

SWARCO  
**SMART GREEN**  
INTELLIGENT SOLUTIONS FOR SMART CITIES

SWARCO | The Better Way. Every Day.

SWARCO is a growing international group providing the complete range of products, systems, services and solutions for road safety and intelligent traffic management.

With five decades of experience in the industry, the corporation supports the growing mobility needs of society with turnkey systems and solutions in road marking, urban and interurban traffic control, parking, public transport, infomobility and street lighting. Cooperative systems, I2V communication, electromobility, and integrated software solutions for the Smart City are latest, future-oriented fields in the group's portfolio.

[www.swarco.com](http://www.swarco.com)



The Better Way. Every Day.





SWARCO has for over 50 years provided innovative traffic solutions across the globe – creating better accessibility on roads, improving traffic safety and reducing our environmental footprint.

Traffic management is an essential part of modern mobility by contributing to a more effective use of the existing network, creating a safer, quicker and more environmental journey for the travelers. Smart Green is our new line of traffic management solutions which includes a range of great features for planning, managing and optimizing intersections and traffic flow in your city.

Higher traffic volumes and fast-growing urbanization represents some of the biggest challenges to cities around the world – both today and in the future. The key is to use a more advanced traffic management system that is both easily configured and adaptable, and able to take full advantage of emerging technologies for optimal control of traffic in your city.

Our Smart Green solutions provide you with complete flexibility and the possibility to adapt the traffic for the citizens and not the other way around. Using advanced sensor technology, cloud computing and traffic simulation algorithms, we make it possible to predict and adapt to changing scenarios in the daily traffic.

In this brochure you will also find our new ITC-3 Traffic Controller and SWARCO MyCity Monitoring which are great additions to any Traffic Management system and works perfectly combined with Smart Green.

We can offer the right solution for any challenge that you may be facing, no matter if it is for larger cities, small municipalities or highway systems. With the experienced team of SWARCO engineers and our efficient line of tools and hardware, we can create tailor-made solutions for congested areas and take control of traffic the better way, every day.

# LET US INTRODUCE OUR MOST POWERFUL TRAFFIC SOLUTIONS

# OUR SOLUTIONS

MAKE YOUR CITY SMARTER



## SMART GREEN

Make your intersections smarter with SMART GREEN, you will find a number of great features for planning and managing intersections.

[READ MORE AT PAGE 6](#)



## ITC-3 TRAFFIC CONTROLLER

With the new ITC-3, you will get a versatile traffic controller that is built for the future. The ITC-3 Traffic Controller is designed for controlling traffic with maximum safety under all possible conditions.

