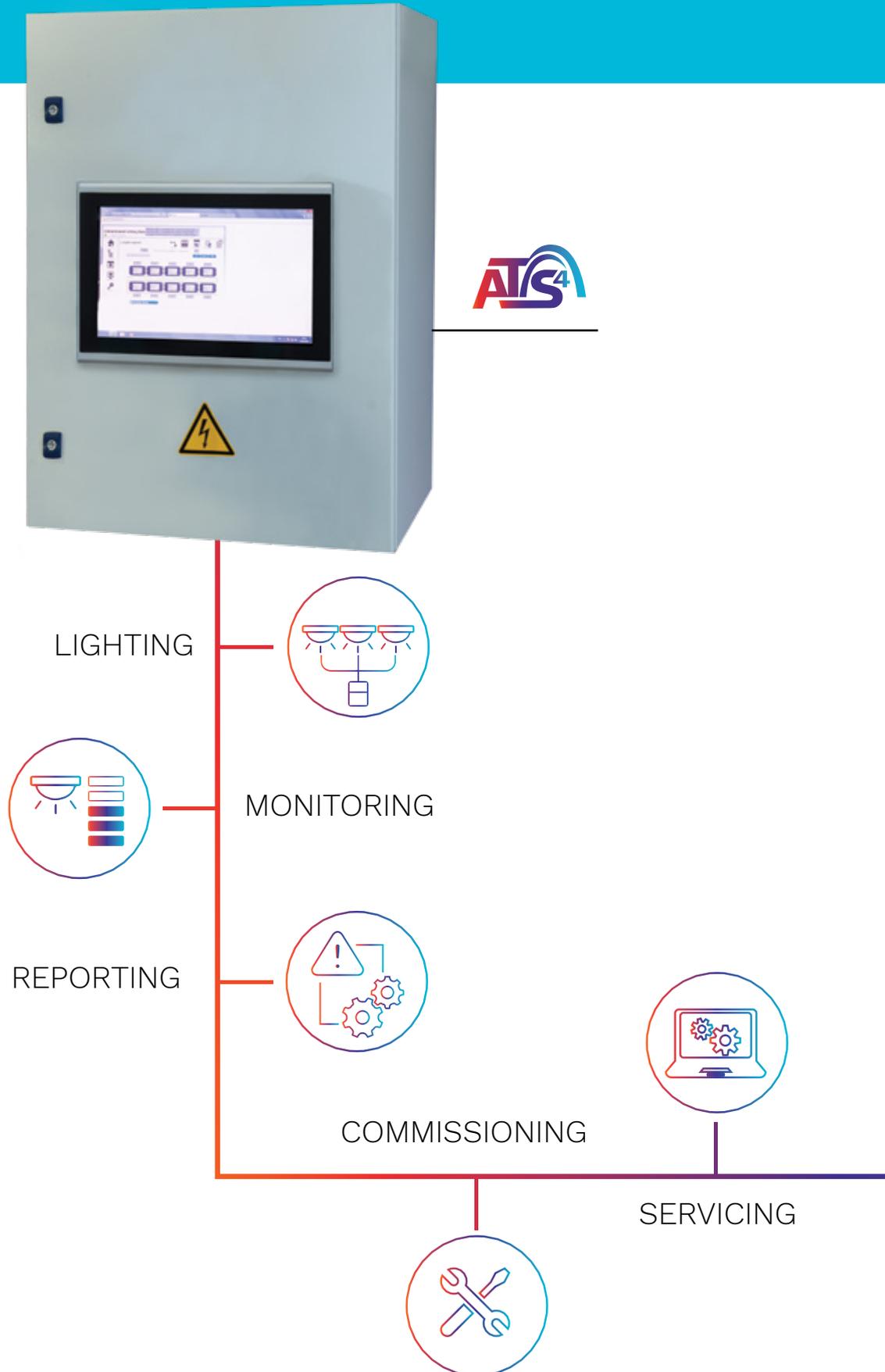


# Advanced Tunnel System 4



# A TUNNEL LIGHTING CONTROL SYSTEM BASED ON INDUSTRY 4.0 TECHNOLOGIES





INCREASE  
SAFETY

BOOST  
MOBILITY



MAXIMISE  
SAVINGS

REDUCE  
MAINTENANCE



**FOR COMPLETE TUNNEL  
LIGHTING MANAGEMENT**

# For safe and reliable tunnels

In tunnels, optimal driving conditions are essential. A reliable and robust lighting system is the key element to guarantee tunnel users the visibility and the security they need for a safe and comfortable journey.

