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European Funds
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CeSIP

Central System for Public Transport Fleet Management

CeSIP is a system for vehicle fleet monitoring and for comprehensive, real-time management of passenger information. A broad range of available functions allows optimal utilisation of the fleet, global management of passenger information, and communication with the drivers.

CeSIP is a modular design, allowing functional development through addition of more modules during operation of the system, with the possibility of integrating the modules into one central system. This solution makes it possible to manage several subsystems at once while still ensuring convenient and effective use of the data collected.

Full control over urban public transport!

01

CeSIP software modules:

Managing routes, stops, and a database of segments between the stops

A module for managing and configuring routes, lines, and stops, and for attributing features to them for the purpose of collecting and interpreting data. Ability to freely group the stops, assign announcements, and manage fare zones, including setting different zones for various segments of the same line, route.

Managing the fleet and carriers, and a communicator module

The functions of this module include assignment of vehicle fleet numbers, vehicle descriptions, vehicle attributes of interest (short, long; low-floor, standard/premium), carrier name, production dates, and other parameters agreed upon during system implementation.

The communicator module allows broadcasting of communications to all or selected vehicles, sending messages to the driver's control terminal, and broadcasting information to be shown on internal displays.

Event log and panic button

Activation of the panic button on the driver's control terminal causes a window to pop up with a map centred on the current GPS location of the vehicle where the button has been activated, accompanied by an audible notification. In response to the notification, the dispatcher can choose the following options: voice call, sending a text message, and generating an event report.

Dispatching functionality

The dispatcher assigns an appropriate fleet number to scheduled tasks (e.g. line no., shift ID, vehicle type, etc.). The module allows the dispatcher to make changes to the route on the fly (e.g. change stops). The dispatching functionality also includes keeping a work log based on the dispatcher's actions and generating reports for selected operators for specified dates.

02

Map and detours module

Real-time tracking of vehicles on the map and reviewing archived route recordings for time periods selected by a dispatcher. Presenting information about the vehicle on a map (current route, timetable deviations, speed).

The option to filter vehicles by various parameters (timetable deviations, line, shift, position on the map). The detour module allows quick creation of temporary detours.

Beads module

A linear graph showing all logged-in vehicles on a given route. The graph provides data such as vehicle fleet number, current delays, shift ID.

The beads module provides a visual representation of the extent of timetable deviations by automatically grouping similarly timed events of vehicles running ahead or behind the official schedule. The timetable deviation scale is colour-coded and presented dynamically.

Virtual display

The option to pull up departure countdowns for a given stop together with a map of vehicles approaching that stop. Information on deviation from the official timetable along with the fleet number of the affected vehicle and its scheduled time of departure.

Information display module

Managing displays by configuring and grouping them, broadcasting text and graphical messages with a defined display area, accessing live preview of the displayed information, setting up additional audio announcements with adjustable schedule and frequency of broadcasting. The software allows the information displays to be remotely turned on/off and reset.

Priorities module

This module is responsible for generating data regarding reporting points at junctions, collecting data from the vehicles, estimating the time for the vehicles to reach the junctions, and reporting the data to the Traffic Management Subsystem, which can then assign appropriate priorities to public transport vehicles.

User management

Access levels and file system permissions for specific data, modules, and functions of the central system can be freely set for various user groups, such as the Dispatchers, as well as for the group with full access (the Administrators).