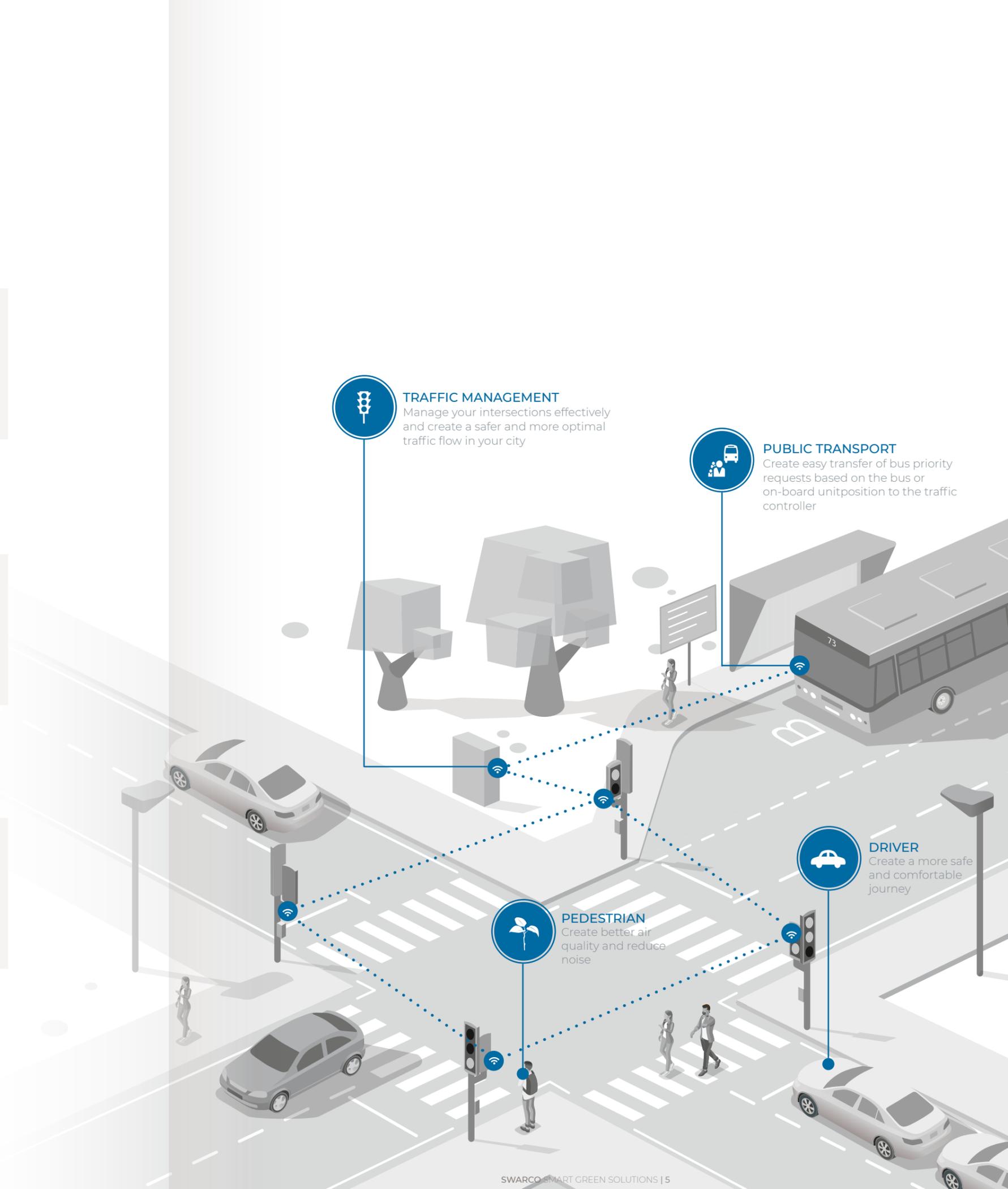
[READ MORE AT PAGE 16](#)



## MYCITY MONITORING

SWARCO MyCity Monitoring is a modern and scalable monitoring solution for single intersections and large cities.

[READ MORE AT PAGE 20](#)



### TRAFFIC MANAGEMENT

Manage your intersections effectively and create a safer and more optimal traffic flow in your city



### PUBLIC TRANSPORT

Create easy transfer of bus priority requests based on the bus or on-board unit position to the traffic controller



### DRIVER

Create a more safe and comfortable journey



### PEDESTRIAN

Create better air quality and reduce noise

# SMART GREEN

## SMARTER CITIES WITH SMART GREEN

Connected traffic systems, which offer flexibility and efficiency are a key factor when facing challenges as the rising urbanization, the environmental impact and creating a more comfortable and pleasant everyday experience for your citizens.

Our Smart Green solutions provide you with complete flexibility and the possibility to adapt the traffic for the citizens using advanced technology which makes it possible to predict and adapt to changing scenarios in the daily traffic.

Creating smarter cities starts with better management of the intersections, and more effective use of the existing infrastructure. In our current age of "Internet of Things", connecting and optimizing the traffic network will reveal new possibilities for more efficient transportation, meaning a more varied range of mobility choices to the citizens enhancing city life.

Smart Green provides a range of innovative solutions for planning and managing intersections. The solutions include a selection of intelligent tools which optimize the traffic flow, by programming traffic light cycles in real-time. When traffic lights are all coordinated responsively to requests, the risk for traffic jams can be minimized – reducing air pollution and traffic congestion by more than 30%.

From a single intersection up to large number of complex intersections, there is always a solution with Smart Green from SWARCO. With our experienced team of engineers, and our efficient software tools, we can create a tailor-made solution which suits your needs.