Jointly developed with Phoenix Contact, the Advanced Tunnel System 4 (ATS 4) is a powerful tunnel lighting control system enabling **precise remote dimming and switching** of each connected luminaire, based on various tunnel parameter inputs.

**Take control** and create tunnels where motorists feel safe and confident.





# ATS 4 SOLUTION: MEET ALL YOUR EXPECTATIONS

1  
CREATE SAFE ENVIRONMENTS FOR USERS

2  
BOOST MOBILITY

3  
DESIGN SUSTAINABLE TUNNELS

4  
GENERATE SIGNIFICANT TIME AND COST SAVINGS



## URBAN TUNNEL

### CHALLENGES



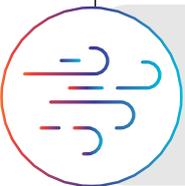
#### MOBILITY

- > Speed limit
- > Traffic density and signals
- > System maintenance



#### SAFETY

- > Visibility
- > Emergencies
- > Obstacles



#### AIR QUALITY

- > Smog alert
- > Exhaust gas



#### ✓ Increase reactivity:

ATS 4 is connected to a **SCADA** (Supervisory Control and Data Acquisition) system, capable of providing **immediate remote response** to help you quickly manage any unexpected event.

#### ✓ Anticipate any event:

ATS 4 can integrate a large selection of lighting scenarios to **adapt the light levels** to any kind of situation (natural light variations, speed limit, pollution peak).

#### ✓ Get connected to your environment:

ATS 4 can be connected to various lighting **sensors and cameras** to permanently adapt the light to indoor and outdoor conditions.



## MOUNTAIN TUNNELS

### CHALLENGES

- > Sun direction
- > Glare effect
- > Black hole effect

LIGHT  
VARIATIONS



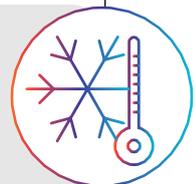
- > Wet road
- > Snow conditions
- > Road reflection

WEATHER  
CONDITIONS



- > Installation lifetime
- > Components' resistance

HARSH  
ENVIRONMENT



## SOLUTIONS

### ✓ Invest in sustainability:

ATS 4 enables **precise dimming and switching** of each connected luminaire, creating adapted lighting to what is absolutely necessary to ensure safe, comfortable driving conditions, and thus resulting in **optimised energy consumption**.

