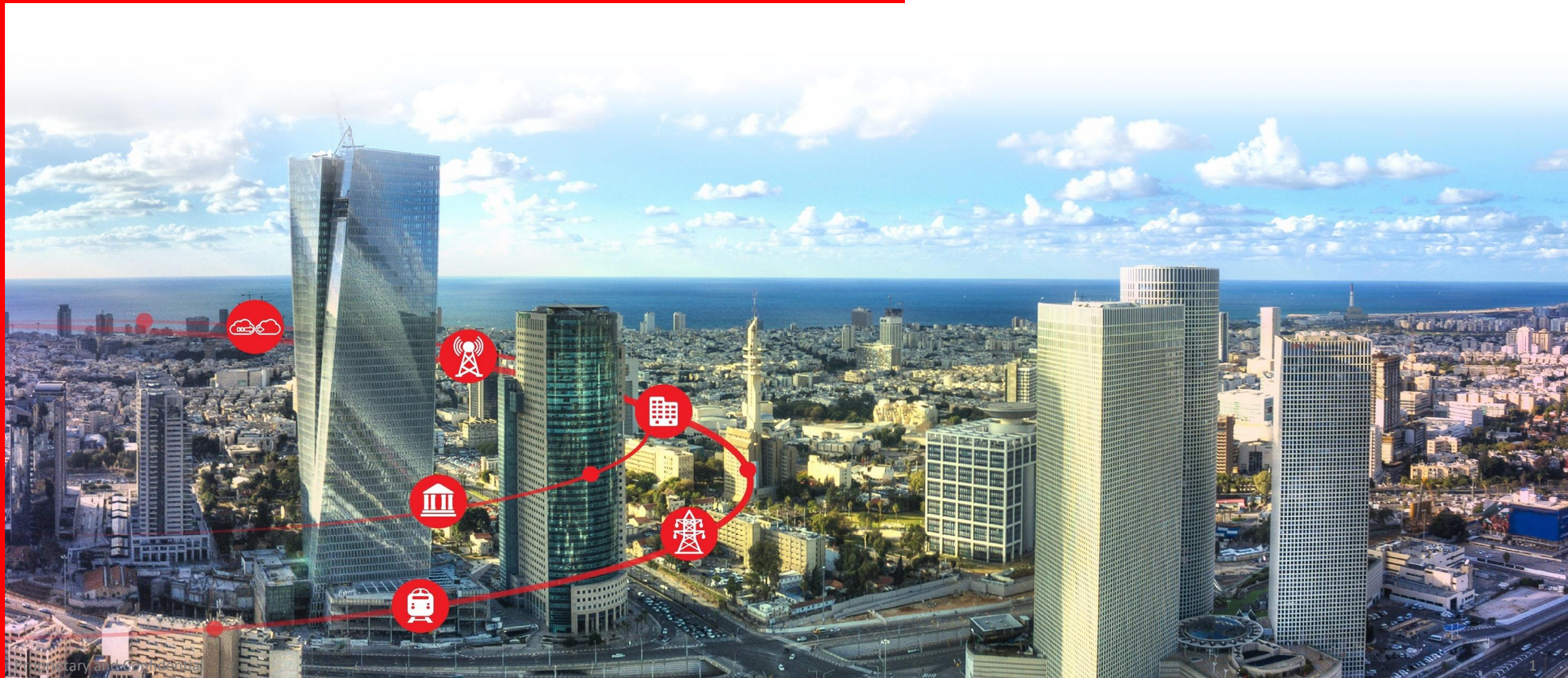


IIoT & PLC in Industrial and SCADA Markets



Your Network's Edge®



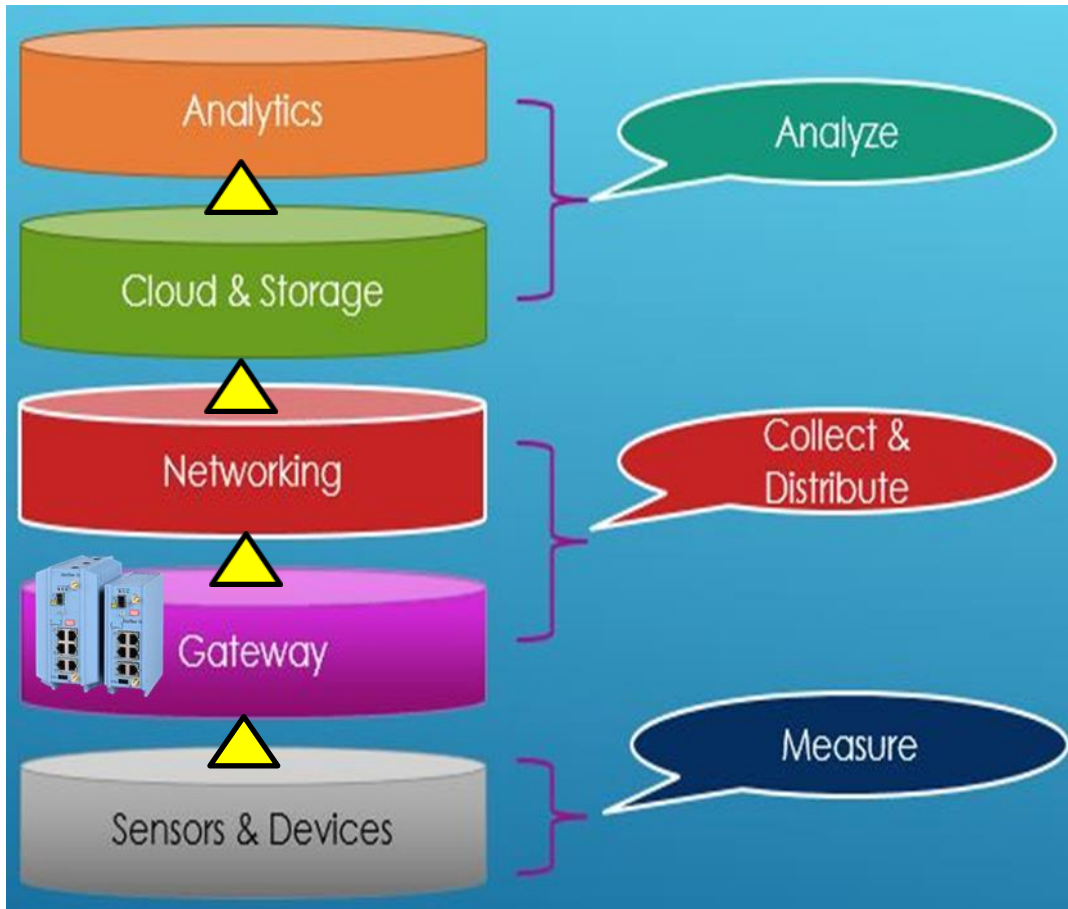
Industrial IoT applications