**SMART PRIORITY**



**SMART PLAN**



**SMART INTERSECTION**



**SMART CORRIDOR**

# SMART PRIORITY

## INTELLIGENT PUBLIC TRANSPORTATION

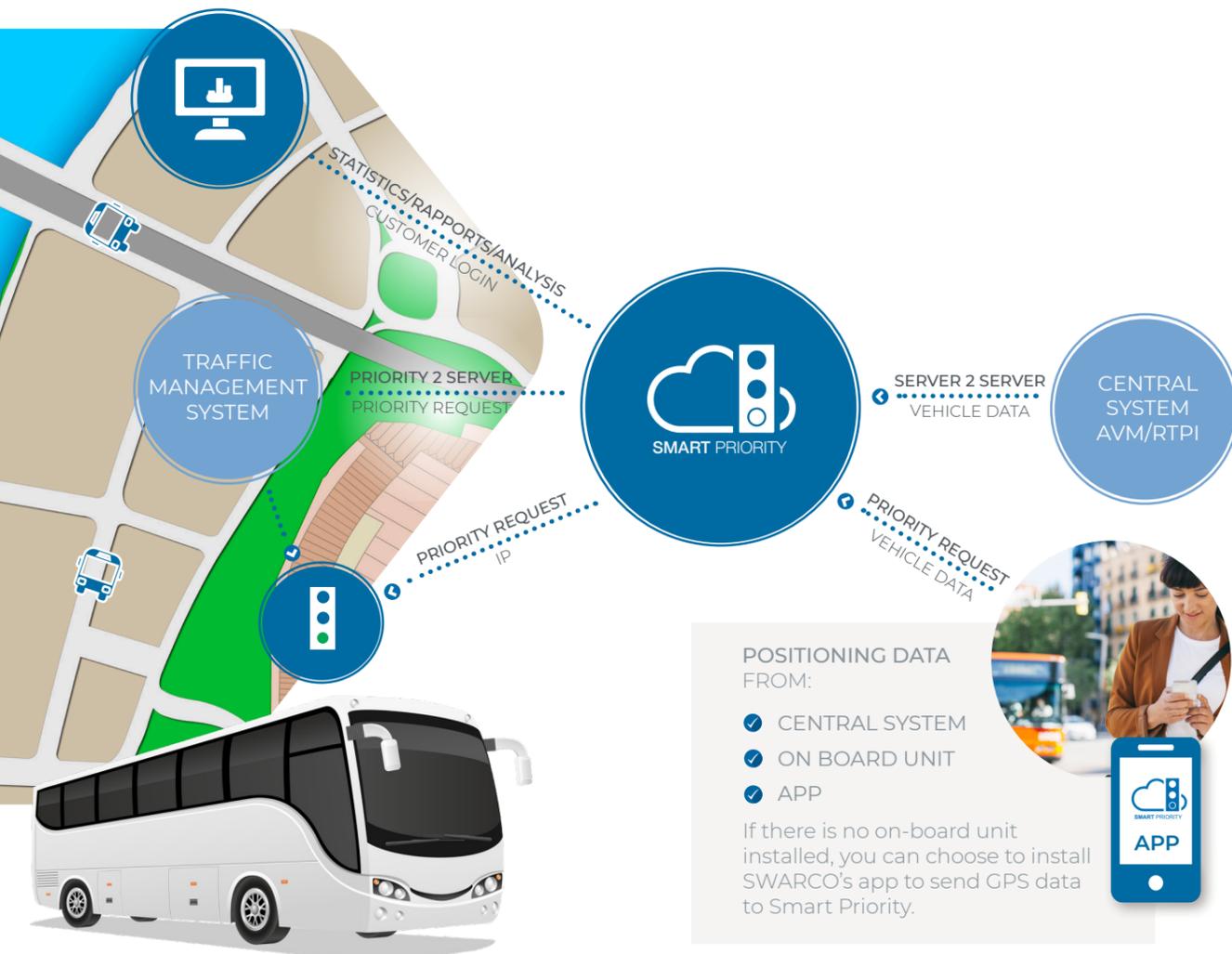
Smart Priority is a cloud-based solution for easy transfer of bus priority requests based on the bus or on-board unit position to the traffic signal controller. It uses the existing communication infrastructure and is scalable to fit both small and large bus fleets, this to provide a cost-efficient way of improving travel times.

