



# Exelerate

Go with green.

## Why us?

Exelerate's goal is to change the traffic-light control paradigm and offer value to cities that:

- Understand that traffic-light control systems need to be simple to operate and accessible like all other city assets (water, parking, security, waste, energy, and lighting).
- Want to break the “vendor block” that they have experienced for many years.
- Want to stop paying for professional services and are looking for a “bullet-proof” tool which they can use independently.
- Want flexibility to connect to any component on the street level whether it is a traffic controller, sensors, or other traffic assets.
- Want to improve air quality in their city and understand that traffic is one of the prime keys to achieve this goal.
- Want to pay a reasonable price with no hidden fees, no endless commitments and no binding restrictions.

## Our offer at a glance

Exelerate Smart Traffic Ltd develops an innovative traffic-light management and control system named "Falcon" that offers several key value factors, including:

- **Adaptable** to the city needs, policies and regulation.
- Open to the street traffic controllers and sensors - **vendor agnostic**.
- Offers a **wide range of control methodologies** including complete adaptive, actuated, and ToD.
- **Completely self operated** requiring no profession services.
- **Open system** - can connect to any other city vector and to an ATMS / Smart City Platform.
- A **completely flexible** price structure and deployment options.
- Implemented in over **1,200 intersections**.

## Our Experience

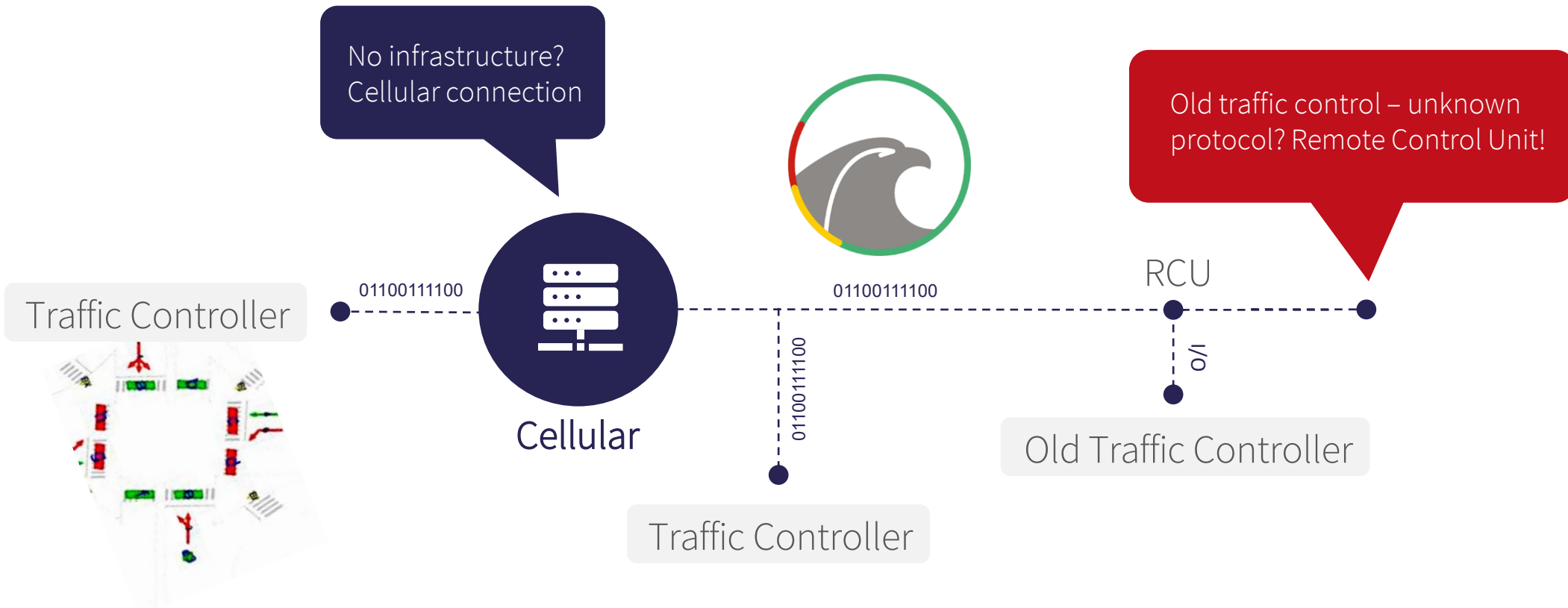
Falcon has been developed based on knowledge and experience from over 45 years of executing traffic projects. A software by traffic professionals for traffic professionals

Falcon is operating in the following signaling authorities:

- 1 Jerusalem, Israel**  
City intersection control system.
- 2 Jerusalem, Israel**  
Providing light rail priority intersection control.
- 3 Tel Aviv NTA, Israel**  
Providing light rail priority intersection control.
- 4 Israel Highways**  
Manages and controls 50% of Israel's intersections.
- 5 Beer-Sheva, Israel**  
City intersection management and control system.
- 6 Ashdod, Israel**  
City intersection management and control system.
- 7 Rehovot, Israel**  
City intersection management and control system.
- 8 Herzliya, Israel**  
City intersection management and control system.
- 9 Ness Ziona, Israel**  
City intersection management and control system.
- 10 Yavne, Israel**  
City intersection management and control system.
- 11 Elblag, Poland**  
Intersection control system.