Five main components of IoT solutions



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Ecosystem

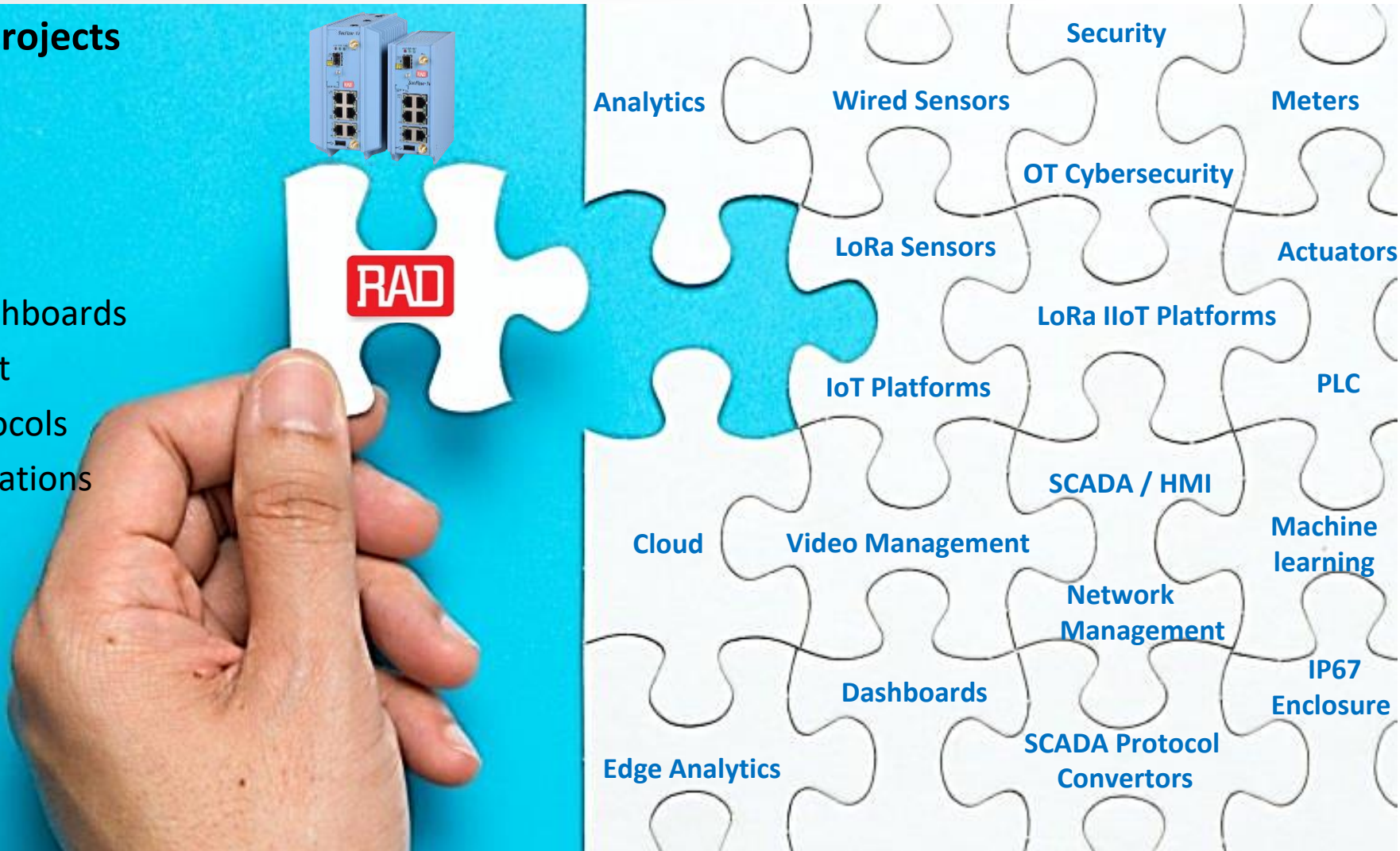
Successful IoT projects depend on a successful Ecosystem



