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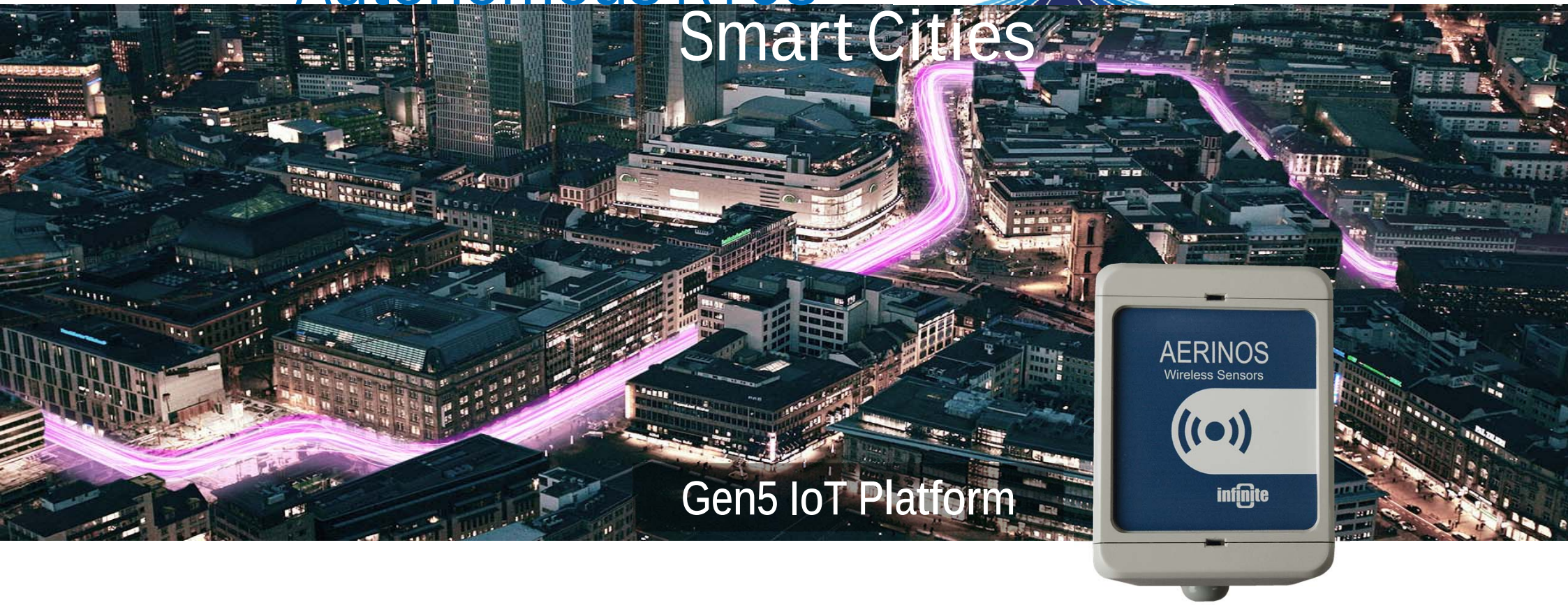
IoT

Itron

Autonomous RTUs

Smart Cities



Gen5 IoT Platform

Design Principles

Autonomous RTUs are flexible devices allowing any modern power source scheme.

They are designed to operate autonomously using single lithium battery cells achieving maximum reliability, and long term solution robustness with operational lifetime >10+ years.

They can work on mains or photovoltaic power with automatic failover to internal lithium battery on power shortage.

They can be used in hybrid power solutions combining lithium battery for telecommunications with rechargable power sources for sensor excitation allowing mixed power media applications seamlessly.

Water resources management

- Level & flow
- Groundwater monitoring
- Lake and reservoir level monitoring
- Leak detection in distribution pipelines
- Sewer water monitoring
- Water quality monitoring

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Power grid

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Earth fault detection and localization in urban power distribution systems.

In combination with earth ground fault detection relays,

- Seamless connection to SCADA via OPC server
- Earth faults can be located in the first minute after occurrence.
- Significant reduction of the CAIDI and SAIDI reliability indicators

Gas Distribution

- Flow and pressure
- Moisture and leak detection
- LPG level measurement on Gas Storage Tanks

Cathodic Protection

- Voltage DC
- Voltage AC
- Current
- Transient voltage drop

Rail & Train
Wireless IoT Systems

Continuous monitoring of infrastructure minimizes dangerous conditions and eliminates accidents.

