AI BASED TRAFFIC MANAGEMENT CENTERS

Complete ATMS Platform

Decision Support System
Smart Active Traffic Management
Big Data Analytics, Cloud Ready, App - NAV - V2X Friendly, Smart City Platform
Two trends are unambiguous in modern days:
1. traffic problems are constantly growing – the cost of congestion caused by traffic jams and incidents is measured in billions of dollars worldwide,
2. technologies for information sourcing, analysis and processing are rapidly evolving.

The evolution of information technologies will inevitably make impact on ITS/ATMS industry and one question remains today - what can be done to deploy new technologies in understandable, yet safe and future-proof ways?

CAN TECHNOLOGY HELP IN SOLVING TRAFFIC PROBLEMS?

COMPLETE AI BASED ATMS

**TOPXVIEW™** is AI based Advanced Traffic Management System that supports complete traffic management center operations from start to finish.

It operates with current and upcoming ITS technologies (such as cloud computing and CV/AV), uses big data fusion and artificial intelligence processing, to provide situational awareness, visualization of traffic conditions, incident detection, executive and communication actions for traffic and incident management.

It’s traffic and incident management decision support tools are tailored to make traffic operators focused and efficient in managing incidents and controlling traffic.

**TOPXVIEW BASE™** is a subset of topXview™, designed to provide maximum of ATMS functionality to Clients who do not have executive ATMS elements in their systems. It uses available inputs (usually only video feeds and crowdsourced traffic data) and can be implemented quickly, without new investments.
topXview™ is a supporting tool for traffic management and it fits into Agency’s concept of operations smoothly.

During implementation process, Telegra’s team of implementation engineers, experienced in deployment of more than 100 instances of topXview™ worldwide, makes sure that Agency receives a software system that is fully adjusted to Agency’s expectations and established procedures.

topXview™ is ready for any network configuration and assures same efficient and coordinated traffic management in case of traffic network operated by single agency, from single control center, or traffic network hierarchically operated from multiple control centers.

topXview™ software system can be implemented in new and existing traffic control centers, and integrate any new and existing legacy ITS assets to provide Active Traffic Management, Integrated Corridor Management, Tunnel Management and Smart City Traffic Management.

Unlimited scalability in terms of integrated subsystems and ITS assets.

Communication in topXview™ system is secured with SSL protocols.

topXview™ runs in cloud, virtual servers, or dedicated servers.

FITS TO YOUR ORGANIZATION IN ALL ASPECTS

TWO DECADES IN TRAFFIC MANAGEMENT CENTERS

topXview™ is being used by traffic management agencies as indispensable traffic and safety management tool in more than 100 traffic management centers worldwide, on more than 3,000 miles of roads, highways, bridges and tunnels. These numbers are constantly growing.

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topXview™ Decision Support Software analyzes and qualifies data from all sorts of sensors and data sources connected to TMC, combines them, and visualizes the state of traffic in real-time to Operators. It detects incidents and predicts possible changes in traffic flow. The real-time traffic state awareness empowers Traffic Operator to start preventive traffic management actions to prevent congestion and prevent escalation of an incident.

Workflow based topXview™ Decision Support Software leads Traffic Operators through the process of choosing and evaluating possible strategies for traffic and incident management, simulates outcome of considered strategies in real time, and helps Traffic Operator in accurate and prompt decision making.

Simplified and Accelerated Resolving

topXview™ can easily store all Agency’s operating procedures, strategies, response plans in its preprogrammed library. That way, it leads Traffic Operators with workflow-based response plans through their decision-making process. Traffic Engineers can easily analyze outcomes, modify procedures, response plans and strategies, and constantly improve quality of TMC operations. The same feature also allows simple, one click distribution of reports.

Entire Process Managed from the Single Cockpit

topXview™ Operator has the same “look and feel” while conducting any segment of his job. For traffic monitoring, topXview™ indicates real-time traffic conditions with different colors on roadway/corridor map. Incident location is indicated on the map, live video-feed from the incident location is shown on the map, and Operator’s attention is focused to estimate its severity.
AI BASED, BIG DATA ANALYTICS, CLOUD READY
APP / NAV / V2X FRIENDLY

BIG DATA ANALYTICS

Data from crowdsourcing and navigation applications, real time information from different sensors, video analytics of each vehicle – all this big data flows to TMC in real time. topXview™ data fusion engine with big data analytics turns this data into useful traffic information, smartly processed and intuitively presented to engineers and operators.