The solution prioritizes requests based on the position of the bus which is received from a real-time system server. It utilizes virtual detectors that can be placed and rearranged depending on the current situation on the street.

Priority requests are transferred from Smart Priority to the Traffic Controller and included in the existing algorithms. In the web based graphical interface you can monitor, interact and review performance and statistics.

### SYSTEM OVERVIEW

Cloud-based central software system



OPTIMIZE  
PUBLIC  
TRANSPORT



Cloud-based



Suitable for both small  
and large fleets



Environmental  
friendly



Improves  
travel time



Easy to maintain



Cost-efficient

# SMART PLAN

## OPTIMIZE AND PLAN YOUR TRAFFIC

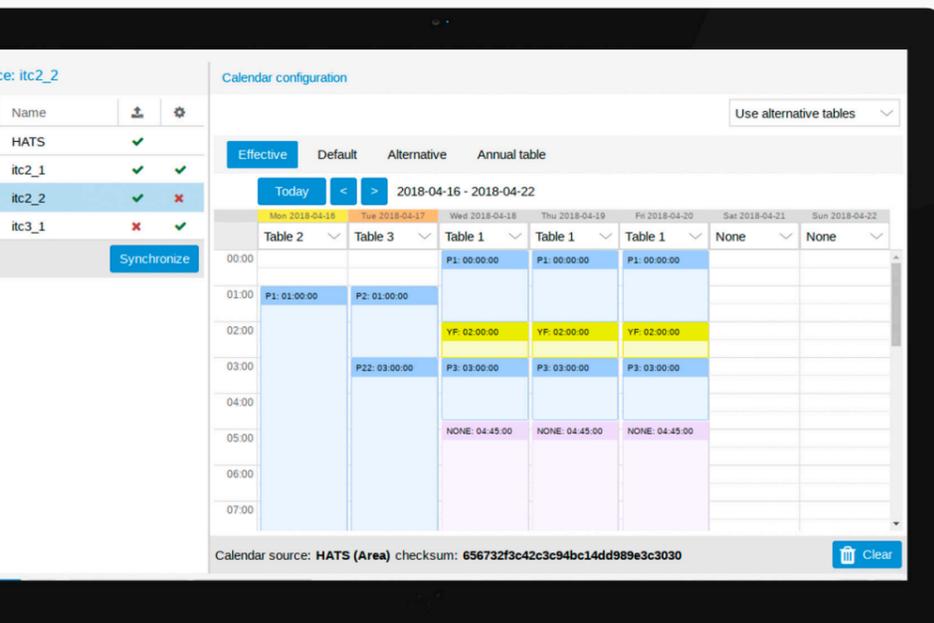
Observing a city's traffic is a fundamental task of traffic management. Information about the traffic network comes from sensors and detectors, e.g. loops and traffic cameras, video cameras, and other sources. Smart Plan is a selection system with cloud access. Set up a full urban environment for plan management. Set up calendar sharing between intersections to quickly adjust several intersections at once.

Smart Plan is an easy-to-use plan selection system with cloud access, which synchronizes the plans for the traffic controllers in each area to create more efficient traffic flow. This is done by sharing a shared calendar logic for the selected controllers and letting this logic control the plan selection.

The Smart Plan cloud plug-in running on a controller contains a calendar logic similar to the one used in our ITC-3 Traffic Controller. It supports setting plans at given times by using its own calendar configuration to inform ITC Traffic Controller which plan to choose.