Rail line mount sensors

- Vibration monitoring of rail lines and slippers
- Temperature, ice, rain monitoring of rail lines

Alarming

- Embankment collapse alarming
- Structural monitoring of bridges, crossings

Environmental Monitoring

Air quality measurements

- Ozone, nitrogen dioxide, sulphur dioxide, carbon monoxide

Impact measurements in rivers

- pH, dissolved oxygen, conductivity, turbidity, color

Soil quality and sustainability

- Soil moisture, electrical conductivity, temperature

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Off-grid general purpose monitoring

- Generator voltage, current
- Diesel fuel tank level
- Backup battery readiness
- Fire, Smoke & water
- Intruder alarming
- Door open and motion detection

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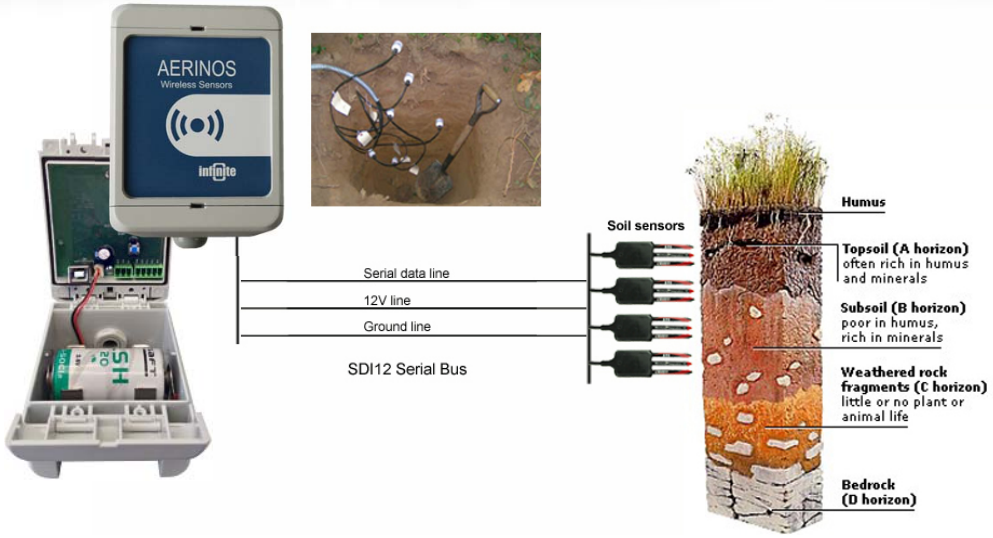
Precision Agriculture

Agriculture related weather measurements:

- Solar radiation
- Air temperature and relative humidity
- Wind speed and direction
- Rainfall
- Soil temperature and moisture
- All in one weather stations



IoT Autonomous devices

ADS-410, Itron IoT wireless end nodes

Autonomous IOT unit to connect any sensor for telemetry applications. The unit sends data to the cloud using the Itron Network.

It incorporates the Milli 5 embedded wireless communication module for connection to this network.
The unit is battery powered for autonomous operation.

The purpose of the device is to connect multiple sensors from any vendor such as analogue (0-20mA, 0-1V), SDI12, RS485 Modbus, measure and transmit the data over the Itron network.

The ADS-410 can also power the sensors with up to 250mA@12VDC using its 3.6V lithium battery.

All telemetry applications can me realized with the ADS-410.

IoT Autonomous devices

ADS-410, Itron IoT wireless end nodes

Power supply:	3.6V, 13-18 Ah Lithium Thionyl battery, D-size
	5VDC mains or photovoltaic power
Consumption :	Continuous 18µA
Discrete inputs:	IN1, configurable as:
	Digital input, 0-30VDC
	Analog input, 0-1VDC, 12 bit resolution
	Digital counter, 1 KHz
SDI-12 Bus:	8 Channels, up to 3 sensor support.
RS-485, MODBUS:	8 Channels, up to 3 sensor support, ASCII/RTU.
Transducer excitation	12V/250mA, 5V/200mA
Wireless modem:	Milli 5 Itron Silver Spring networks
Antenna	internal or external
Messages:	Data, Alarm
Temperature:	-20°...+65°C, operating
Dimensions:	79.5 x 125 x 61 mm (with cable gland)
Housing:	IP66, IP68 Nema 4x

Battery lifetime

ADS-410 RTU/Itron powered by one 3.6V, 13Ah lithium-thionyl battery

Excitation @12V [mA]	Sample/Send rate [S/hour]	Sampling delay [sec]	Battery life [Years]
1	4	1	6.9
1	12	1	4.7
1	30	1	2.7
25	6	1	2.6
25	30	1	1
5	4	1	6.2
5	6	1	5.4
5	30	1	2.1
25	4	5	1.8
50	4	5	1
100	4	5	0.5

Sensors

Water application SDI12 & Modbus sensors

Submersible water level sensors

Ultrasonic water level

Water velocity

Multiparameter Sensors

Temperature, Conductivity, Depth, pH, Dissolved Oxygen, Turbidity, ORP, Blue-Green Algae, Chlorophyll, Ammonium, Nitrate, Chloride