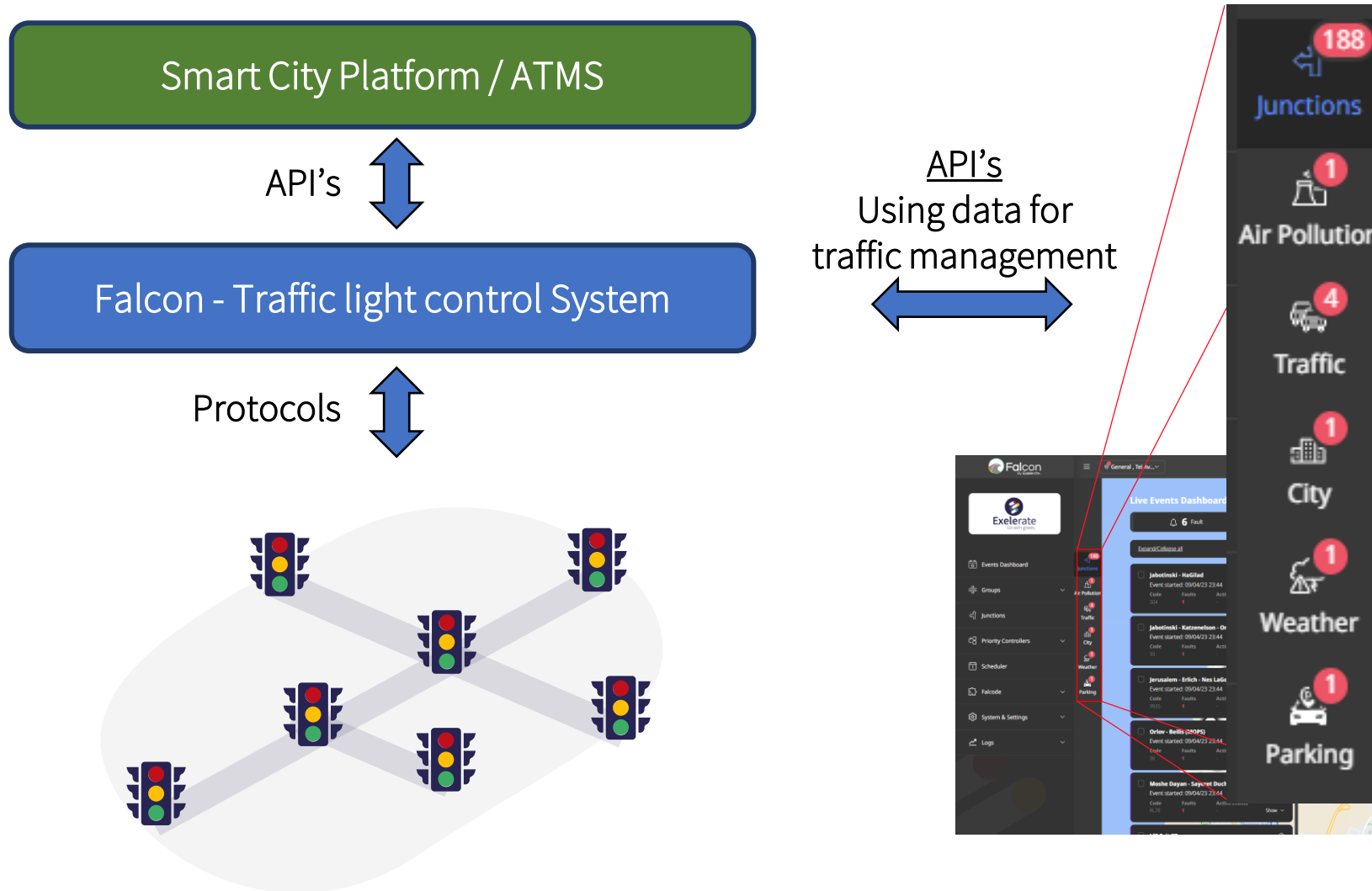
# Connects to all Controllers/Sensors

Falcon can connect to any on-street traffic signal controller and sensor via proprietary or standard protocols (e.g., OCIT, RSMP, NTC-IP). Interfacing legacy traffic light controllers is done via Remote Control Unit.





# An Open System to all Directions



Examples:

