Sprint

SPRINT/ITS

TRAFFIC MANAGEMENT SYSTEM WITH A CENTRAL APPLICATION

WHAT IS SPRINT/ITS?

As the largest and most crucial ITS element, the Traffic Management System (TMS) ensures communication between subsystems in terms of data distribution. It also aggregates and publishes this data in graphical form as a GIS map in the Central Application. Additionally, the system can dynamically present specified data on the Internet, such as on an ITS website. As the integration layer, the Central Application guarantees the interoperation of modules within the intended scope of interactions between subsystems.

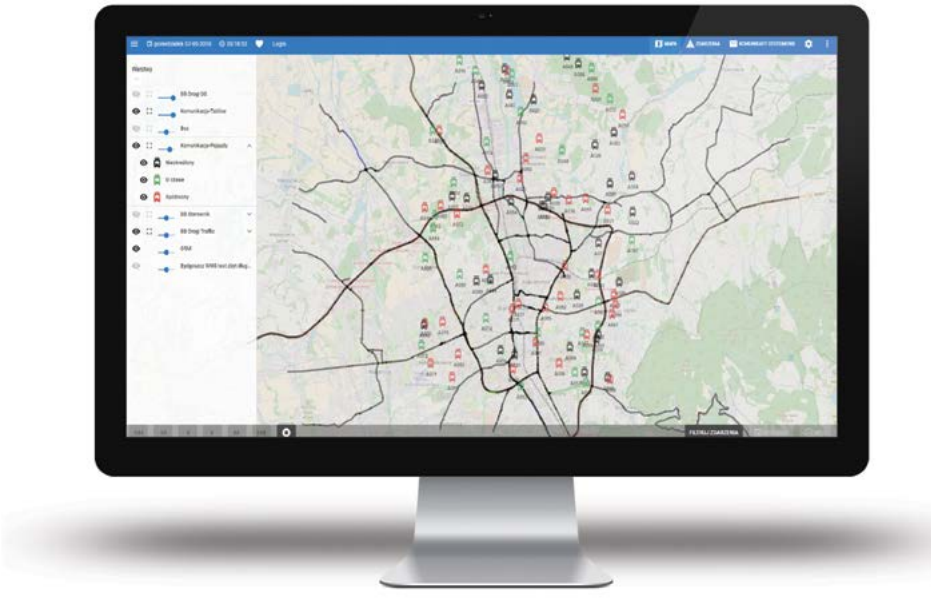
FUNCTIONALITIES OF THE SPRINT/ITS SYSTEM

- Monitoring for the Traffic Control Subsystem and other subsystems (e.g. CCTV, VMS, ANPR, Parking, Public Transport)
- Supervision of specified traffic parameters
- Verification and backup of Monitoring Subsystem camera footage
- Control of specific subsystem elements
- Management of passenger information displays
- Data storage and aggregation in databases
- Traffic information sharing for all users
- Provision of urban parking lot occupancy information within the system's coverage
- Creation of summaries, statistics, reports, and analyses based on acquired data
- Indication of potential traffic problems
- Dynamic in-browser presentation of specific data

CENTRAL APPLICATION

The Central Application's interface groups specified information and operator functions in themed tabs.

The main view is a GIS map with TMS elements represented by icons. Each subsystem is shown as one or more map layers, which each present various subsystem aspects. The Central Application's options allow for the definition of custom map overlays using the WMS standard. The layouts are later accessible to operators through the map layer panel.



The Central Application's Map View

ADVANTAGES OF THE CENTRAL APPLICATION

The Central Application allows for defining a set of operator functions (operator commands), which enables saving map view settings (location and layer presets) and defining actions.

Actions are a mechanism that allows a user or system element to execute predefined operations using contextual data from the action's initialization. Depending on operator privileges, actions can be called upon based on map element context, function tree objects, or events.

The following are examples of functions:

- Selecting a monitoring camera
- Indicating a traffic light controller
- Previewing traffic light controller parameters
- Bringing up a specific intersection's system console

All actions executed by the operator are registered in the Application's work log (audit).

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SPRINT/ITS SYSTEM EXPANSION

The system architecture allows for expansion on every level:

- Network – communication between the system's elements is based on standard protocols such as Ethernet/TCP/IP, which would easily allow installing new TMS elements
- Interface – new TMS interfaces can be created without implementing dedicated software thanks to ESB module integration, which ensures the communication between systems that is necessary for operation
- Database – additional tables can be added to the data structure to support new subsystems
- Component – the TMS is composed of standard modules, such as a Microsoft SQL database, an enterprise service bus, and a message bus. These elements allow for the sharing of data and execution of complex functions (e.g. urban transport prioritization) by linking dedicated modules, such as SCATS, the Vehicle Management System, traffic light controllers, etc.

BENEFITS OF SPRINT/ITS IMPLEMENTATION

- A single application for the supervision and monitoring of all subsystems
- Access to every function from the same screen
- All system logs and received messages can be saved in an event registry
- Faster system failure response and diagnosis
- Access to subsystem statistics, such as public transport vehicle signal wait times in the priority subsystem
- Central Application data collection that enables the optimization of specific subsystems, e.g. for traffic control
- Specified system data publishing on a dedicated website or mobile application
- Future system expansion possibility thanks to the open interface allowing for easy addition and editing of subsystems and their elements
- Visualization of data from pre-existing urban subsystems

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