Sensors

Environmental SDI12 & Modbus sensors

All in one weather stations

Ambient
Humidity & Temperature

Gas Sensors

Sensors

Wind Speed

Sun Radiation

Wind Direction

Sensors

Agriculture sensors

Leaf Wetness

Soil Moisture, Conductivity, Temperature

Soil Moisture

Soil Temperature

Sensors

Structural Engineering SDI12 sensors

Crack Propagation

Inclination

Critical Structure Monitoring

Bridge suspension

Sensors

Structural Engineering SDI12 sensors

Inclination Crack Propagation

Critical Structure Monitoring

Sensors

Power Grid & Industrial

Earth Ground Fault alarming

Substations & Transformers

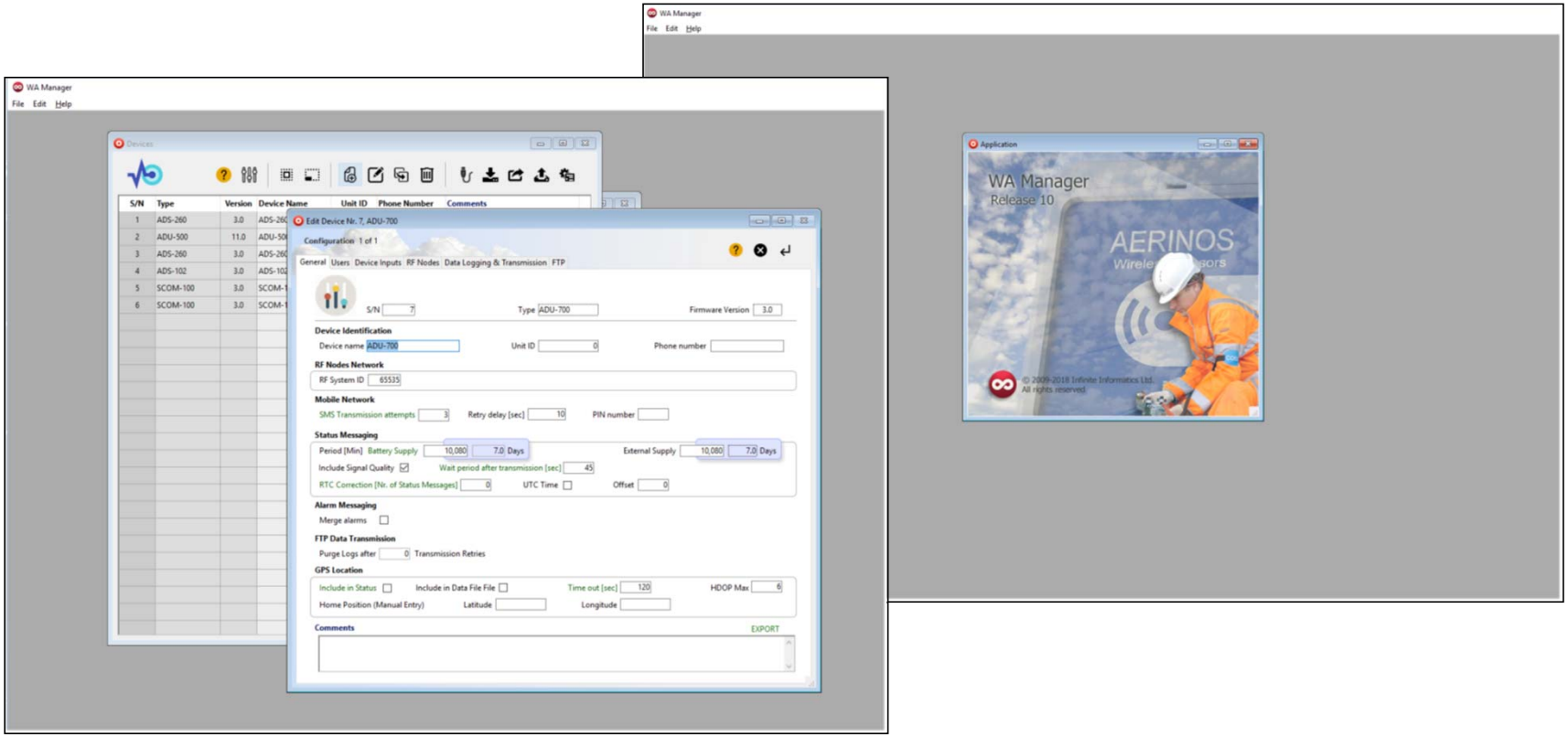
Multifunctional RTUs, PLCs

Current Transformers

4-20mA, 0-20mA, 0-10V, 0-1V sensors