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Components of IoT projects

1. Sensors / Actuators
2. Gateways
3. Device connectivity
4. Cloud / Server farm
5. User Interface / Dashboards
6. Device management
7. Standards and Protocols
8. Analytics and applications
9. Business Model
10. System Integration





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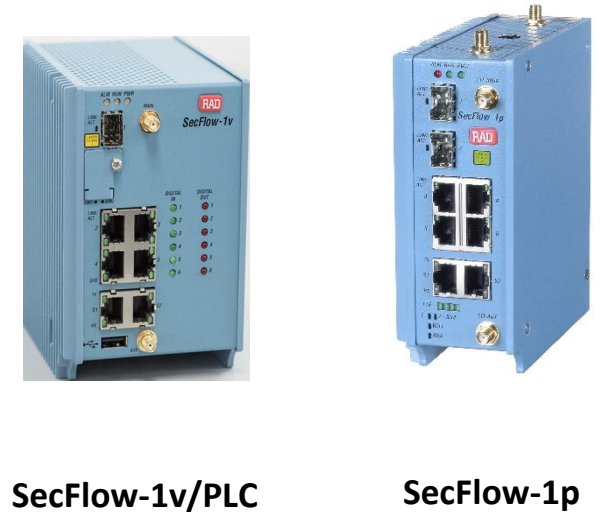
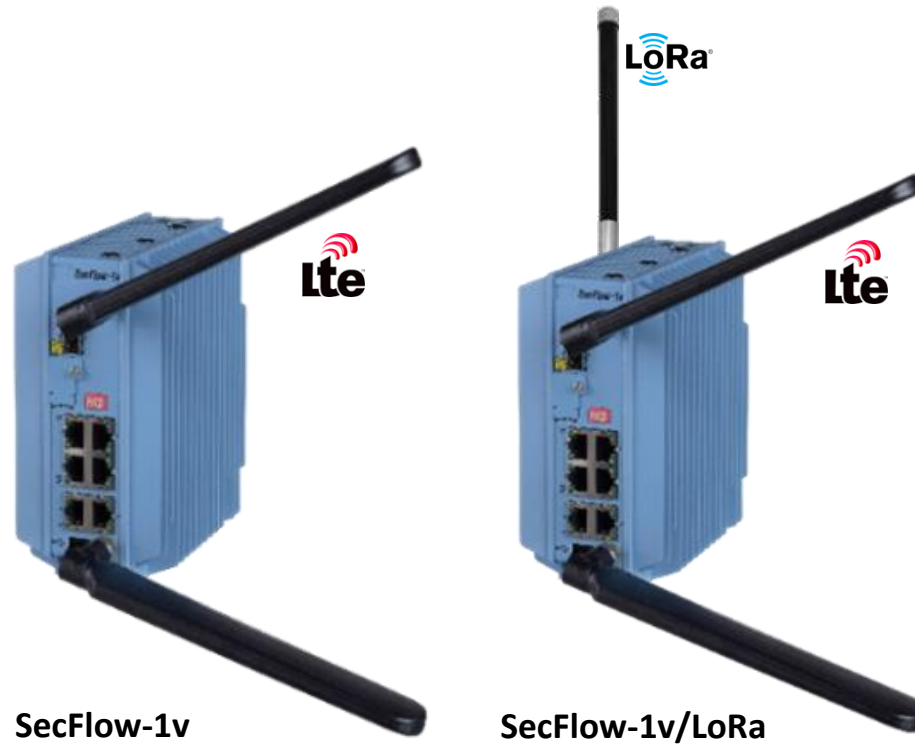
RAD's SecFlow



SecFlow Family - Industrial IoT Gateways



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Current models

IIoT Gateway Platform Solutions



SecFlow-1v: RAD's 3-time IoT Evolution Award Winner 2020
Secure Industrial IoT gateway, programmable IoT Edge Computing platform

SecFlow: a Multiservice, Secure IIoT Gateway

for the real world Industrial IoT



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Motor/ Valve



Sensors



LoRa
LPWAN Sensors



PLC



CCTV



RTU/ IED




Alarm

Proprietary and Confidential

Inputs

Ethernet
Fiber Optic
SFP
Wi-Fi
LoRa
Serial RS232/ 485
Analog input
Digital input
USB
GPS

- Multi-Service integrated like a *Swiss Army Knife*
- Cost effective edge device
- Multiple Inputs and Multiple Outputs
- Edge computing for custom applications
- Standard Linux OS 
- Security
- SCADA protocol converters
- Rugged, Industrial grade, -40°C to +75°C, Fanless
- Compact size
- IEC 61850-3 and IEEE 1613 EMI immunity
- ZTP (Zero Touch Provisioning)
- Powerful NMS monitoring and control



Outputs

Ethernet
Fiber Optic
Unlicensed PtP Radio
Wi-Fi
Serial RS-232/485
Digital output
LTE
Dry Contact
PoE
USB
SD Card