Air Pollution Data

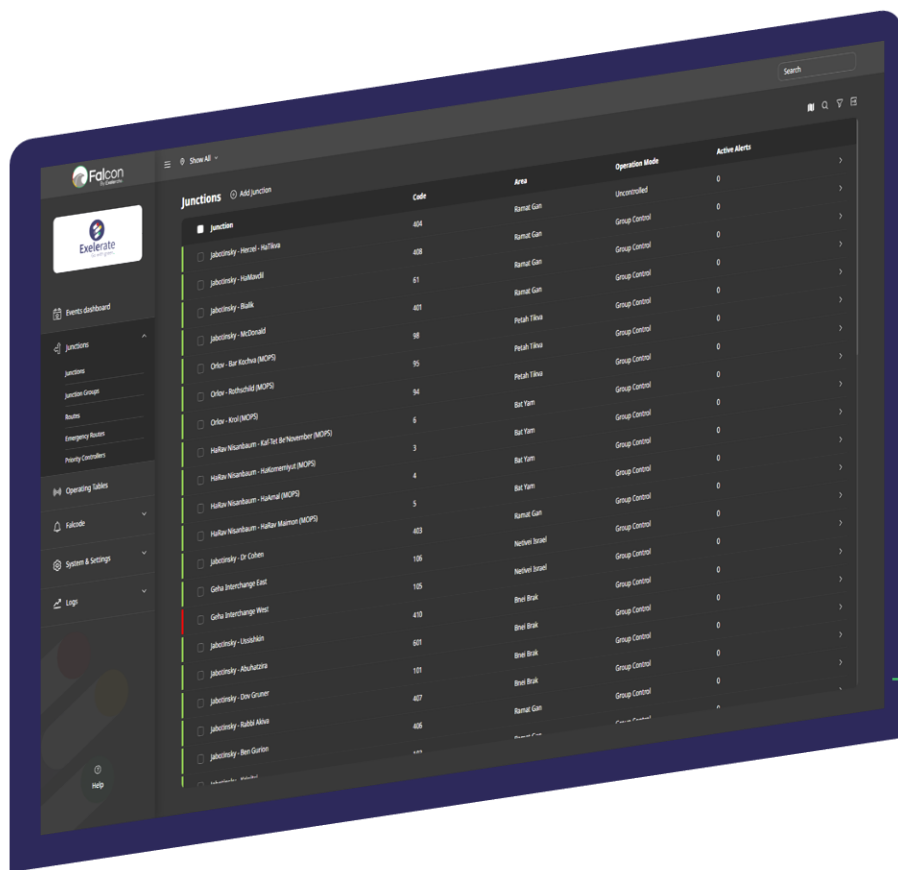
Traffic data from external sources

Emergency and special events "911", "511"

Weather data

Parking occupancy information

# A Graphic System



- Web-based graphical system in HTTP5 standard. Supports TLS/SSL
- Supported by scalable redundant secured backend system
- Can be interfaced from any operating system which has a supporting web browser
- Easy to understand and use
- Ease of addition/changing intersections and changing system definitions (matter of minutes). No special coding knowledge required
- Import intersection definition and parameters table from unified format.

# Full Traffic Signal Control Capabilities

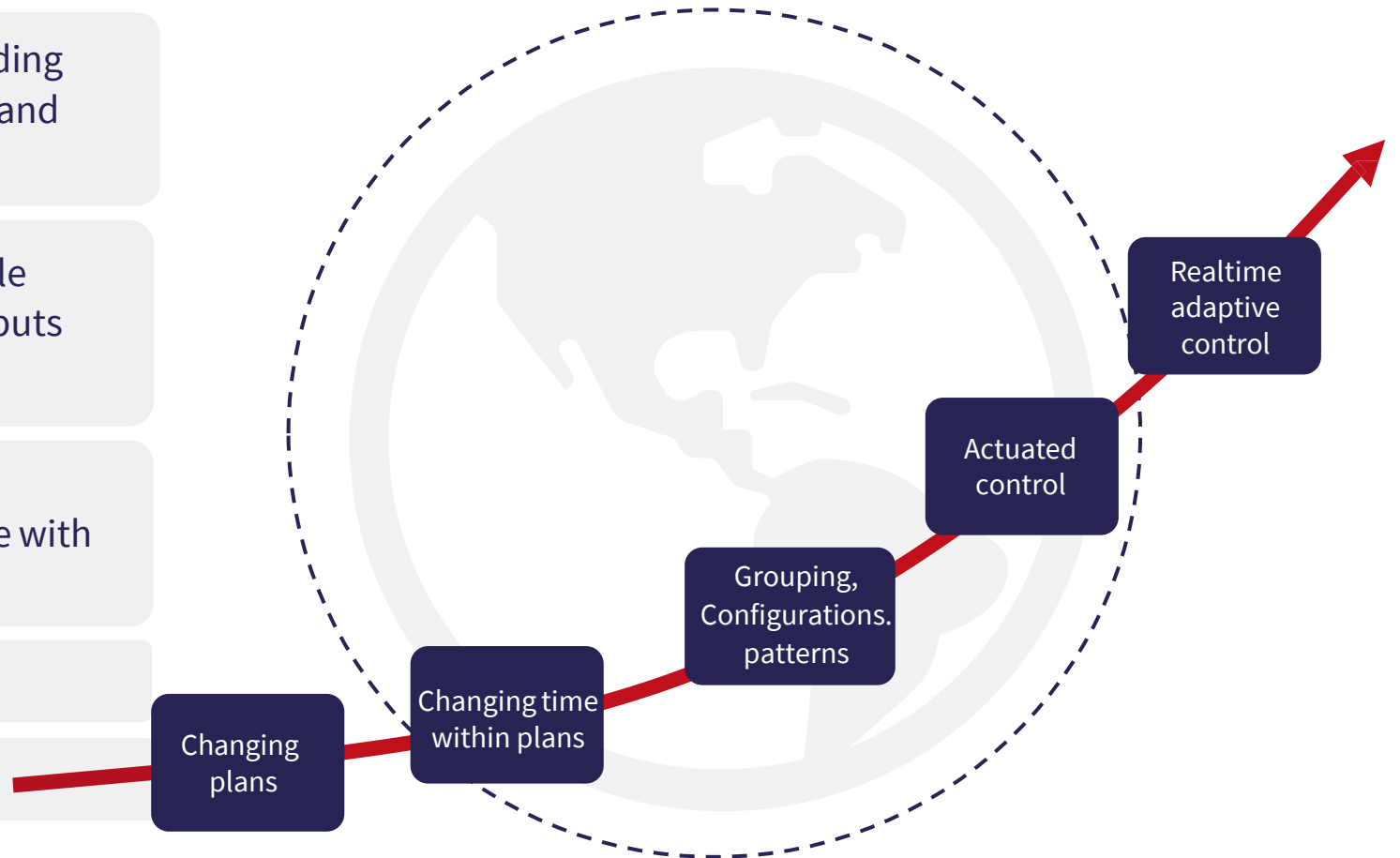
Complete time-of-day scheduler including creation of groups and configurations and patterns

Decision making for a single or multiple intersection according to rules and inputs predefined by the user.

Creating rules for traffic prioritization according to priority sensors. Interface with fleet management systems.