Fault passage indicators

WA Manager – Windows software to configure devices



Losant - Cloud Telemetry

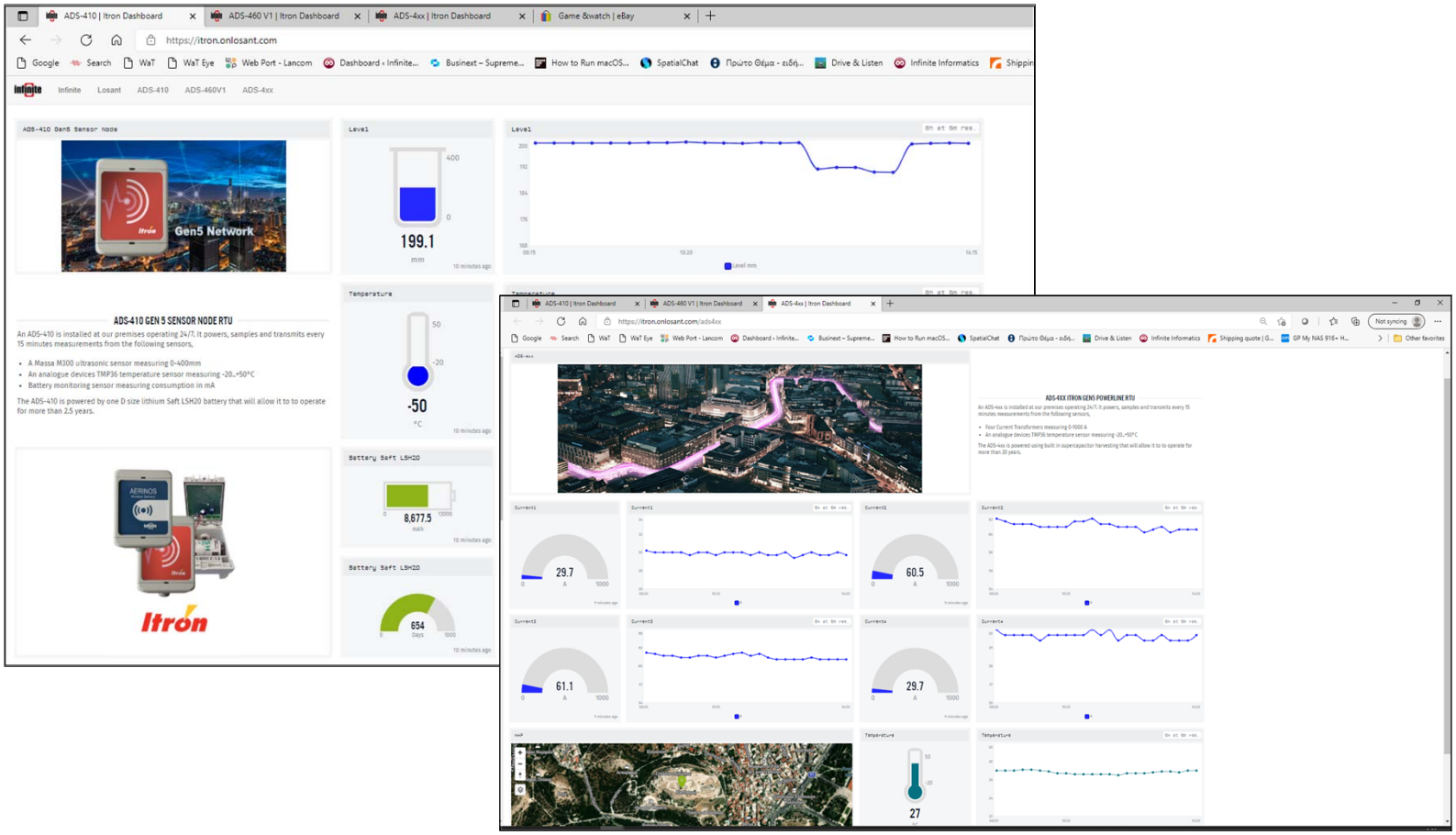
LOSANT

Live at Losant
ADS-410, ADS-460, ADS-470

https://itron.onlosant.com

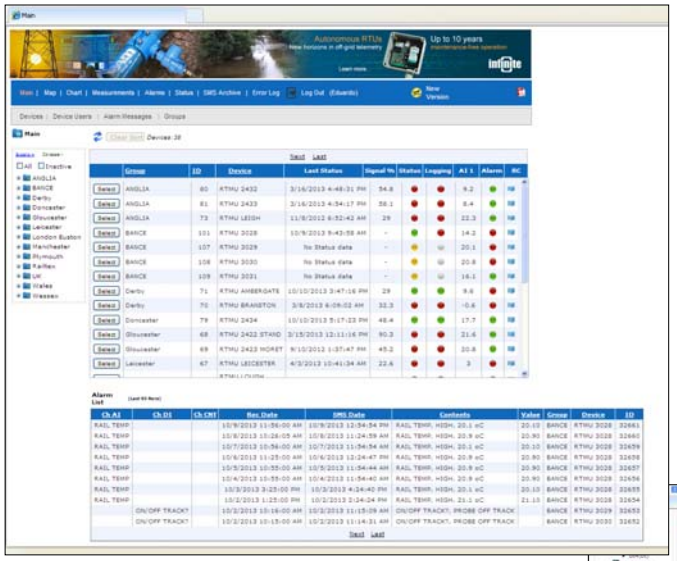
User: guest@infinite.com.gr

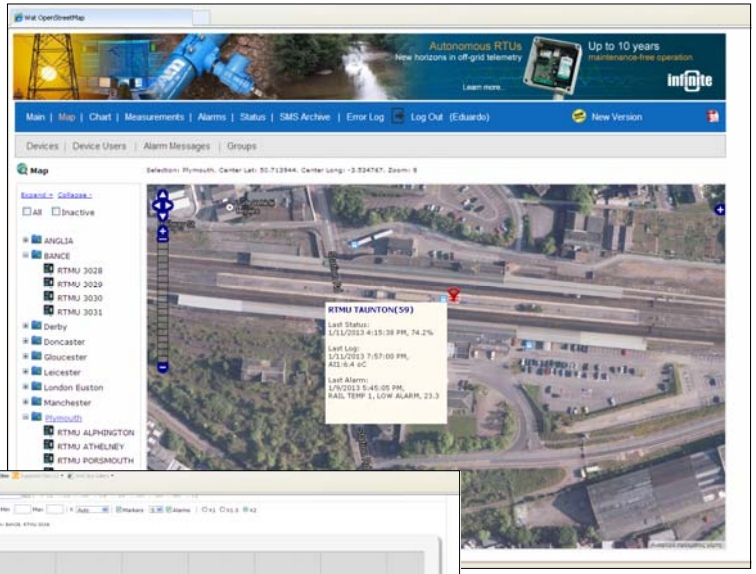
Pass: infiniteitron