Motor/ Valve



RTU/ IED

Actuator



Actuators



PLC



SCADA



Server



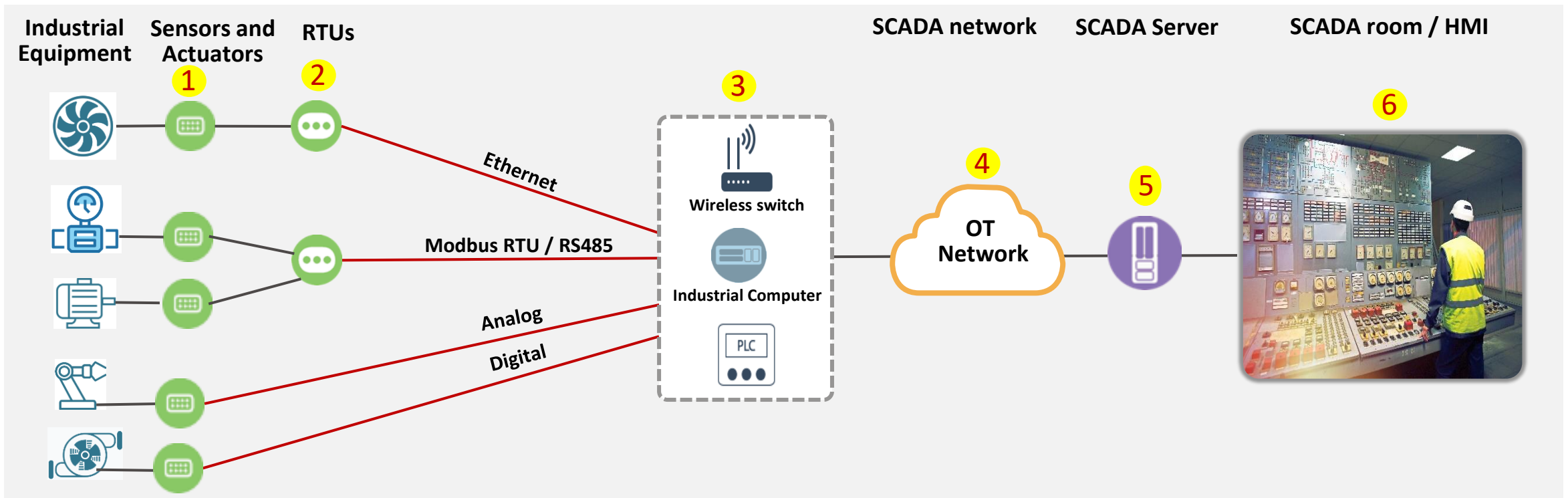
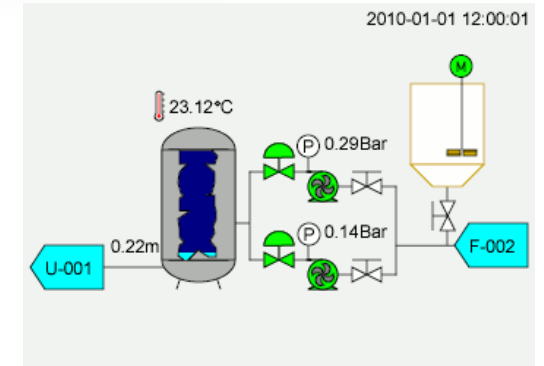
Cloud

SCADA Systems



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- 1 Sensors and Actuators
- 2 Remote Terminal Units (RTUs)
- 3 Programmable Logic Controllers (PLCs)
- 4 SCADA communication network
- 5 The supervisory system (SCADA server)
- 6 Human Machine Interface (HMI)

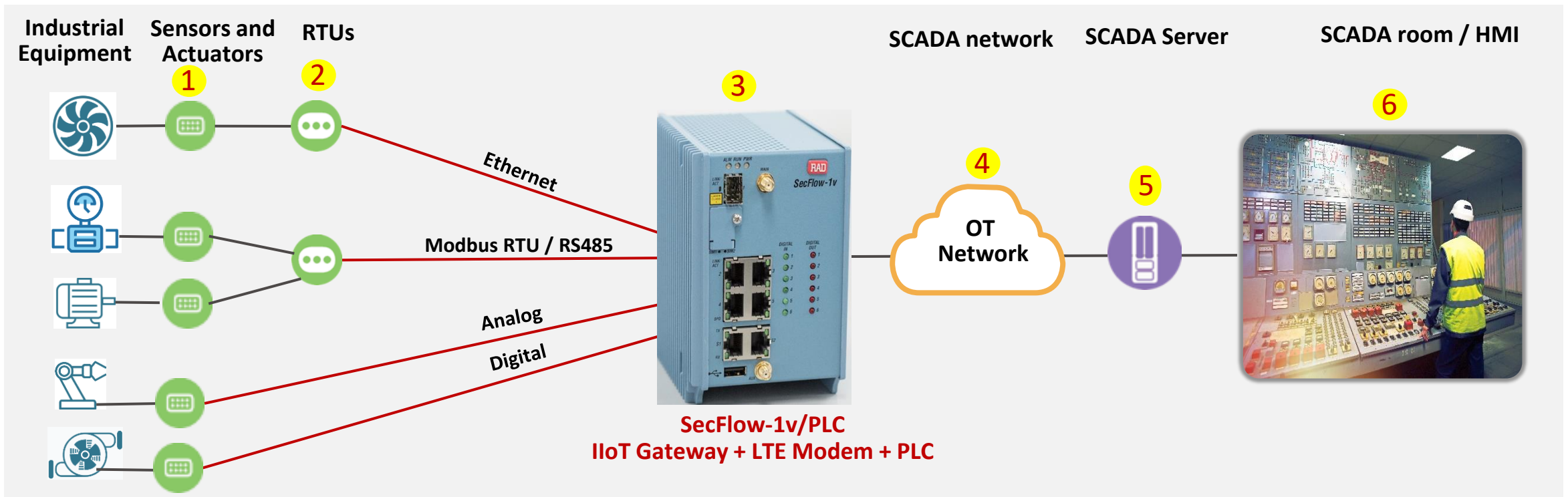
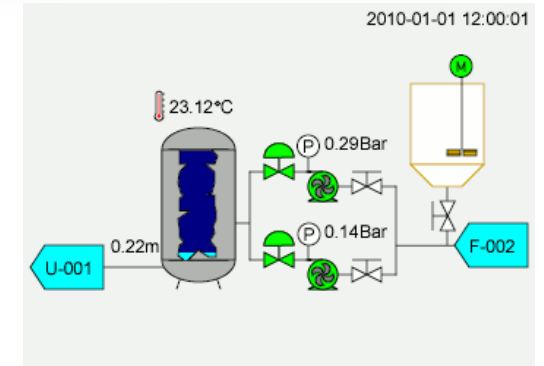