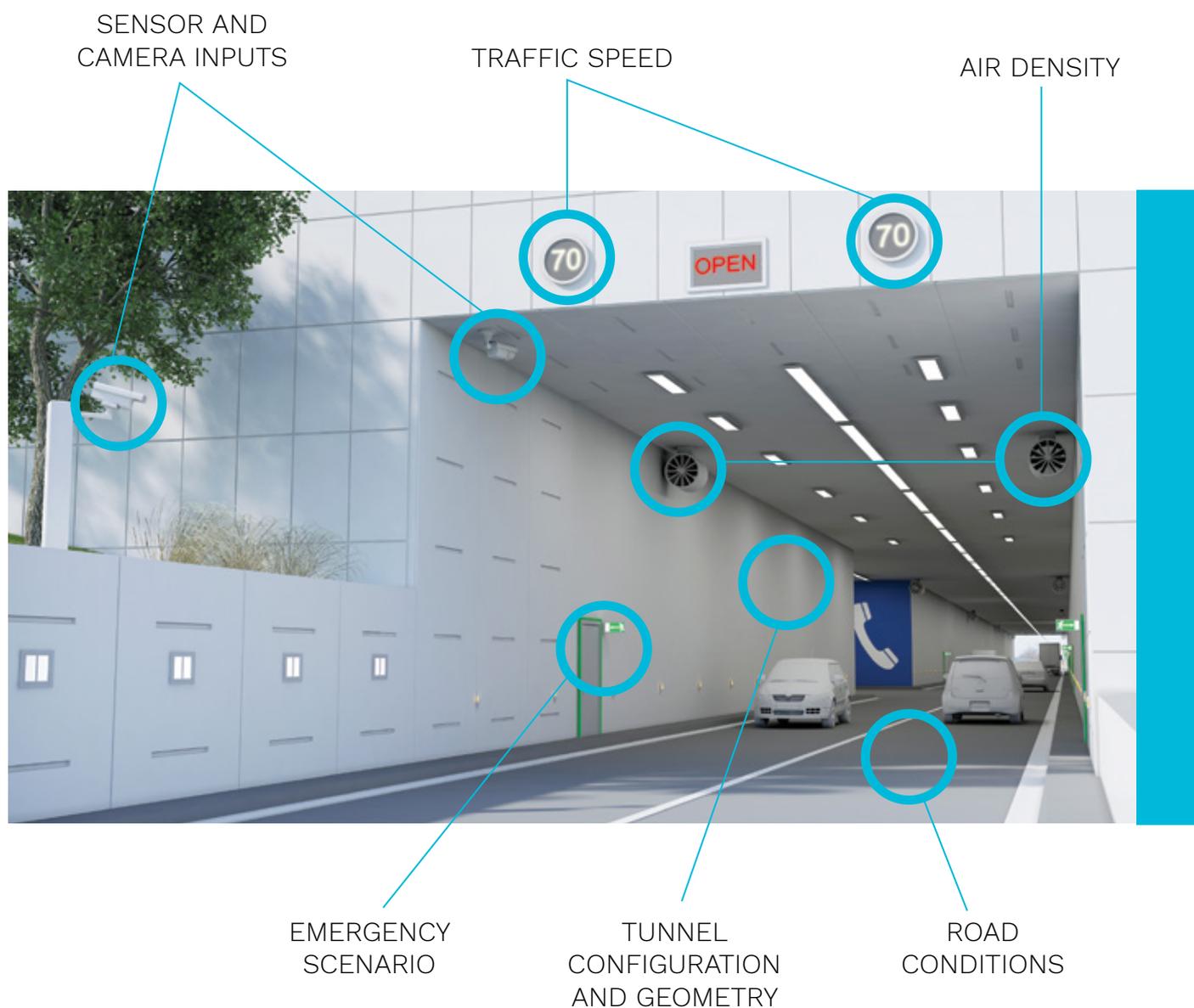
### ✓ Save valuable time:

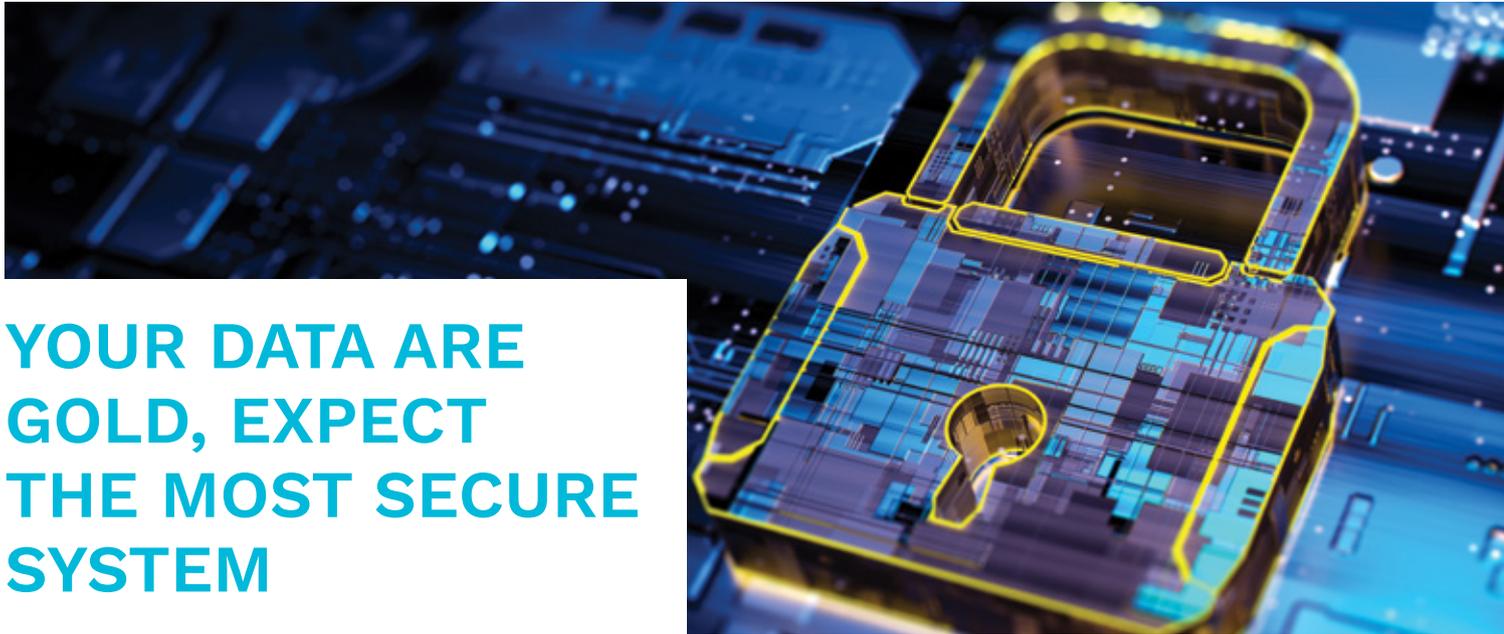
The ATS 4 reports and manages any failures or repair activities. It also enables integration of Schröder Tunnel Lighting Calculation Software and Lighting Controls System, leading to unparalleled **auto-commissioning and maintenance savings**.

# Your tunnel optimised in every way

The ATS 4 provides an optimum solution to implement a reliable and powerful lighting system in tunnels, no matter what the conditions.

Use any relevant input to define, automate and trigger the most suitable lighting scenarios.





# YOUR DATA ARE GOLD, EXPECT THE MOST SECURE SYSTEM

In the recent years, countries and continents have had to deal with new types of cyber crime, requiring higher levels of security for critical infrastructure. Tunnels are part of those infrastructure.

A lighting control system involving a wide range of critical data and functions requires **the higher level of security** to guarantee your **tunnel data** a safe journey.

That's why the ATS 4 is built on the innovative Phoenix Contact PLCnext technology, an open automation communication system compliant with the most

**highly demanding cyber security standards** such as the European **NIS Directive** (Network and Information Security EU 2016/1148) and international standard **IEC62443**.

The ATS 4 controller is **the first control system to fully comply** with both regulations and can be used in these applications.



# SAVE SIGNIFICANT INSTALLATION TIME

The Advanced Tunnel System 4 benefits from a **complete set of toolless smart cables and connectors**. This cabling philosophy is part of the complete solution provided by Schröder allowing you to **speed up system installation** and implementation.

The communication cables between the central controller and the luminaires themselves is made via an industrial Bus network, perfectly suited to **handle the high demands linked with tunnel control applications**.





