# Master the Digital Future of Your Industrial and Utilities Processes

Mastering Operational Efficiency with Schneider Electric

Measurement and Instrumentation Technology

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# Bio Jason Hutchings

Channel Director, North Europe and Sub-Sahara Africa

- I received a Higher National Diploma (NTC5) in Electrical & Electronic Engineering from Witbank Technical College, South Africa.

- I began my career in Electrical Engineering in 1985 as a young apprentice Electronic Technician in Witbank, South Africa.

- In 1996 I chose a new career path within the field of Industrial/Process Automation, I have since worked for a number of leading Global Manufacturers of Industrial/Process Automation, namely Weidmuller, Omron, Rockwell Automation and now Schneider Electric in leadership roles across various industry segments.

- Currently I am driving the channel business across North Europe and Sub-Sahara Africa (NESSA) including leading the establishment of our PA business in South Africa

- I am based in "Rather wet Wales".

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# Global Specialist in Energy Management and Automation
## Diversified End Markets

**DATACENTER & NETWORKS**

**BUILDING**

**INFRASTRUCTURE**

**INDUSTRY**

**15%**

**43%**

**20%**

**22%**

- Cloud and Service Provider
- Telco

- Office, Commercial and Industrial Buildings
- Healthcare
- Banking and Finance
- Hotel

- Utilities
- Smart City
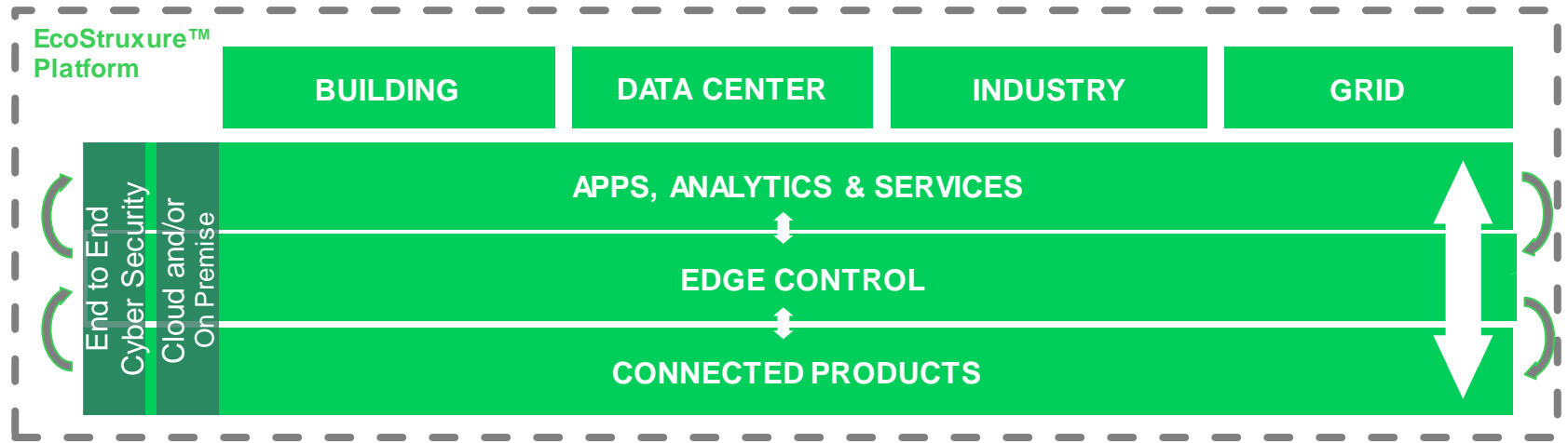
- Oil and Gas
- Power
- Mining, Minerals and Metals
- Water and Wastewater
- Food and Beverage

# Delivered by a Single Architecture - EcoStruxure™
## Innovation At Every Level



**EcoStruxure™ Platform**

| BUILDING | DATA CENTER | INDUSTRY | GRID |

End to End Cyber Security

Cloud and/or On Premise

APPS, ANALYTICS & SERVICES

EDGE CONTROL

CONNECTED PRODUCTS

BUILDING    POWER    DATA CENTER    MACHINE    PLANT    GRID

EcoStruxure™
Innovation At Every Level

Internal

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# EcoStruxure™ for Process Automation