03

Estimation, monitoring, and punctuality analysis

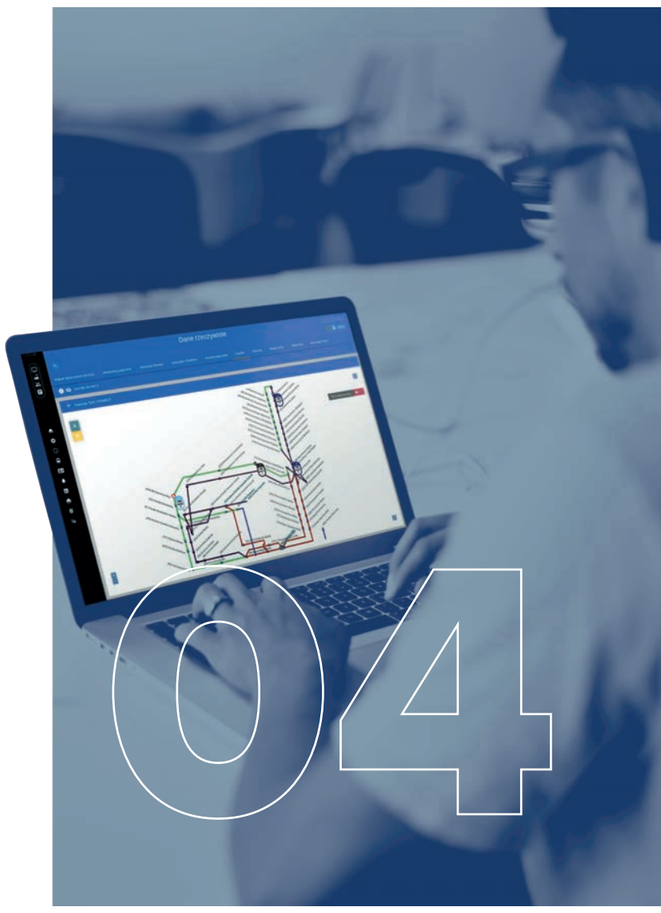
An algorithm estimating the time of arrival of public transport vehicles which takes into account current delays en route that precede a departure. The bus arrival time estimation is performed centrally, i.e. the GPS data sent by the vehicles is used to measure the travel time for specific route segments. This allows the system to provide more realistic results. The monitoring and analysis of punctuality (also available in graphical form) may be used to verify carrier performance.

Analytics and diagnostics

The system offers the ability to monitor the current state of devices and provides information about issues, technical problems, and faults. Automatic detection and reporting (notifications, e-mails) of long-term absence of peripheral devices.

Reporting

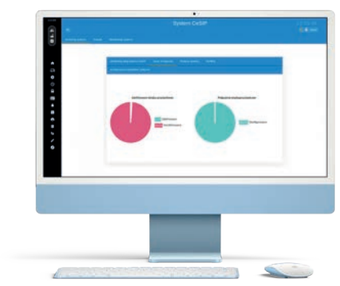
The CeSIP system is designed to correlate all timetable data and real-time information from vehicles to generate reports as needed and expected by the Customer.



04

Essential functions of the system

- Planning, designing, and managing timetables.
- Network planning.
- Input of routes and travel times.
- GIS-based planning.
- Variants and analyses of timetables.
- Positioning of stops and other points in the network.
- Defining travel times and distances.
- Prioritising public transport.
- Fleet management (in respect of planning and operational needs of transport operators).
- Performance monitoring.
- Locations, times, and occupancy of the vehicles.
- Support for dispatching tasks (ensuring smooth information exchange between dispatchers and vehicles).
- Monitoring of transport assignment completion (reports on completion of transport assignments in view of agreements concluded with transport operators).
- Traffic monitoring centre.
- Managing timetable deviations.
- Tracking vehicles on the map.
- Monitoring the list of behind-schedule and ahead-of-schedule events.
- Exporting comparative statistics of official vs. actual schedule.
- Monitoring the scope and quality of services provided.
- Carrier performance verification.
- Monitoring punctuality.
- Monitoring devices and vehicles.
- Real-time control of active vehicles.
- Generating reports from operational statistics of the vehicles and the transit offer.
- Centralised management of dynamic passenger information.



05

Tasks performed by the system

- Improving punctuality and regularity of public transport.
- Offering dynamic passenger information (DPI) at stops.
- Prioritising public transport.
- Positioning of stops and other points in the network.
- Defining travel times and distances.
- Support for dispatching tasks (ensuring smooth information exchange between dispatchers and vehicles).
- Managing timetable deviations.
- Tracking vehicles on the map.
- Monitoring the list of behind-schedule and ahead-of-schedule events.
- Generating comparative statistics of official vs. actual schedule.
- Real-time control of active vehicles.
- Centralised management of dynamic passenger information.
- Delivering information to passengers via the internet and through a mobile application available for smartphones and tablets.
- Increasing the appeal of public transport in the city.

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