### KEY BENEFITS

- ✓ Create the most optimal traffic conditions
- ✓ Minimize air pollution in your city by optimizing traffic flow
- ✓ Get instant feedback on the performance of your intersections
- ✓ Easy set-up and configuration



Optimize traffic conditions



Instant feedback on performance



Easy set-up and configuration



Full flexibility

OPTIMIZE  
YOUR  
TRAFFIC

# SMART INTERSECTION

## OPTIMIZE GREEN TIME

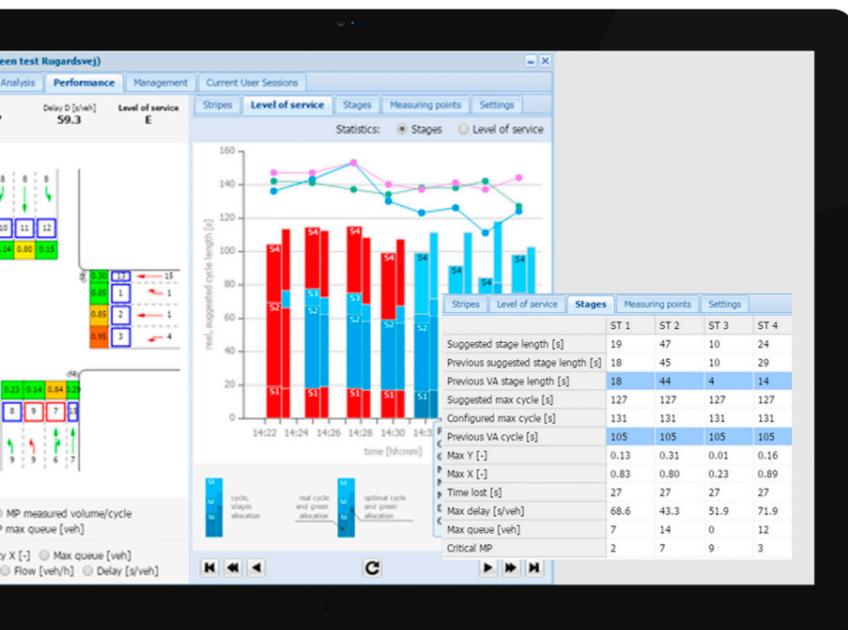
One of the major problems at signalized intersections is lack of maintenance on the traffic time plans. Outdated signal settings are the cause of unnecessary traffic jams, higher emissions and frustration among the drivers. One of the reasons for the situation is lack of simple solutions, including available tools on a local level. Tools that can help estimating service level at a signalized intersection. SWARCO's Smart Intersection is a software package installed locally in the controller, that optimizes green times for the signal groups in your intersection.

Smart Intersection is an adaptive traffic control solution for an isolated intersection and is designed to measure the level of service on an individual intersection and evaluate optimal cycle length and the green split in order to minimise the overall delays, number of stops, pollution and fuel consumption. SWARCO came up with an idea to provide such a tool directly on the local level making the capacity evaluation algorithm part of the traffic controller software.

The aim of Smart Intersection is to maintain an optimal allocation of green time and to reduce or increase the cycle length time in accordance with prevailing levels of traffic demand. This means that ineffective green time is minimised and that the system adapts to the traffic situation.

It is an innovative approach having such a powerful adaptive traffic control logic build in the controller software. It allows adaptive operations locally without the need for a central level. This is a way to reduce the licensing and infrastructure costs but also simplify the installation and maintenance procedures.

User-friendly and intuitive programming user interface is an additional strength. An advanced programming tool with the 3D junction layout makes the advanced traffic control solution easy to implement and understand for the traffic engineers.



MAKE  
YOUR  
INTERSECTION  
SMARTER



Optimize green times  
in an intersection



Minimize air pollution



Create optimal  
traffic conditions



User-friendly  
web interface



Easy set-up and  
configuration

# SMART CORRIDOR

## CONNECT AND OPTIMIZE INTERSECTIONS

Get complete flexibility and the possibility to adapt the traffic for the citizens using advanced technology which makes it possible to predict and adapt to changing scenarios in the daily traffic.

Smart Corridor is an adaptive dedicated traffic control solution for co-ordinated signalized corridors. It is a software package that decides optimum cycle length for a whole corridor and supports individual junctions with the cycle split estimation. With the Smart Corridor the cycle change and split are applied gradually in order to always maintain the coordination path. The rule can also deal with another intersection some distance away which shall run a different cycle length at some point of the cycle change transition.