Actuated Control

Realtime adaptive control

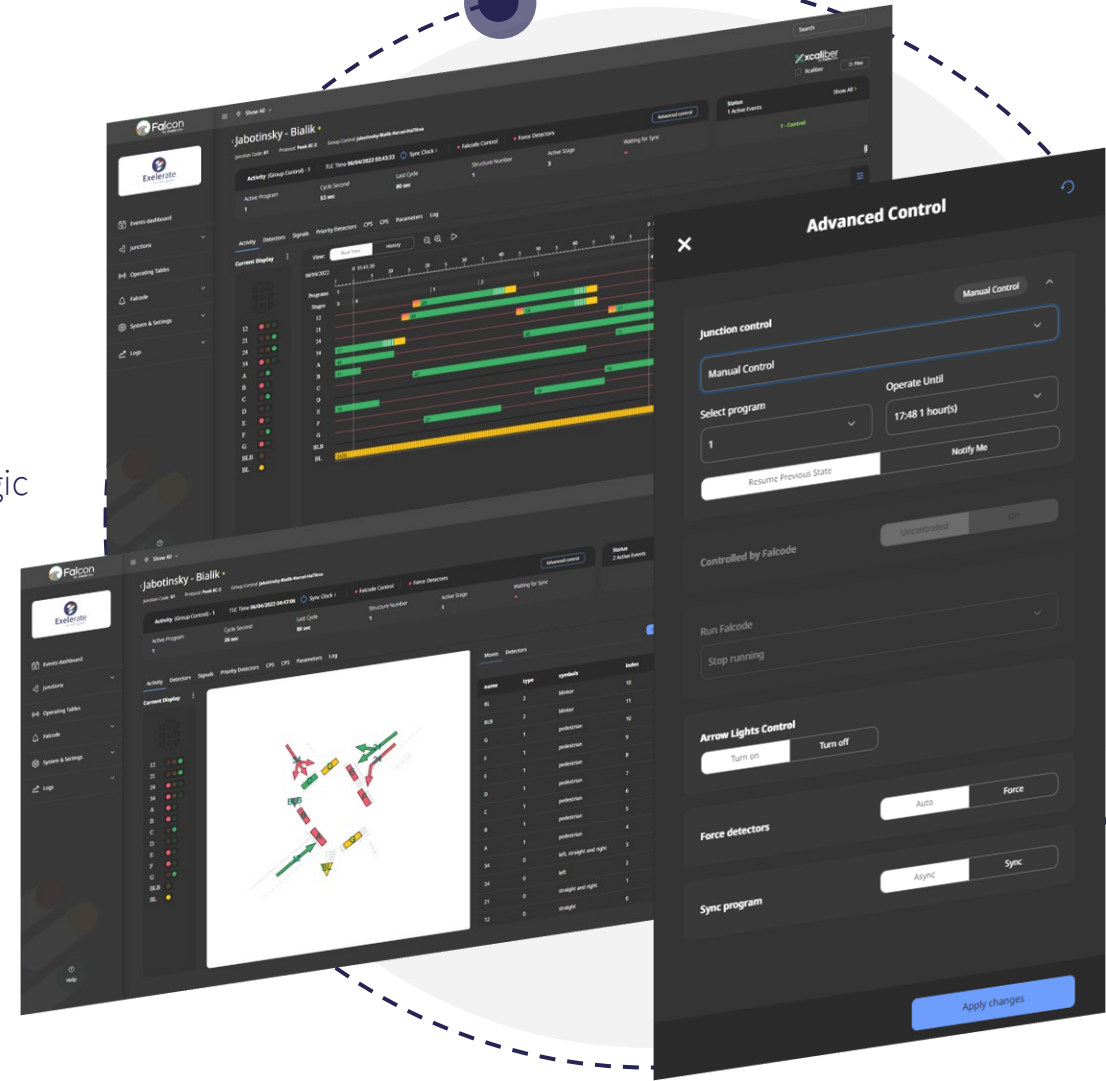




# The Intersection

The intersection screens present the status of the intersections in a graphical and table manner:

- Event status, sensors and their activation, traffic volumes, strategic sensors (inductive loops, Bluetooth, camera, radar, etc.).
- Complete intersection status. Alerts and Incidents management.
- Defining and changing traffic plan parameters,
- Graphical phase diagram in real-time/historical, graphical intersection map.
- Traffic Programs performance data analysis (BI).