SCADA Systems



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IIoT Use Cases and Alliance Partners



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LoRaWAN GW



Automation GW with PLC



Protocol Conversion GW



OT Security GW



Distributed Video Surveillance



Secured IIoT Backhaul:

- Resilient and secured communication
- Easy deployment w/ ZTP
- Powerful security suite
- Edge computing



eSIM



Cloud Connectivity



Our sweet spot: Combine several functions in a single device

Industrial IoT Backhaul with PLC



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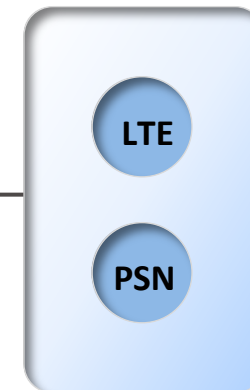


Secure IIoT Backhaul

- SecFlow-1v + Integrated I/O (DI, DO, AI)
- Master/Slave Inter-connectivity options (for expansion)
- Ladder Logic
- Optional Extension of additional external I/O ports

Built-in PLC + I/O:

- 6x Digital Inputs
- 6x Digital Outputs
- 6x Analog Inputs
- 2x Dry Contacts



SecFlow -1v-PLC

IoT GW with built-in RTU/PLC



Your Network's Edge®



Bottom Panel

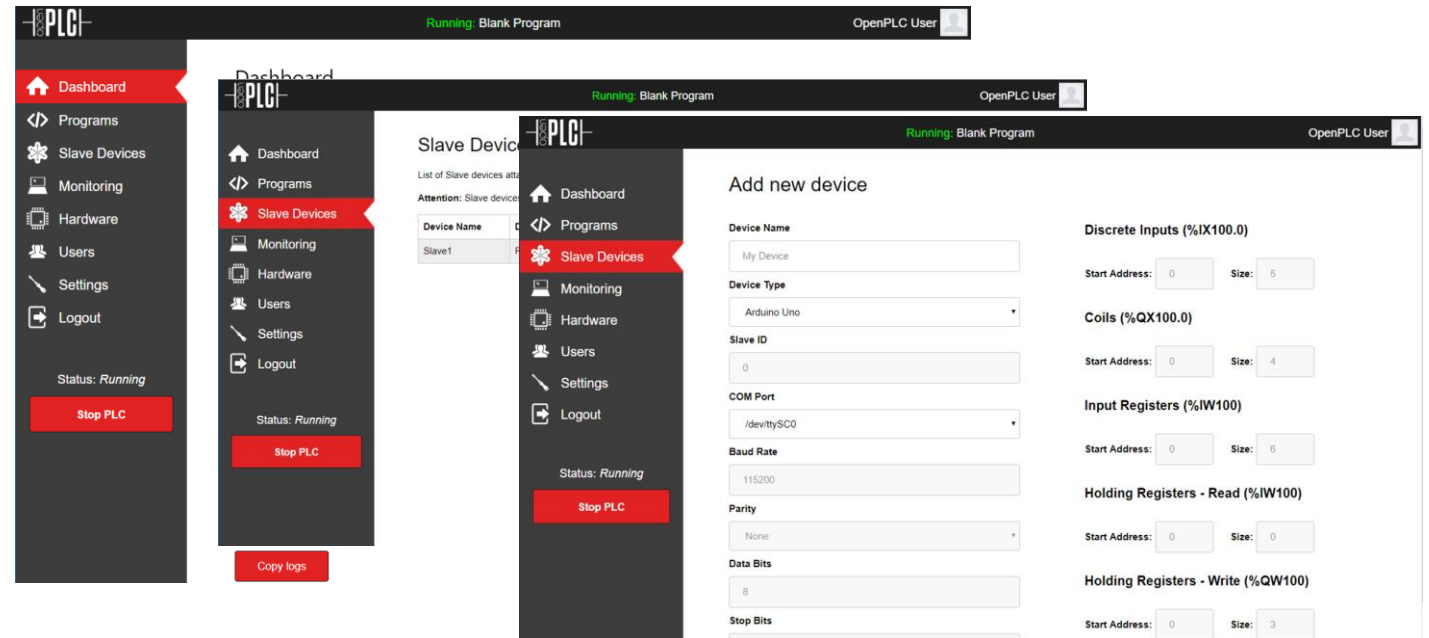
- 6x Digital Inputs
- 6x Digital Outputs
- 6x Analog Inputs
- 2x Dry Contacts