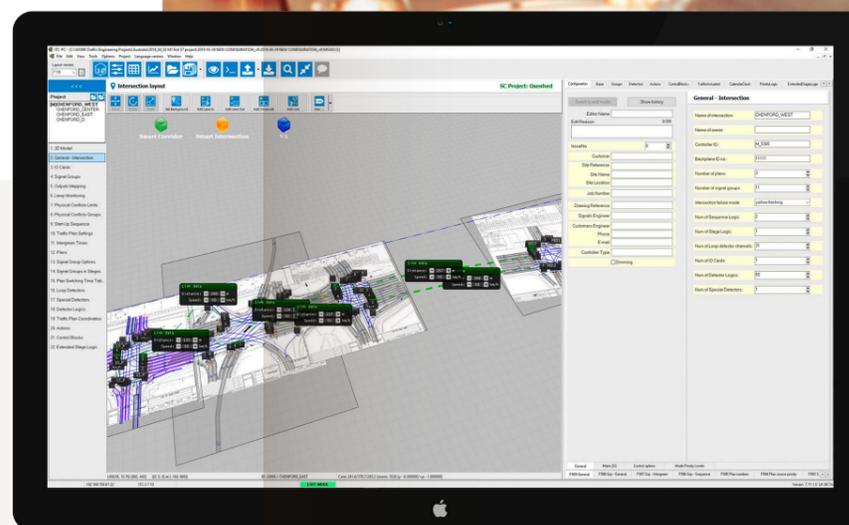
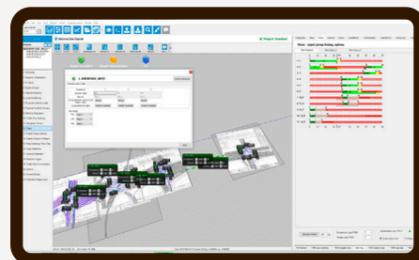
Together with the Smart Intersections reporting evaluated performance factors from each individual junction, the traffic algorithm can decide either to fully support the coordination path or resolve some oversaturation problems measured on intersection's side roads or left turn movements.

The variety of different options makes the solution very modular. It is the user that can decide level of adaptiveness on the individual junction and the individual junction impact on the traffic control strategy for a whole corridor.

### KEY BENEFITS

- ✓ Complete control of a network of intersections with an intercom system
- ✓ Optimize green time and coordination in every single intersection
- ✓ Updating of each cycle based on traffic detection
- ✓ Gathering traffic data inside and outside of the system
- ✓ Every system is customized, but can be changed or optimized if needed

### SCREENSHOTS



Complete control of your intersections



Full flexibility



Collect useful traffic data



Minimize traffic congestion



Easy set-up and configuration

OPTIMIZE  
FOR  
GREEN  
WAVES

# ITC-3 TRAFFIC CONTROLLER

BUILT FOR THE FUTURE

With SWARCO's new ITC-3, you will get a versatile traffic controller that is built for the future. The controller can manage all existing signal heads and is designed for controlling traffic with maximum safety under all possible conditions. The integral easy-to-use interface provides engineers a fully flexible solution for easy configuration and signal status confirmation.

While being fully scalable, it also supports a wide range of adaptive traffic control functionalities, making it the perfect choice for all types of intersections. The controller can improve the performance of intersections easily with 25% or more, by optimizing the cycle time and the result is a significant reduction in travel time.

Cooperative ITS is a greatly emerging field. SWARCO has drawn its competences in traffic together to be able to offer great integration in its products. The ITC-3 comes by default with C-ITS/C2X support and integration into the traffic algorithm is constantly evolving. By working together with authorities, automakers and suppliers, the ITC-3 is on the forefront of this innovation.



## KEY BENEFITS

- ✓ **Cost effective rack system**  
With up to 24 signal groups in one single 19" rack
- ✓ **VGA Touchscreen 800x480**  
Makes it easy to maintenance and program the controller
- ✓ **Innovative Adaptive Traffic Algorithms**  
Calculates flow to capacity for every cycle and optimizes cycle time and green split for a single intersection.
- ✓ **ITC-PC Programming tool**  
Powerful 3D graphical programming tool makes it easy to configure the controller even with advanced adaptive programs.
- ✓ **C-ITS functionality**  
Newest innovation like TLA (Traffic Light Assistant, Time to Green and Time to Red) are already included in the ITC Firmware



BUILT FOR  
SMART CITIES



Optimal performance



High safety



Compact design



User-friendly

# ITC-3 TRAFFIC CONTROLLER

## SOFTWARE FUNCTIONS

The ITC-3 controller is state of the art in its design, running a Linux based system on a modern and reliable ARM-based platform, with tight integration of dual safety CPUs and all required hardware to run an intersection in a single rack.