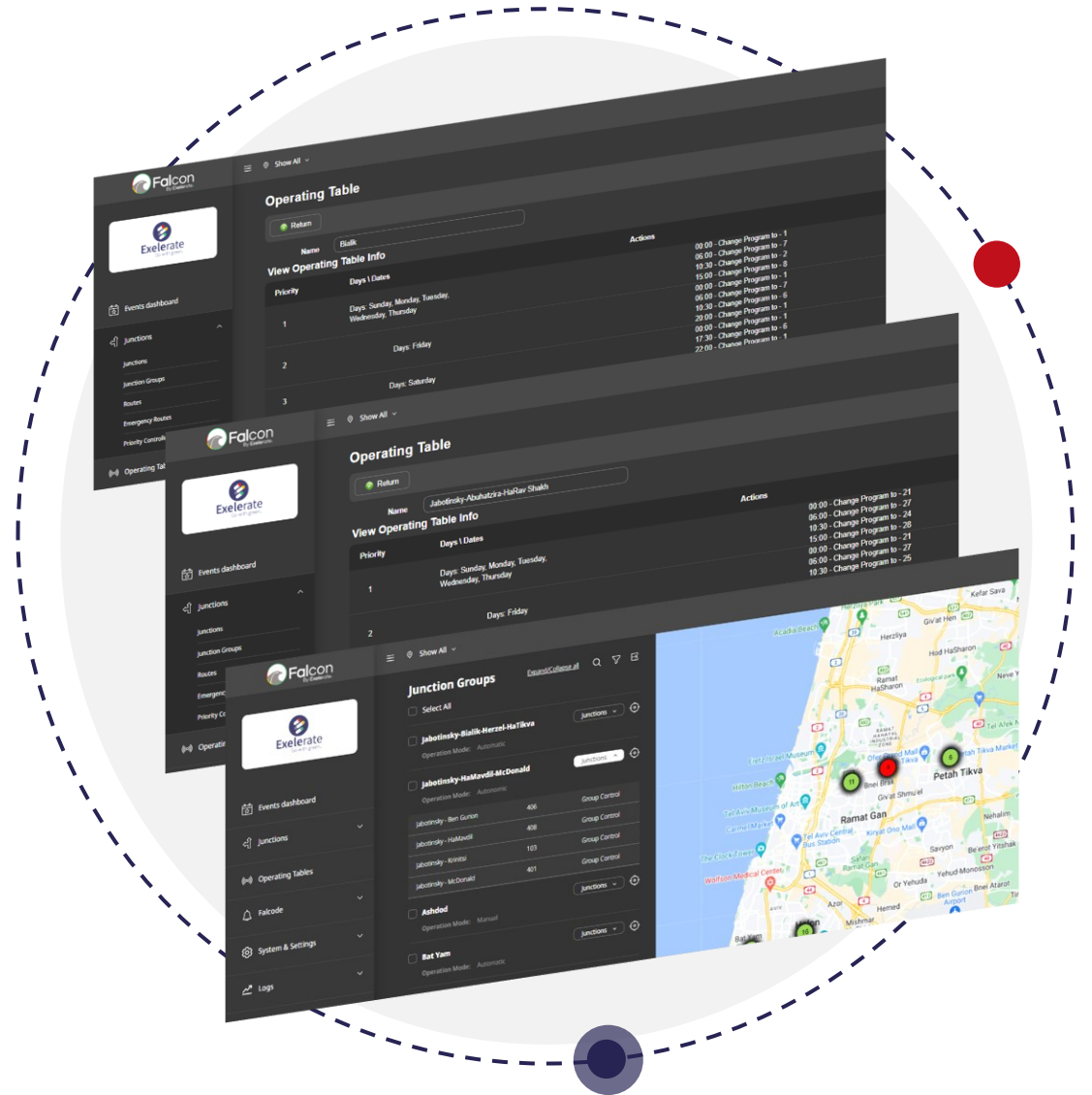
# Time of Day Control and Grouping

Falcon includes a comprehensive **Scheduler Module** which defines time-of-day operating tables for daily, weekly, calendrial, and one-time events.

**Groups of intersections** can be defined, including affected intersections.

The systems allows creation of traffic plan **configuration and patterns** for intersection groups.

The system allows to execute **ad-hoc actions** on a group of intersections (as per regulatory limitations).





# Xcaliber

Xcaliber is an adaptive AI based traffic control algorithm implemented in Falcon.

The algorithm inputs a very wide range of data sources, which allows to predict the effects of traffic in new unique vectors.

The algorithm allows traffic operators and engineers to actively configure its operation to align with the city's traffic policy.

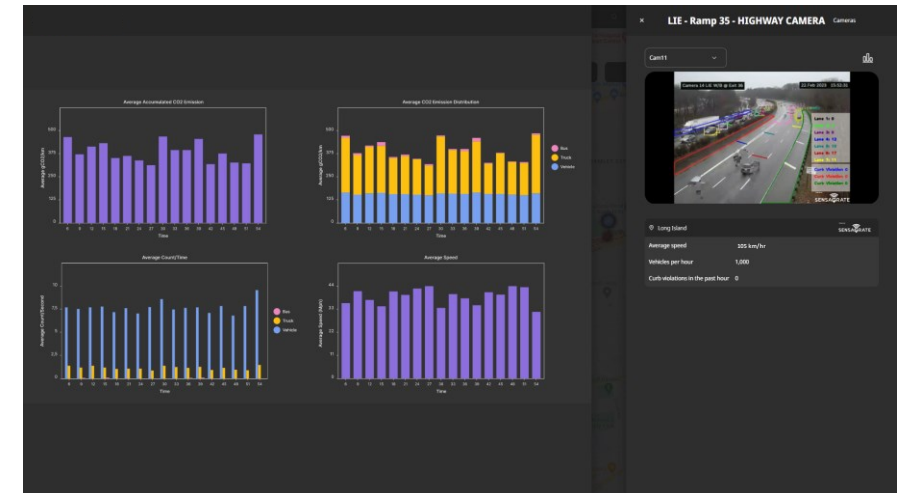
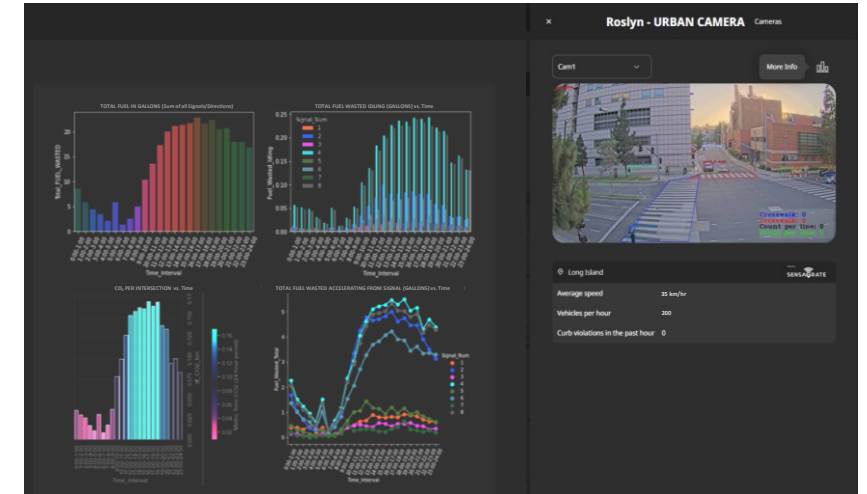


Xcaliber AI based adaptive algorithm combines several state-of-the-art AI models bound together into one functional algorithm for traffic optimization of intersections, corridors, and cities.