## Apps, Analytics & Services

**Ecostruxure™**
Control Advisor

**Ecostruxure™**
Maintenance Advisor

**Ecostruxture™**
Profit Advisor

**FLEX**
Flexible Lean Execution

**Process Automation Services**
- ❖ Business Consulting
- ❖ Training / Learning
- ❖ Maintenance & Support
- ❖ Modernisation
- ❖ Migration
- ❖ Life Cycle
- ❖ Cyber Security

## Edge Control

**Distributed Control System**
EcoStruxure™ Foxboro DCS

**Distributed Control System**
EcoStruxure™ Hybrid DCS

**Safety Instrumented System**
EcoStruxure™ - Triconex®

**SCADA & Telemetry**
SCADAPack RTU
RealStream LiftStation

**PAC / PLC**
EcoStruxure™ Modicon

**Software**
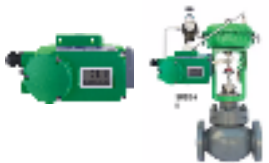SimSci, Wonderware, Avantis, Ampla

## Connected Products

### EcoStruxure™ Process Instrumentation

Temperature, Pressure, Flow, Level

Valves, Valve Positioners

Liquid Analysers

Process (Gas) Analysers

Wireless (Wi-STAR)
IAN (WirelessHART)

**iPMCC**
Intelligent Power MCC

**Trio Data Radios**
Licensed UHF|VHF
Ethernet and Serial

EcoStruxure
Innovation At Every Level

# 360º Life Cycle Management: Offers

## People

**Training Services:**
Control Systems (DCS / PLC/ SCADA / SIS)
Instrumentation
Cyber Security

**Online Tools & Services**
24/7 Technical Assistance Centre
Online Training Services

**Marketing Engagements**
Demo Kits
Technical Forums
Technology White Papers

## Process

**Business Consulting & Planning**
Future Projects
Current Assets
Expansion

**Process Optimisation**
Advanced Process Control
Operator Training Simulator (OTS)

**Advisors**
Control Advisor
Maintenance Advisor
Profit Advisor

## Technology

**Digital Consultancy**
IIoT
AVR / VR

**Hardware**
PLC / DCS / SIS
Telemetry (Radios)
Instrumentation

**Software**
SCADA
Wonderware
SimSci, Ampla e.t.c
AVEVA

## Assets

**Maintenance**
Service Engineers
24/7 Response

**Modernisation / Migration**
Legacy Systems
Competitive Migration

**Cyber Security**
Anomaly Detection
Vulnerability
Remediation

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# EcoStruxure™ Process Instrumentation

Jason Hutchings
Gerrit Bruntink

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# SE Process Instrumentation at a glance