**TRAFFIC  
FUNCTIONS**



**NETWORK  
INFRASTRUCTURE**



**ENERGY  
SUPPLY**



**UTILITIES**



**VENTILATION**



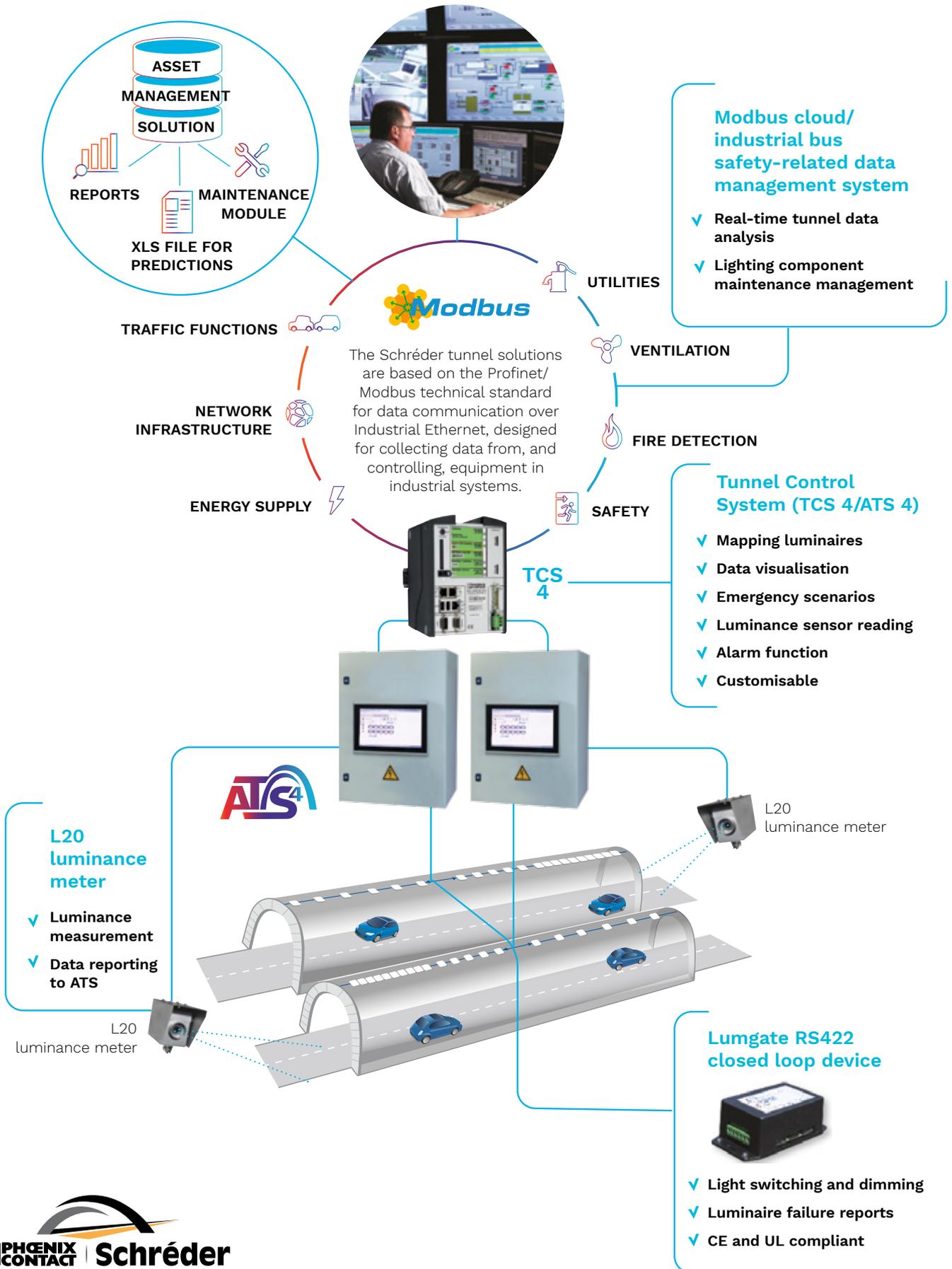
**FIRE  
DETECTION**



**SAFETY**



# ATS 4: the most complete tunnel lighting control system



# ATS 4 DALI: Tunnel lighting control system over a DALI network protocol

Provides the essential control functions of the ATS 4 in a **lean feature set**.