CLOUD EXECUTION

System’s modular architecture is particularly suitable for cloud environment. This allows users to get required services quickly in leased resources, with no need for own hardware environment.

Web browser-based human-machine interfaces are perfect match that enables system operation form standard browser equipped workstations.

ARTIFICIAL INTELLIGENCE (AI) IN ITS CORE

topXview™ uses advanced AI techniques to analyze huge amounts of available data. Innovative video analytics (machine vision based on deep learning) and advanced decision support that uses AI to analyze real-time and historical traffic data are examples of using advanced information processing to predict and detect incidents and suggest most suitable strategies for traffic and incident management.

BASE FOR SMART CITY TRAFFIC MANAGEMENT

Direct communication with vehicles is not a future any more. topXview™ CV module supports communication with Agency’s own fleet of vehicles and each individual traveler by sending relevant traffic information to each vehicle.

With big data analytics, artificial intelligence, unlimited integration capabilities and CV based balancing, topXview™ is a true Smart City traffic management platform.
TRUE INTEGRATION - SUPPORTS TMC OPERATIONS FROM START TO FINISH

**MONITORING**

topXview™ Software features almost all communication protocols used in ITS/ATMS industry today so it is able to collect data from all sensors and sources of data connected to Traffic Management Center (traffic data, weather, video, other agencies and services, etc.).

This raw data is then qualified and synthetized into relevant traffic information about traffic flow, congestion and incidents, and visualized to Traffic Operators in ergonomic way on interactive roadway map. In parallel, Traffic operator has incident manager dashboard that is a part of monitoring GUI, to be able to monitor resolution of incident response plans.

That way, Traffic Operator is monitoring traffic and all its changes in real-time, having complete awareness about the traffic in his network.

**DETECTION**

A set of different algorithms in topXview™ Software constantly analyzes information and detects disturbances and incidents.

Traffic prediction module analyzes actual traffic flow and its modifications in correlation with actual events in network, and warns about the risk of congestion.

Built-in algorithms for congestion detection and prediction based on traffic data (such as California, Marz, etc.) assure that contemporary traffic know-how is always at Traffic Operator’s service.

topXview™’s Artificial Intelligence based XAID™ system for analysis of video detects in real-time traffic incidents out of CCTV streams with highest accuracy and reliability of all similar systems in traffic industry.
After it detects incident or congestion, and puts it to Traffic Operator’s focus, topXview™ will offer one or more suitable response plans from his library of predefined plans and strategies for Active Traffic Management (ATM), Incident Management, planned special events or work zone management. To support Traffic Operator’s decision making, topXview™ will simulate and visualize in real-time outcome of strategies and response plans Operator is considering. This way, Operator will choose the most suitable response for given incident.

Execution of response plans (incident management and execution of chosen traffic strategies) is carried out through workflow driven plan of actions. At any time, Traffic Operator is aware of the state of each response plan and what is the next step. This assures uniform and accurate incident management at the Agency level.

topXview™ truly interconnects all systems. All systems can communicate with one another so there are no limits for response plans, triggering messages on DMS, implementing traffic plans, etc. alleviating Operator’s workload.

The Software stores all events, changes and Operator’s actions in database. Reporting capabilities enable Planners, Engineers and Operators to analyze offline how incidents were handled and response plans executed, and make operational improvements based on this analysis. Operational improvements are entirely under control of TMC Personnel. Software’s interactive tool for creating and parametrization of response plans and strategies allows TMC Planners to easily create, modify and tune response plans for different ATM strategies, such as speed harmonization, hard shoulder running, ramp metering, lane management, etc.

Reporting tool is used to create predefined and customized reports required for Agency’s internal and external reporting procedures. Any kind of report can be pulled up by a touch of a button (traffic density, speed, what triggered DMS messages, who issued commands, what strategies were started and by whom, what kind of congestion and where occurs most often, etc.)
Traffic Control Center equipped with topXview™ Smart Active Traffic Management and Decision Support Software System can empower your Agency for efficient congestion and incident management, even without expensive new investments. topXview™ will help you stay focused on your management responsibilities and help you improve your practices and procedures.