# EcoStruxure and connected Process Instrumentation, Analysers & Valves

Let the data drive your process efficiency



EcoStruxure™ Architecture

| | Apps, Analytics & Services | Edge Control | Connected Products |
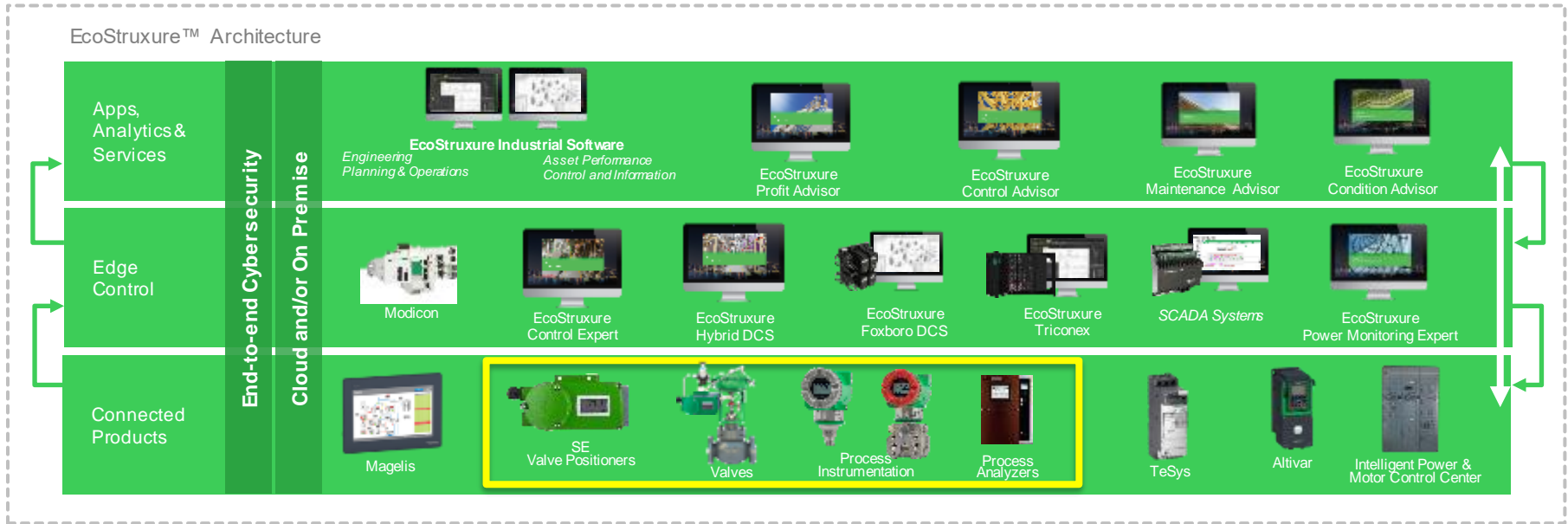
**Reliable and Accurate data** are the 1st (and most important) step to Smart Industry.
Inaccurate measurements (always) result in poor performance and inefficiency !

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# Process Instrumentation (Foxboro), the story

- Became part of Schneider-Electric January 2014.

- Now part of the Industry Business division of SE.

- Global brand for ICSS and Process Instrumentation.

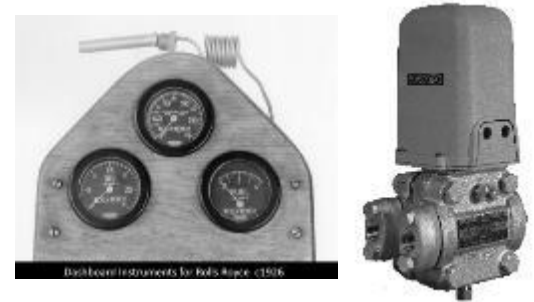- Longest Heritage in the industry of >100 years.

- We work with;