The controller can be serviced through the built-in touch screen and web interface and connects to a wide range of systems. The Hardware and Software platform used in ITC-3 makes it easy to upgrade for new innovations and this makes the ITC-3 controller future safe.

### KEY FEATURES

- ✓ 32 traffic plans available per stream with standard parameters for programming of local and central co-ordination
- ✓ Cableless linking is possible with a GPS or main synced clock source. One controller can control up to 8 fully independent
- ✓ One controller can control up to 8 independent intersections streams
- ✓ Each stream can have 16 stages. Each stream can be operated fully independently
- ✓ The logic is signal group controlled with a full conflict matrix between all groups



### EASY TO SET UP AND MAINTAIN

The ITC-3 controller is state of the art in its design, running a Linux based system on a modern and reliable ARM-based platform, with tight integration of dual safety CPUs and all required hardware to run an intersection in a single rack. The controller can be serviced through the built-in touch screen and web interface and connects to a wide range of systems.

The Hardware and Software platform used in ITC-3 makes it easy to upgrade for new innovations and this makes the ITC-3 controller future safe.

### CONFIGURATION AND TESTING

A Windows based, easy-to-use software tool is provided, enabling config simulation directly from a standard PC or mobile device.

## TECHNICAL INFORMATION

<b>Basic sizes</b>	<b>ITC-3 RAC 24/40:</b> 19" rack model, max 24 signal groups and 40 loop detector inputs <b>ITC-3 RAC 6/16:</b> 11" rack model, max 6 signal groups and 16 loop detector input
<b>Voltage</b>	40 VAC, 42 VAC, 48 VAC, 110 VAC, 220 VAC, 230 VAC
<b>Ambient temperature</b>	-40C to +80C
<b>Load per output</b>	Max 500VA
<b>I/O interfaces</b>	5-48V, 100mA
<b>Total Output</b>	3.7kVA (24 Phase)
<b>Cabinet</b>	Large 655x1244x450mm, Small 467x944x450mm
<b>Communication</b>	RS232, Ethernet, USB
<b>System Connections</b>	SCATS, SCOOT, NTCIP, ITAKA, Omnia/SPOT
<b>Certification</b>	EN-12675, EN-50293, EN-50556, TOPAS TR2500A

### OTHER GREAT FEATURES

- ✓ **Enhanced temperature range**  
ITC controllers are tested under all weather conditions from Artic to Equatorial environments
- ✓ **ITC-Sim**  
Simulator that gives the opportunity to test and optimize controller programming directly on a PC with no need for extra hardware.
- ✓ **Web interface**  
Can be used as supervision and control system or as a back-up system to easy service and maintenance the controller.
- ✓ **Connect to the world's most common systems**  
I.e. SCATS, SCOOT, Artic, ITAKA, NTCIP, Omnia

# SWARCO

## MY CITY MONITORING

### SMART TRAFFIC SOLUTIONS

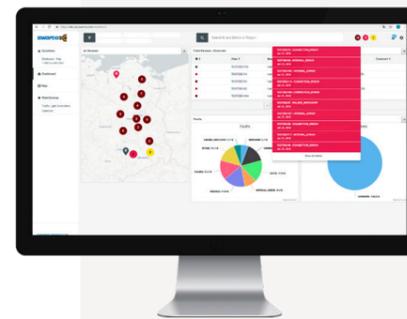
SWARCO MyCity Monitoring is the simple and elegant response to a fundamental and important problem for Intelligent Traffic Systems.

It resides on SWARCO MYCITY – the modular urban traffic management platform – and succeeds the well-established systems “Omnia Basic”, “SWARCO CLOUD” and “topic”.