Enables **coordinated dimming and switching** of groups of luminaires for even more **savings**.



Equipped with a fully featured **powerful lighting control software**. No additional interface is required.

The ideal **solution** for basic tunnels or interior zones of long tunnels.

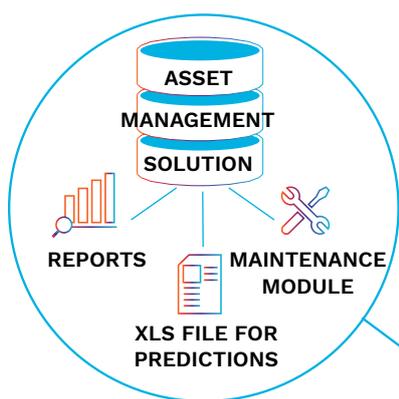


## ✓ OPTIMISED INSTALLATION

The ATS 4 DALI cabinet constantly communicates with the **ATS 4 DALI boxes**. Equipped with multiple DALI outputs (up to 64), the DALI boxes send commands to or receive data from groups of luminaires. This type of system architecture provides an optimised solution for specific tunnel needs.

## ✓ STANDARD CABLING

The ATS 4 DALI benefits from a complete set of **toolless standard cables and quick-on connectors**, considerably speeding up cabling and saving valuable time on-site.



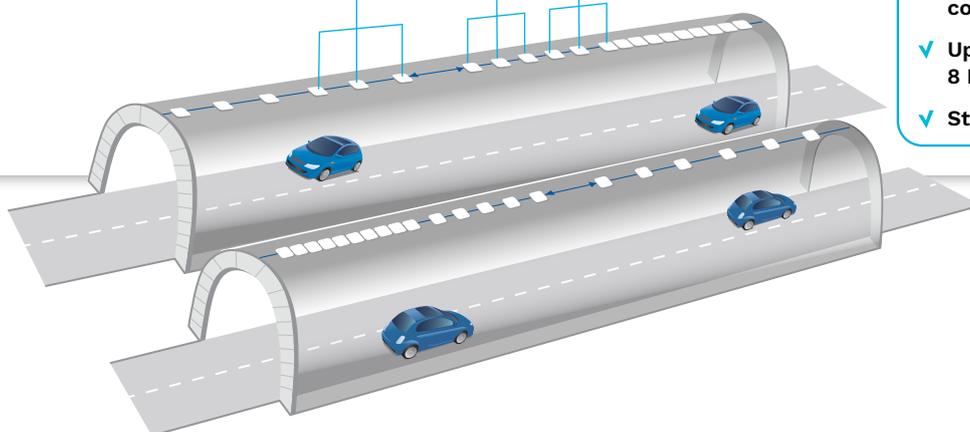
**TCS**



**DALI BOXES**



- ✓ Broadcast commanding
- ✓ Up to 64 DALI drivers  
8 DALI masters
- ✓ Standard cabling

