows applications in multi-agencies as well as in companies with sub-operations.

License packages

The various subject areas are covered by individual license packages. Thanks to its modular design, BI can be expanded gradually as a customer's individual needs increase. Following is a selection of the available license packages.

Operations log

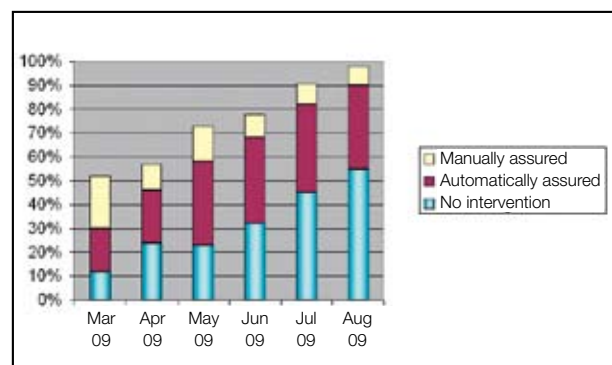
The operations log enables all events that have been logged in the control center to be output and displayed as a report. Extensive filter criteria are available, including selection according to workstation, route, run, vehicle, or vehicle owner.

Connection evaluation

The report on connection assurance allows the connections monitored in the control system to be subsequently analyzed. Every relevant action is recorded for each connection pair so that a concrete transfer process can be traced. Also the overall quality of connections and the effect of automatic connection assurance can be documented.

Documentation of operations performance

The purpose of the operations performance documentation feature is to determine the mileage of all vehicles of a public transport company, i.e. all the distances actually covered. The mileage-based performance provides the basis for various calculations such as vehicle-specific operating costs, allocation of the distances actually traveled, allocation of the distances traveled to company branches and cost centers, or forwarding of the data to master evaluation systems. The aggregate data can cover the daily, weekly, monthly, and annual totals or any required period of time.



Successful connections

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	February	March	April
Route 1	120 865	200 754	154 143
Route 2	21 942	42 36	162 881
Route 10	0	0	0
Route 11	0	0	0
Route 12	0	0	0
Route 13	0	0	0
Route 14	0	0	0
Route 15	0	0	0
Route 16	0	0	0
Route 17	0	0	0
Route 18	0	0	0
Route 19	0	0	0
Route 20	0	0	0
Route 21	0	0	0
Route 22	0	0	0
Route 23	0	0	0
Route 24	0	0	0
Route 25	0	0	0
Route 26	0	0	0
Route 27	0	0	0
Route 28	0	0	0
Route 29	0	0	0
Route 30	0	0	0
Route 31	0	0	0
Route 32	0	0	0
Route 33	0	0	0
Route 34	0	0	0
Route 35	0	0	0
Route 36	0	0	0
Route 37	0	0	0
Route 38	0	0	0
Route 39	0	0	0
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Route 93	0	0	0
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Route 97	0	0	0
Route 98	0	0	0
Route 99	0	0	0
Route 100	0	0	0

Operating performance logging by month and route



Visualization by map displays

Punctuality

The punctuality evaluation shows immediately which routes are not serviced according to the schedule. The reports provide an overview of the punctuality of the individual routes. The result allows individual routes or different time windows of individual routes to be compared. The characteristic figures can be filtered according to different criteria and then be shown in the form of charts or graphs.

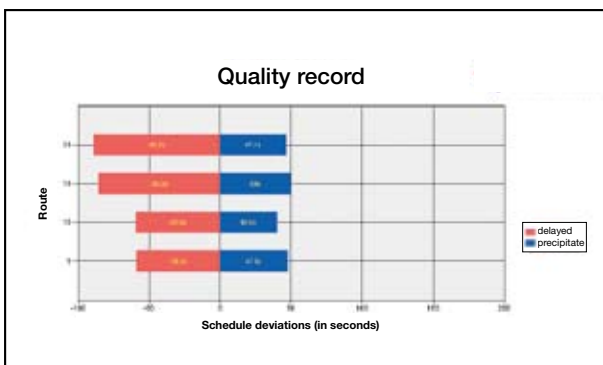
Map displays

The map displays extend the various subject areas by the addition of more visualization options. The required map layers are shown or hidden in accordance with the degree of detailing. For example, it is possible to display several vehicle events on one single map. The visualization of the location

accuracy and radio quality on a map allows potential problem areas to become visible.

Highlights at a glance

- Efficient management tool
- Reliable and high-quality database
- Dynamic data analyses
- Multi-dimensional data analyses
- Report model for easy, intuitive report creation
- Customized report design
- Numerous export interfaces (e.g. Excel, XML)
- Import interface for data from external systems
- Business Scorecard monitoring tool
- Easy operation through web interface
- Standard reports with drill-down/drill-up function
- Automatic report creation and emailing
- Scalability on the basis of modern system architecture
- Company-specific data warehouse
- Flexible access control
- Unlimited total number of users



Schedule deviations