Fully activated by Q3-Q4 2023

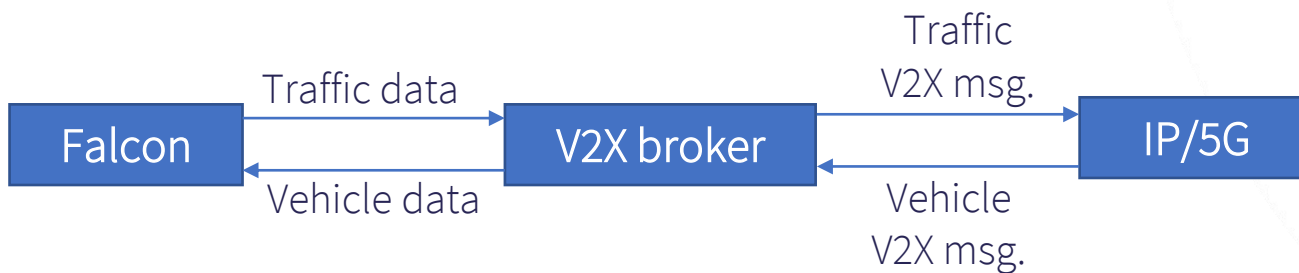
# Converting Analytics to Actions

- Falcon includes an **Analytical Module** that can provide a wide variety of data analyzed from CCTV cameras or LIDAR feeds. These include:
  - Average fuel consumption or CO<sub>2</sub> emissions in idle, acceleration and movement of vehicles / time
  - Classification of Average CO<sub>2</sub> emissions per vehicle / time
  - Vehicle counting
  - Vehicle classification
  - Average speed
  - Curb violations
  - Near misses
  - any many more...
- This data is used in order to create automatic or manual traffic actions



## V2X and Falcon

- Falcon includes a V2X broker module that acts as bi-directional “translator” that:
  - Transfers that traffic light information that is collected by Falcon via standard “MAP and “SPaT” messages.
  - Transfers standard vehicle V2X message to Falcon (including priority) which can be used to trigger traffic related actions.
- The messages can be transmitted over IP or via 5G.
- Architecture scheme



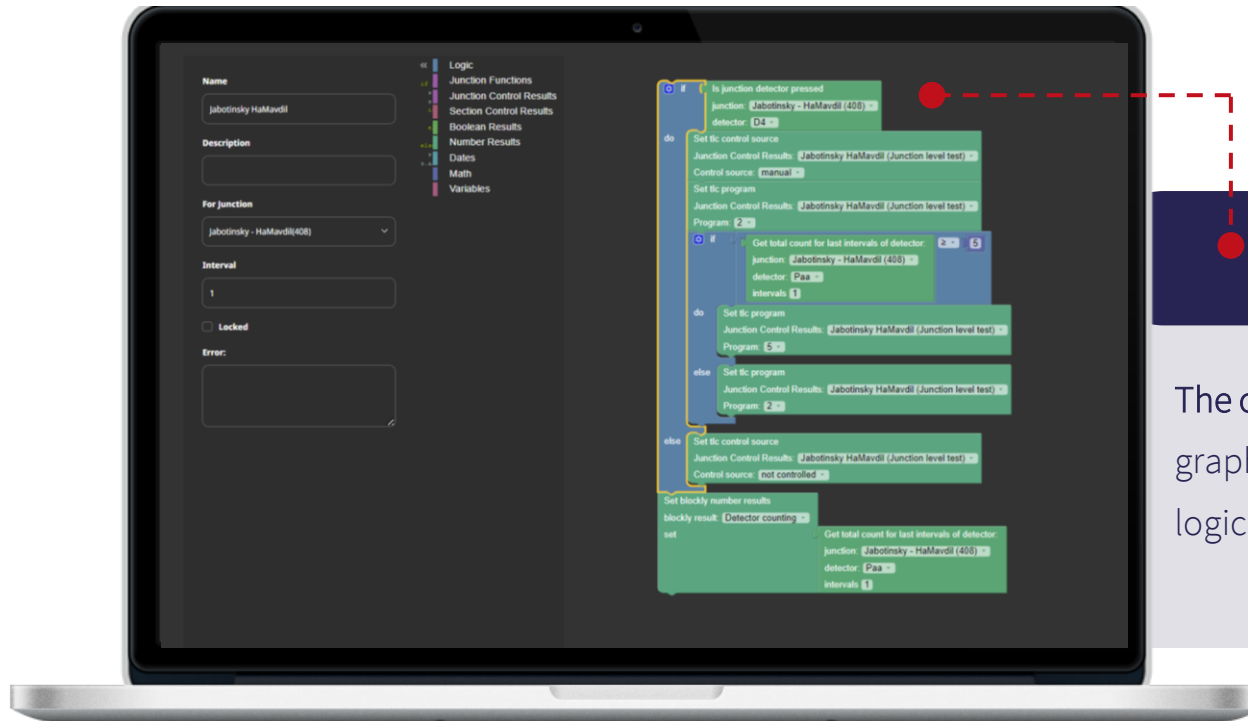


## DSS and BI

- Falcon includes a decision support system (DSS) module which assists traffic operators to make educated operational day-to-day decisions.
- The DSS provides recommendation for the traffic operators on methods to better execute the city's traffic policy and reduce congestion by changing traffic plans or specific parameters.
- A **BI module** assists the traffic engineers and traffic operators to review historical information, perform analysis, and get deeper insight on traffic behavior and trends.