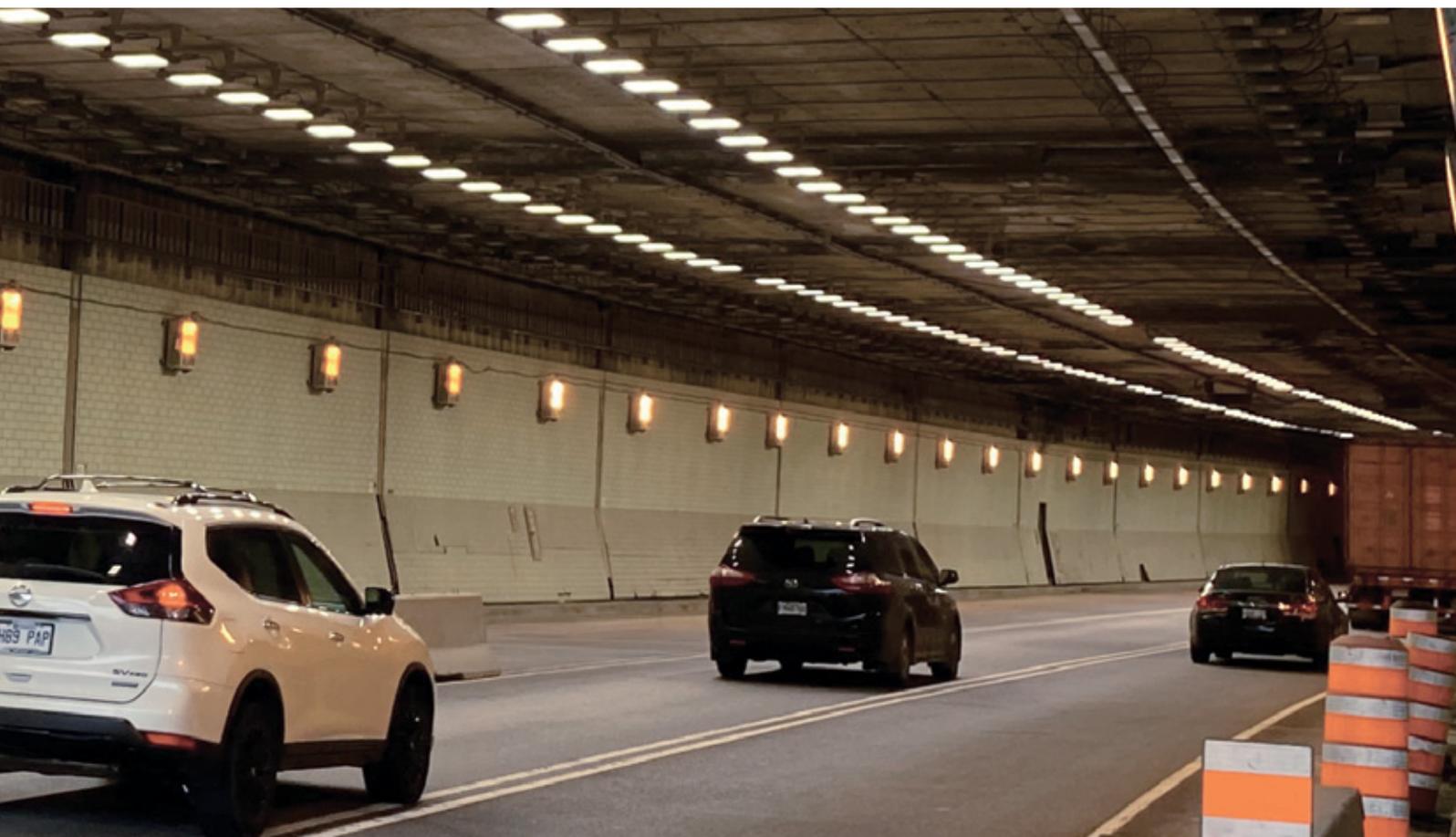


# YOUR TUNNEL YOUR SOLUTION





<b>COMMUNICATION TYPE</b>	DALI network	Industrial bus communication
<b>INSTALLATION TYPE</b>	Luminaires/driver box equipped with DALI drivers	Luminaires/driver boxes equipped with Lumgate
<b>LIGHTING CONTROL</b>	Broadcast command (one order per luminaire segment)	Individual control (one order per luminaire)
<b>MAINTENANCE</b>	Group failure indication	Precise failure location
<b>CABLE TYPE</b>	Standard cables	Bus communication cables
<b>MAX. CIRCUIT CABLE LENGTH</b>	Up to 300 m per entire segment	Up to 400 m between two devices
<b>INSTALLATION</b>	Toolless Plug-and-Play system	
<b>SYSTEM CAPACITY</b>	2 to 8 DALI masters per ATS 4 DALI box	240 Lumgates per ATS 4
<b>IDEAL FOR</b>	Basic tunnels or interior zones	Complex tunnel architectures



# Schröder

Experts in lightability™



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