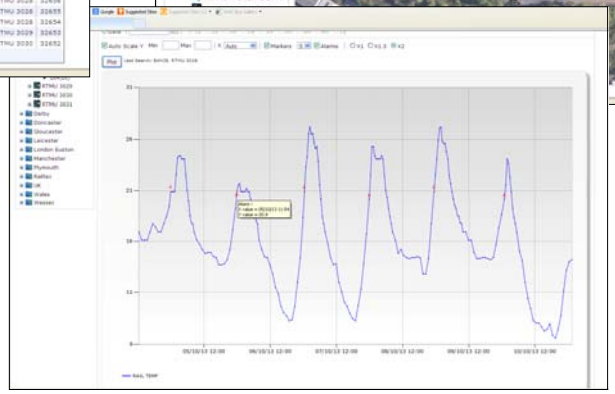


WaT - Web aided Telemetry

Cloud telemetry platform with GIS information







ANDROID APP ON Google play

Download on the App Store

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WaT - Web aided Telemetry

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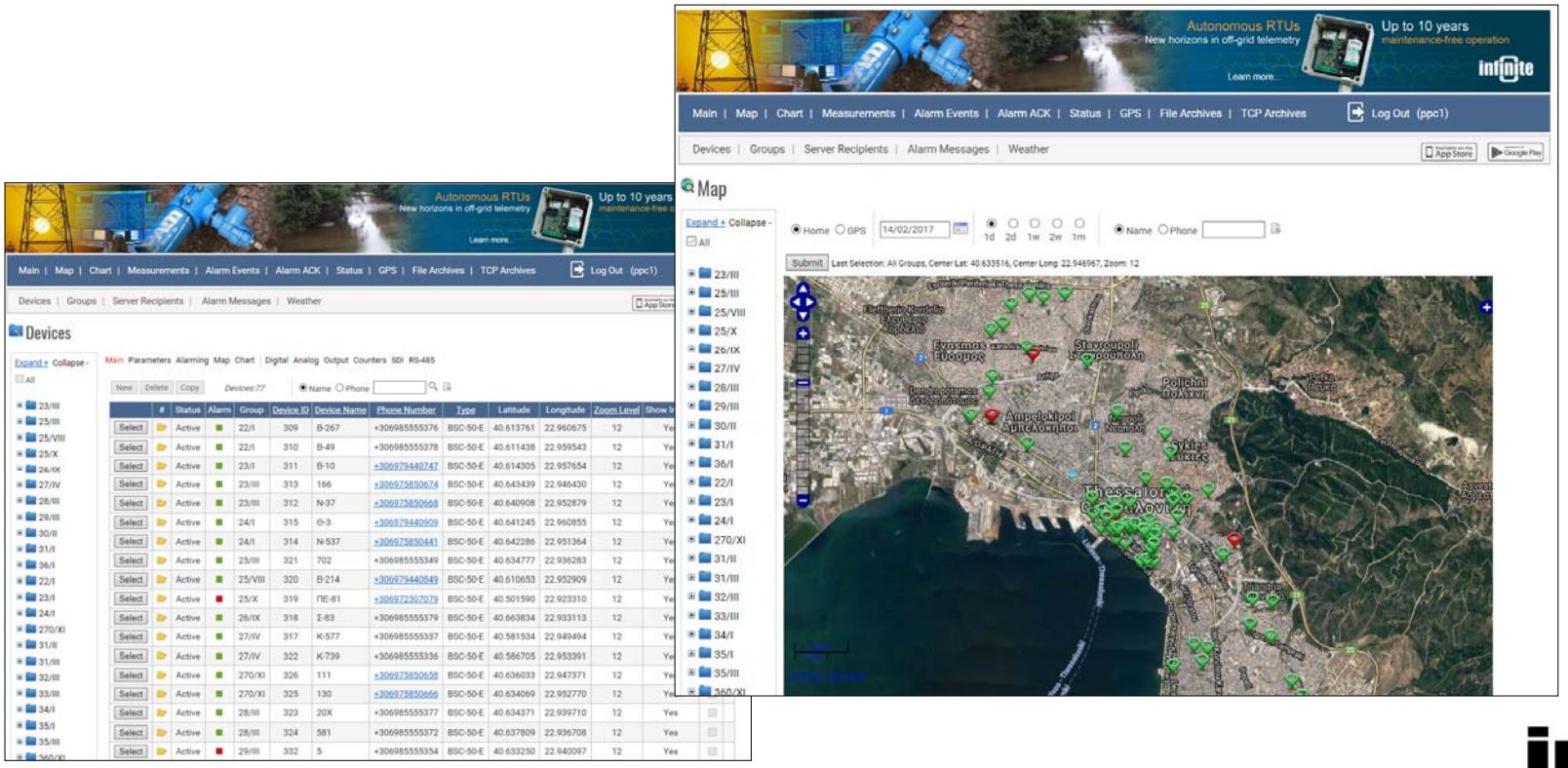
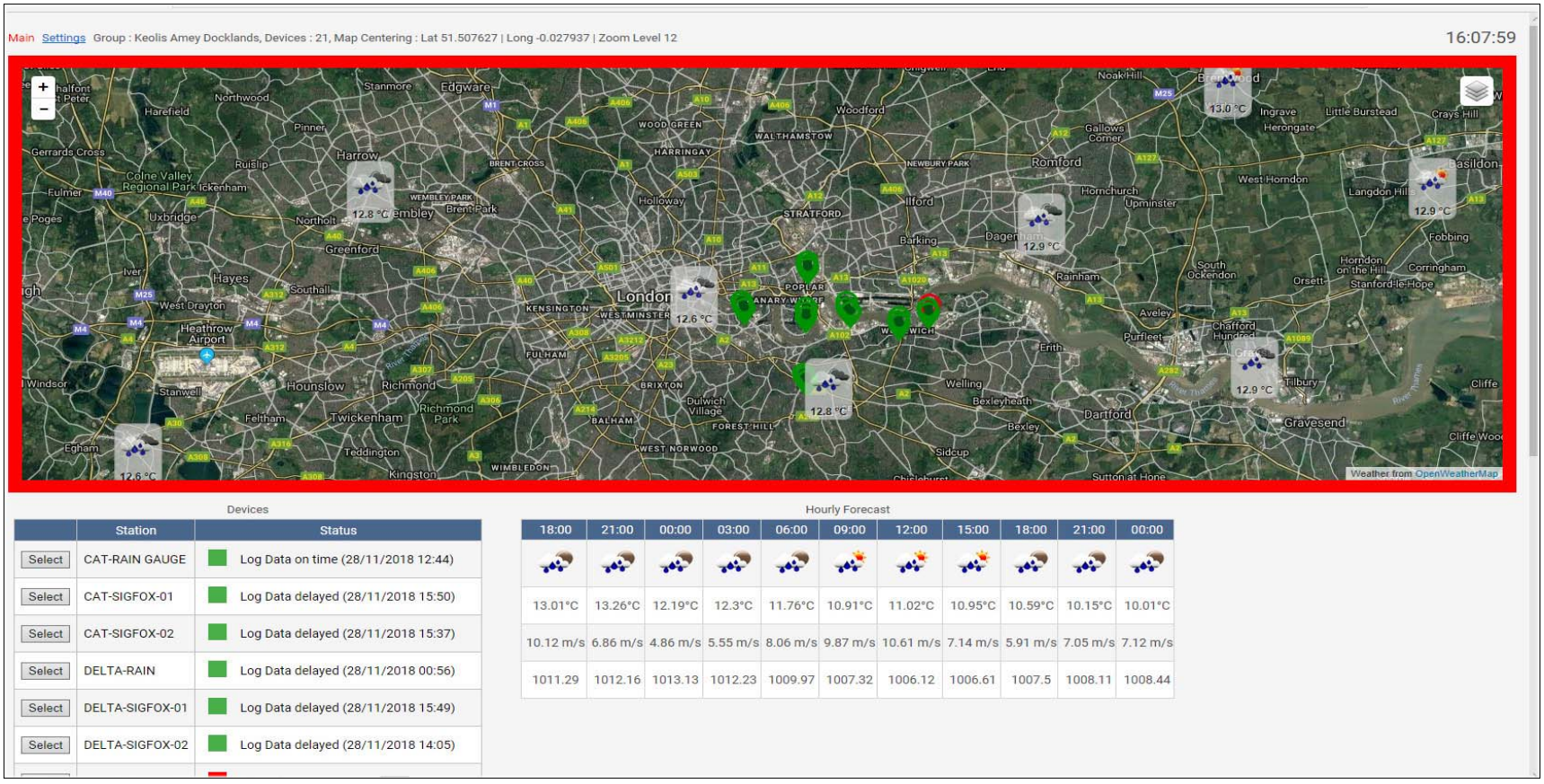