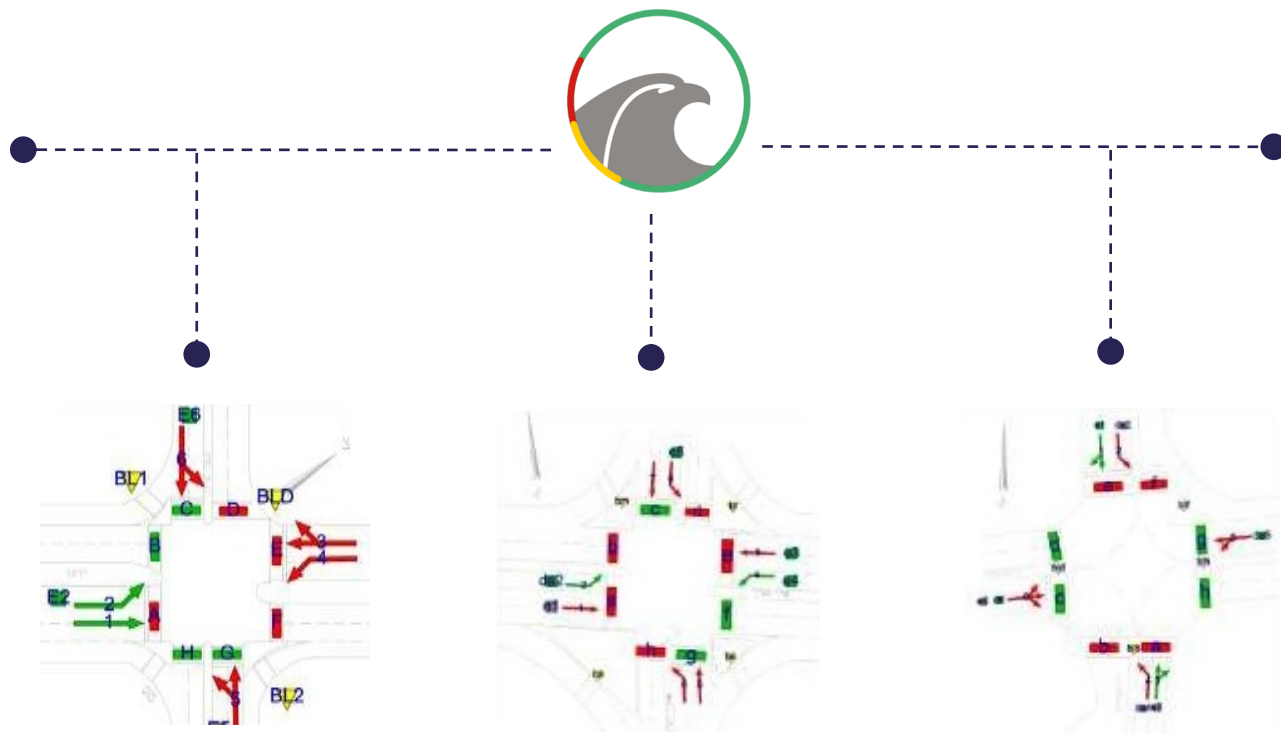




## Falcode

The control system allows to set logic signals by graphic “coding” based on blocks of functions and logic actions in an easy “drag-and-drop” manner.

# Signal Synchronization



Transferring and synchronizing signals between intersections.

Operation and management of Green-Waves

Synchronization is performed via wired and wireless (e.g., cellular) communication.