PLC Software

- Web GUI
- IEC 61131-3 Compliant
- Multi protocol northbound to HMI
- Ladder Logic
- Master/Slave Inter-connectivity options
- Northbound to HMI
- Modbus, DNP3, BACnet

Value Proposition

- Less Real-Estate, Less Boxes
- More Secure and Less TCO (all-in-one)
- SCADA FW, Stateful FW



PLC I/O Extensions



PLC I/O extension



Your Network's Edge®

PLC Input / Output Extensions

- Extended multiple I/O (DI, DO, AI, Relay, more...)
- DIN rail, IEC 61131-3 Compliant
- Modbus / RTU Daisy Chain interfacing
- Plug & Play integration with SecFlow-1v/PLC
- Web Based control & programming



External I/O Options

Digital Inputs

Relay /
Dry
Contacts

Electricity
Meter

Analog
Inputs

Build-in I/O

6x Digital Inputs
6x Digital Outputs
6x Analog Inputs
2x Dry Contacts



Use Cases

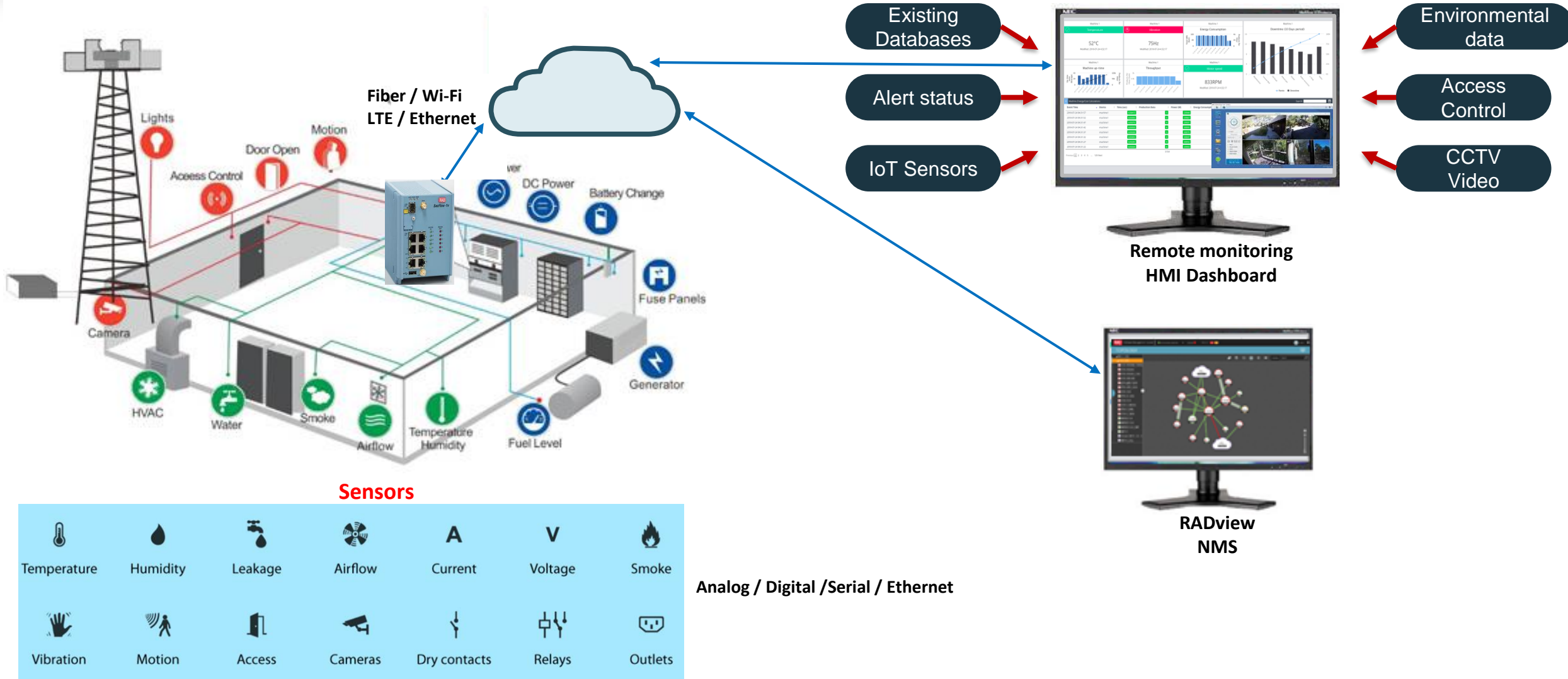


SecFlow-1v/PLC use cases

#1 - BTS Remote Monitoring



Your Network's Edge®



SecFlow-1v/PLC use cases

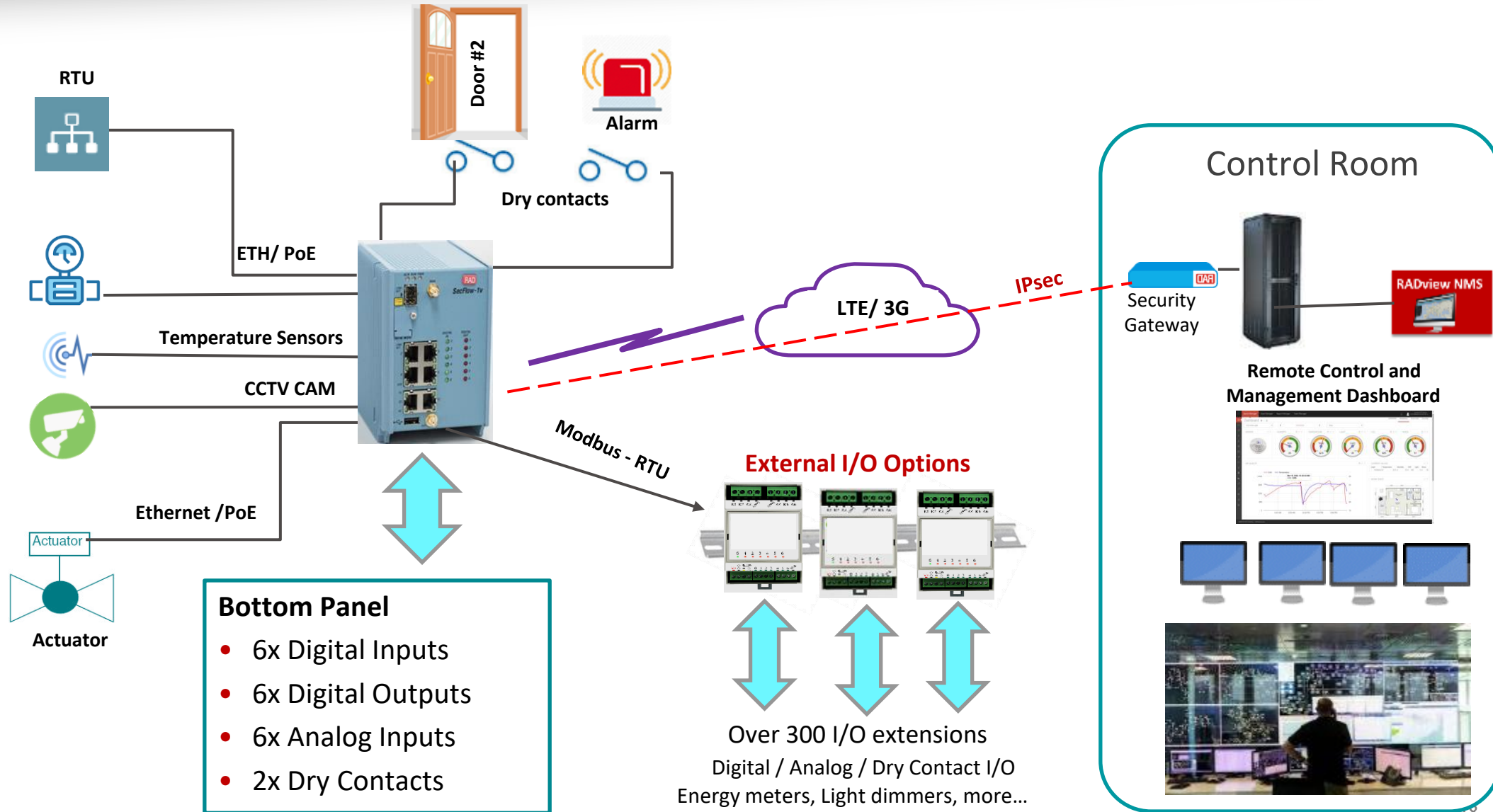
#2 - Substation Remote Control (Multiple I/Os)



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Substation



SecFlow-1v/PLC use cases

#3 - DSO - Predictive Maintenance (PdM)



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The dashboard provides a comprehensive overview of transformer health. It includes a map of the monitored area, a bar chart showing key metrics (Oil temperature, Winding temperature, Oil level, Oil density, Other), and a summary of unhealthy transformers. A pie chart displays alerts by transformer over a 1-day period. A table lists transformer alert details, and another table shows communication alarms for various PLC units.

PLC ID	Status	Unit type	IP	F/W version	F/W update	Last Transmission Time	RSSI	SNR	Number of Alarms	Alarm Reason
T1	off	SecFlow 1v	81.218.126.200	16	05/06/19	2019-10-02 14:12:33	-48	63	2	Ethernet link is not detected
T3	on	SecFlow 1v-PLC	81.218.126.202	54	05/06/19	2019-10-02 14:12:33	-38	88	9	ETH port disable
T2	on	SecFlow 1v	81.218.126.201	22	10/02/19	2019-10-02 14:12:33	-42	99	7	Ethernet link is not detected



- ✓ Improve uptime by 9%
- ✓ Reduce costs by 12%
- ✓ Reduce safety, health, environmental & quality risks by 14%
- ✓ Extend the lifetime of aging assets by 20%