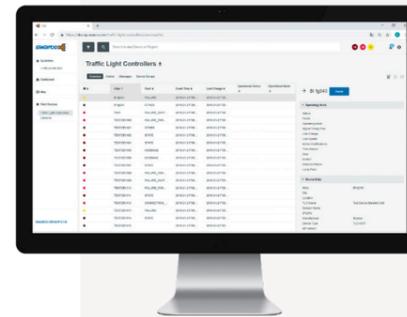
#### KEY BENEFITS

- ✓ **REAL-TIME ALERTS & HISTORICAL DATA**
  - Customized dashboard
  - Monitoring in real-time
  - Export historical data
  - Keep track of user log
- ✓ **MODERNE & SCALABLE**
  - Common core for every customer = fast implementation of system updates
  - User friendly Interface
  - Accessible with all digital devices
  - Single Sign-on
- ✓ **SWARCO MYCITY - UPCOMING FEATURES**
  - One platform – many features
  - Control and monitor all city traffic with one solution
  - Easy to set up new features
- ✓ **POSSIBILITY TO GROW**
  - Add-ons and new features
  - Multi-users & multi-tenant with differentiated rights
  - Suitable for most TLCs on the market



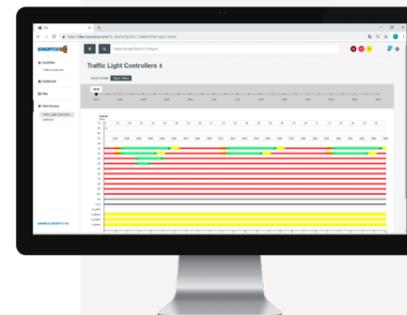
#### THE DASHBOARD - ALARM MANAGEMENT 24/7

- ✓ Alarm classification and distribution streams
- ✓ Acknowledgment and suppression of alarms
- ✓ Browse and explore alarms in table, grid, or map views
- ✓ Filter of alarms
- ✓ Alarm notification for Device- and User-Groups (via E-mail, SMS or Push in App)



#### OVERVIEW OF EQUIPMENT - IN TABLE, GRID OR MAP VIEWS

- ✓ Management of devices, groups and alarm notifications
- ✓ Browse all your connected field devices (traffic controllers, cameras, parking)



#### DEVICE DETAILS - E.G DETAILS OF SELECTED TRAFFIC LIGHT CONTROLLER

- ✓ Action menu with links to the following functionalities
- ✓ Overview of connected cameras
- ✓ Second by second log for signal groups and traffic detector state for a TLC



Monitor of alarms, devices and equipment



24/7 operated cloud-based solution by SWARCO



Multi-device support to provide access from mobile and tablet



Standardized system with customization possibilities to meet customer needs



Direct access and control of TLC's



Advanced features for all SWARCO controllers



High number of integrations to external systems and different traffic light controller interface standards

# WHO WE ARE

THE BETTER WAY. EVERY DAY. SINCE 1969

You encounter us every day on the roads of our planet. Our products, systems, services and turnkey solutions make travel safe and convenient for people on the move. In the spirit of SWARCO founder Manfred Swarovski we pride ourselves in being agile, innovative, reliable and trustworthy; and will not hesitate to go the extra mile for you.

SWARCO has an international network of production facilities, offices and partners on all continents and offers one of the most complete solution portfolios for road marking, signage, urban traffic management, parking, highway and tunnel management, public transport, and street lighting.

We connect vehicles with the road infrastructure, help in setting up charging infrastructure to boost electro-mobility and offer modular and holistic solutions with added values that support tomorrow's mobility and make life in our cities more liveable.



**50** years

The first chapter of the SWARCO story was written in 1969 when Manfred Swarovski built his first glass bead factory in Austria

**3700** mobility experts

We have a mission; as specialists in intelligent traffic management solutions, we support our customers in implementing safe, comfortable and environmentally friendly mobility.

**675 Mio. €**

The 2017 financial year brought us a new record in sales. SWARCO continues to grow and our business partners grow with us

**25** countries

SWARCO employs mobility experts in 25 countries across the globe



A BETTER  
JOURNEY