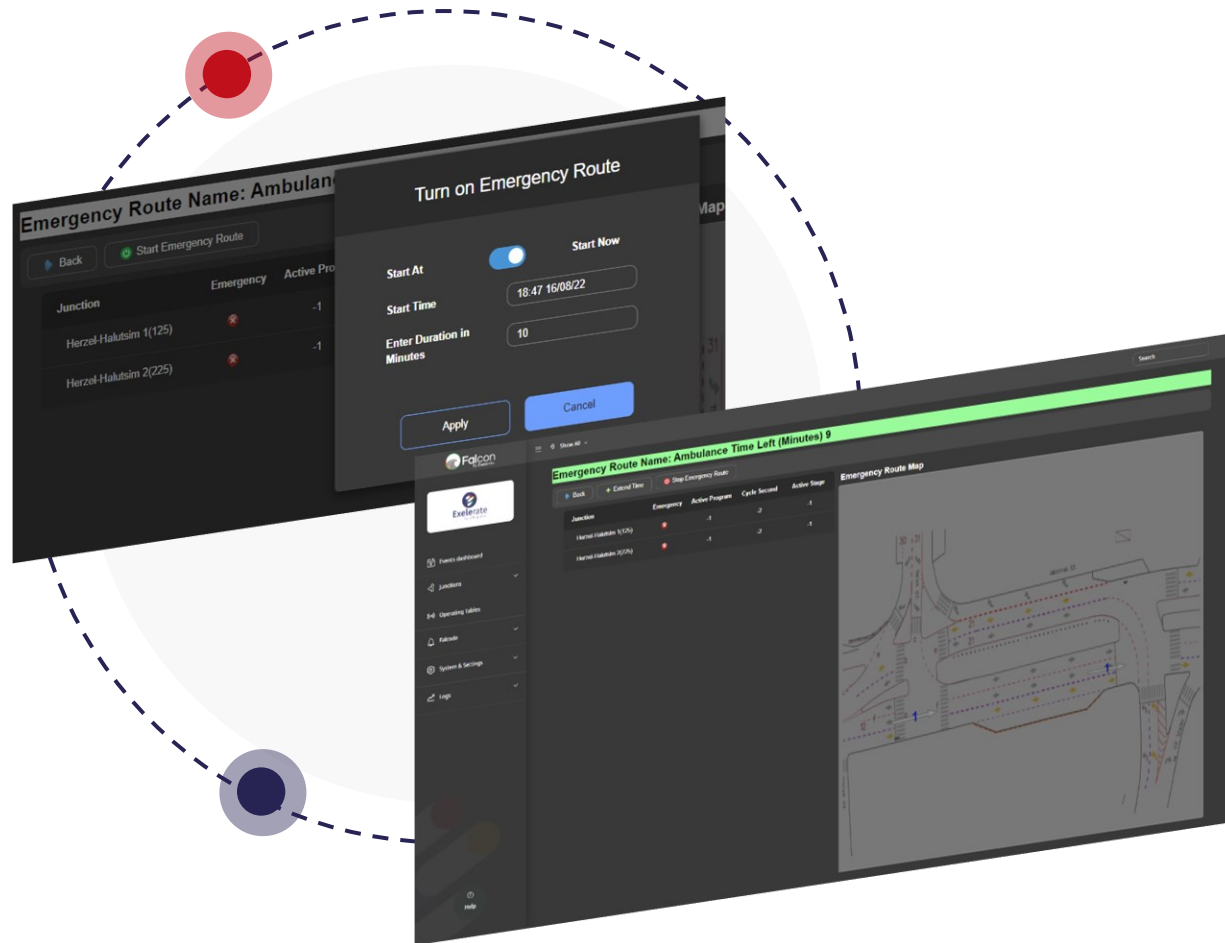
## Policy based priority

The system can provide priority control for vehicles including public transportation (buses, rail, light rail), emergency vehicles, pedestrians, micro-mobility, or vehicles.

All of the different road users can be taken into consideration to develop a unified priority function that is dependent in accordance to the city policy.



# Emergency Routes



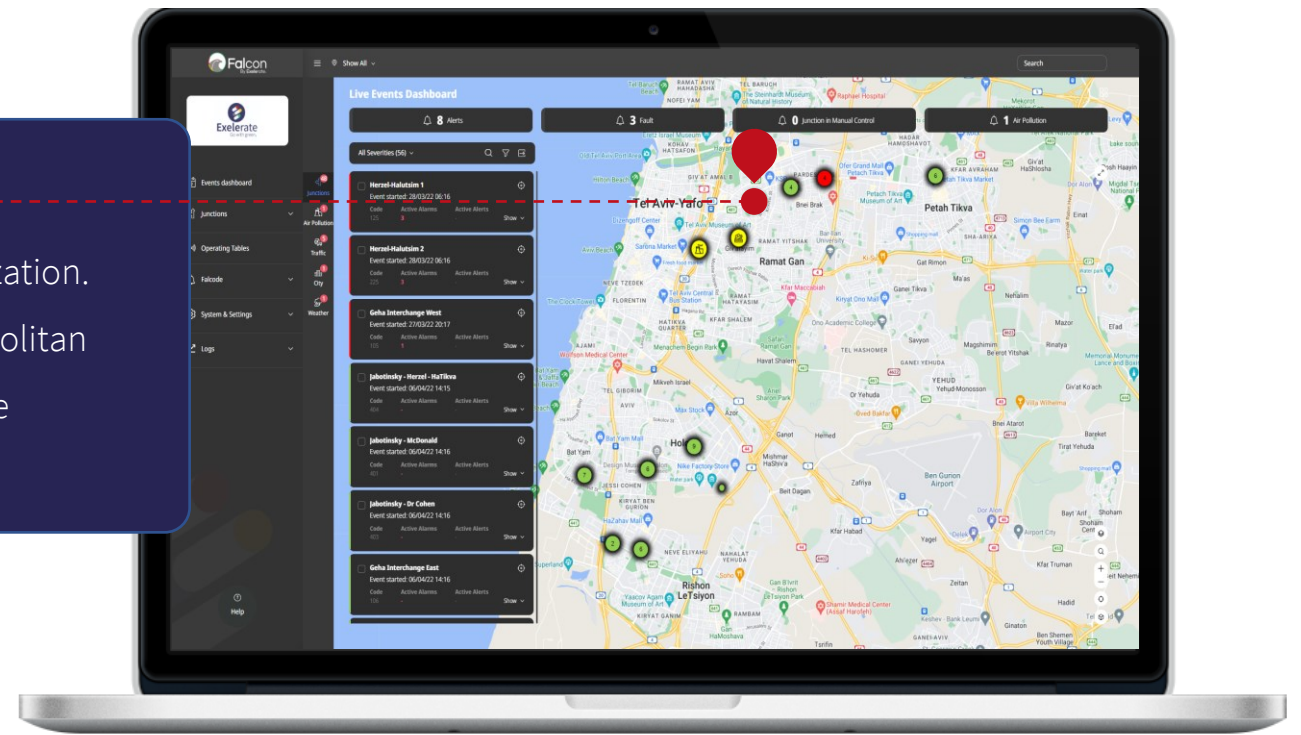
Defining intersections and routes to be open in emergency cases upon demand either manually or automatically.

For example – changing a corridor behavior to continuous green in order to expedite an ambulance event (vehicle presence can be transmitted via beacon, fleet management integration and other means).

# A Metropolitan System

Falcon can control traffic lights of a complete metropolitan giving each municipality access to the traffic lights of their jurisdiction and the governmental authorities an ability to view/control the whole network.

Each intersection “point” can be accessed for viewing and amending its activity per user authorization. The infrastructure “owner” gets a complete metropolitan access. The municipality accesses the infrastructure within its own borders.





**THANK YOU!**

Go With Green.



**Exelerate**

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