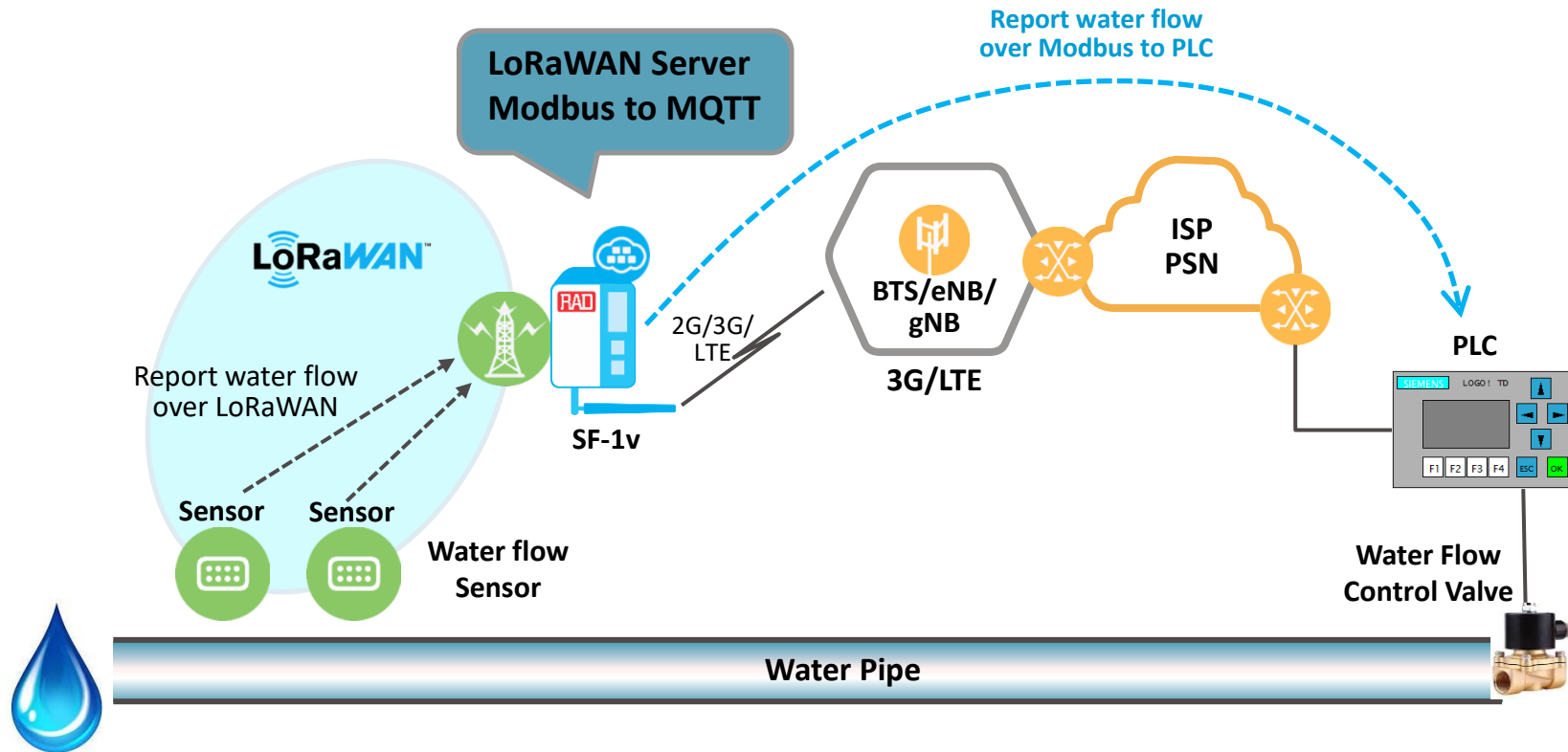
Application: Power Distribution - transformer health analytics and predictive maintenance

SecFlow-1v/PLC: Water Pipe Flow Control

#4 - Remote PLC control and LoRaWAN Sensors



Your Network's Edge®



Compelling Event

- Automatic control of water flow in pipes

Application

- PLC Extension with wireless sensors

Solution Benefits

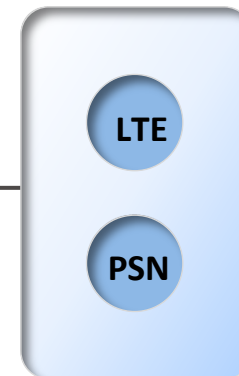
- LoRaWAN GW + Server + embedded Modbus protocol GW
- Embedded cellular modem
- Interoperability with customer's sensors
- Multi-service device
- Well established communication company

Industrial IoT Backhaul & Protocol Conversion



Protocol Converter

- Single Box Solution Protocol Gateway
 - Optional Cellular, Fiber Optic or Ethernet uplink
- SCADA and Utility industrial protocols:
 - DNP3 / IEC104 / IEC101 / Modbus / DLMS / SunSpec / IEEE 2030.5 / OCPP / IEC 61850 IEC62056 / DMLS-COSEM / ControlNet...
- IP Protocols:
 - Ethernet IP, Modbus / TCP, BACnet, Profinet, OCPP...
- Over 60 supported protocols



Industrial IoT Backhaul & OT Cybersecurity & Anomaly detection

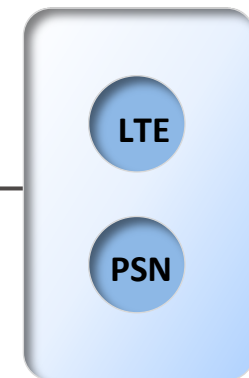


Your Network's Edge®



OT Cybersecurity

- Intelligence: Sensors for OT Cybersecurity & Anomaly Detection
- Analyze: Monitor, Analyze and Visualize the entire data traffic and asset inventory in OT networks with DPI
- Learn: Automatically Learn the Normal Communication Patterns
- Protect: Real-Time Reporting of Network Anomalies that may cause interruptions or outages
- Easy Deployment in 1000's of remote sites



Complete OT Network Visibility & Protection

Takeaways



Your Network's Edge®

- Innovative Secure Industrial IoT Gateway with Edge Computing
- SecFlow-1v/PLC is a versatile, flexible multi-service device
- Powerful Industrial IoT Backhaul for many industrial applications
- Ecosystem partners with industry leading powerful solutions
- Large company with over 40 years of teamwork with partners



RAD is Your Network's Edge