WaTEye - Web aided Telemetry Eye dashboard

Online dashboard with live weather and telemetry data

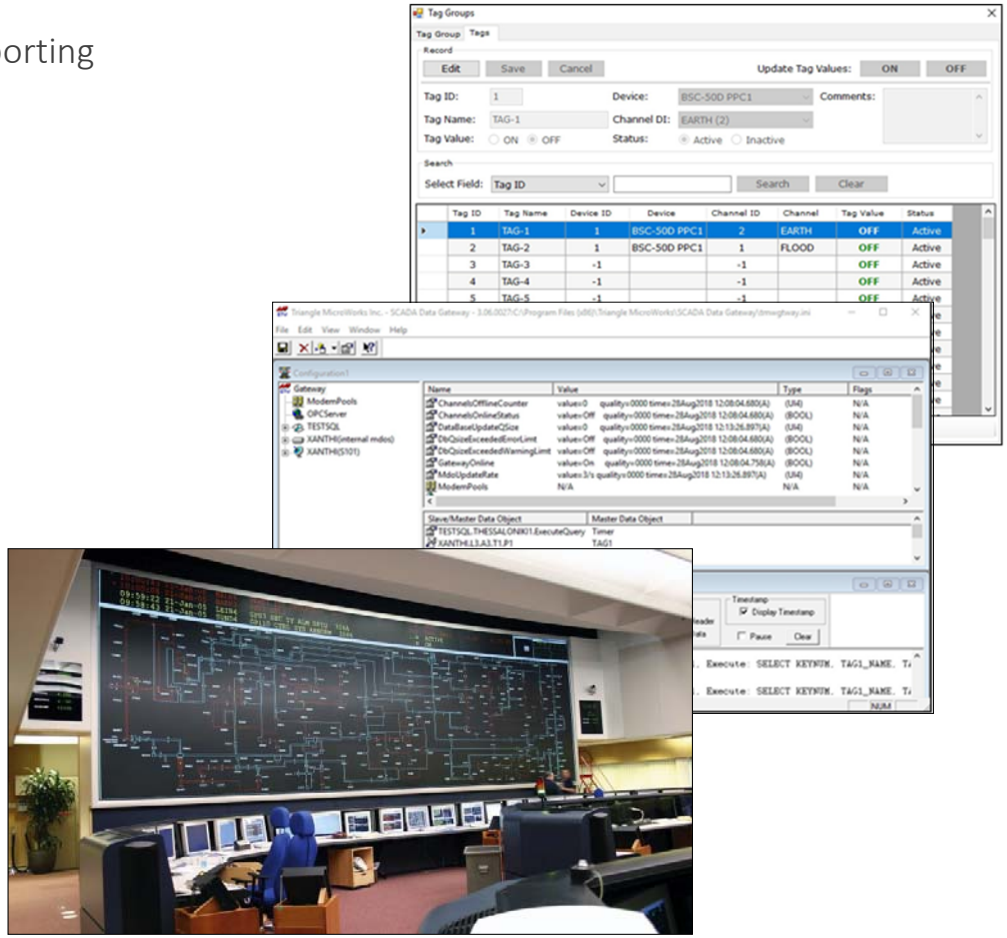


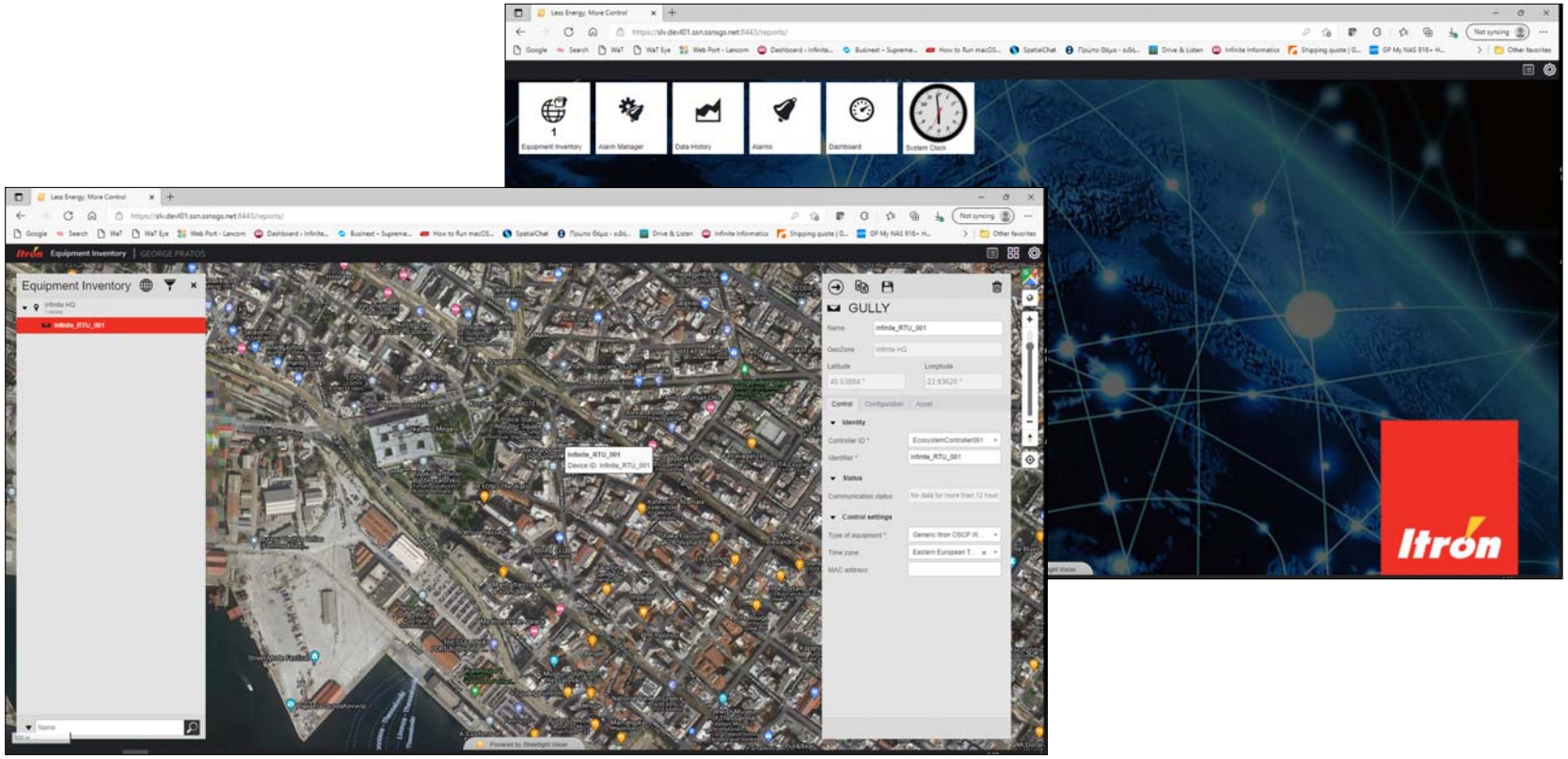
MsG – Multiprotocol Scada Gateway

The MSG is a modern SCADA communication gateway, supporting multiple protocols,

- DNP3 Secure Authentication v5 (SAv5)
- IEC 60870-5-101, 102,103
- IEC 60870-5-104
- IEC 60870-5 Secure Authentication for -101 and -104
- OPC Data Access
- OPC XML Data Access
- OPC Alarms & Events
- IEC 61850
- IEC 60870-6
- Modbus

MS SQL server database backend for
Historical data storage and management.



Itron SLV- Streetlight Vision

SLV cloud platform integration