*60% World's LNG producers*

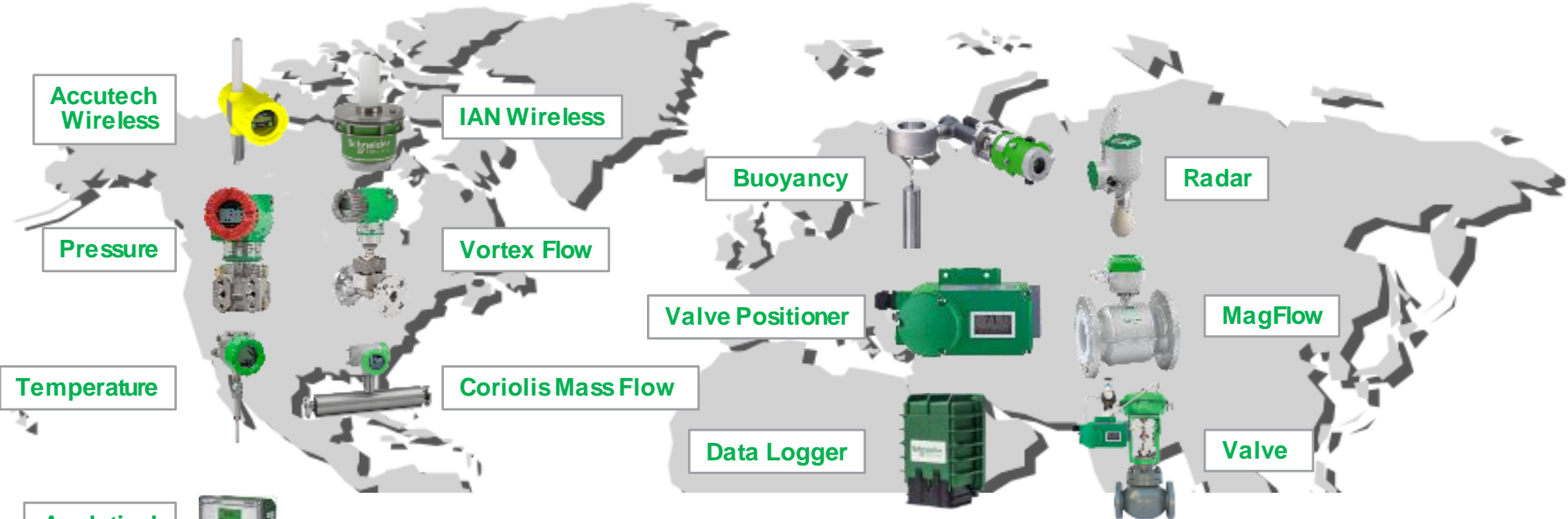*92% World's Petroleum Companies*

*92% World's Chemical Companies*

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# SE Process Instrumentation a global supplier

With global manufacturing plants and delivery organizations



Accutech Wireless

IAN Wireless

Buoyancy

Radar

Pressure

Vortex Flow

Valve Positioner

MagFlow

Temperature

Coriolis Mass Flow

Data Logger

Valve

Analytical

**SE Process Instrumentation** is a **global supplier** of instrumentation to the process industry. Lean manufacturing facilities incorporate measurement and control innovations to produce **State of the art instrumentation** for all process industry.

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# Compressed overview



Flow

Coriolis (Massflow)　　Magflow (Volume)　Vortex (Mass + Volume)

Pressure

S-Series

Level

Radar + Buoyancy

Wireless

IAN & Accutech

Valve Positioners

SRD-Series

Valve

Temperature

RTT-Series

E Chem

PH & Conductivity

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# Agenda for today - WINS



Cost Effective Wireless Technology

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# Bio Gerrit Bruntink, SSE Director Wireless

- Gerrit Bruntink has received his Bachelor degree on Mechanical Engineering and later his master degree in Commercial Economics.

- Since 1990 I have had several jobs in the Instrumentation and Control industry, varying from, sales and channel management, general management and business development at E&H, Tyco, Metso and SE.

- Currently I am driving the wireless portfolio in EMEA and support the regional sales team to grow the wireless business.

- I am based in beautiful Netherlands

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# Industrial Automation and Wireless Information Network Solutions

**Process Automation – Wireless Adopted:**

- It has taken over a decade for wireless to emerge as a **default** requirement for pervasive monitoring.

- By 2017 more than **80%** of industrial operators had deployed Wireless Sensor Networks (WSN).

**Why Wireless:**

- As many as **50%** of desired points are not monitored due to **cost** and **time** of implementation.

- IIoT technologies and **mindset** are changing expectations.

- Maintenance Advisors, Asset Advisors and other deep rooted **Facility Management Systems** are ready to embrace the data.



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# Wireless Information Network Solutions

- Why Schneider Electric Wireless Information Network solutions?

- Schneider Electric Wireless Information Networks are not just Wireless Field Instruments;

  - *They are wireless information networks that can provide many process parameters and provide much more information to improve your business instead of just monitoring your process.*

- Schneider Electric Wireless Information Networks are not limited to just one technology

  - *BLE Bluetooth Low Energy + Wireless HART for short range, 2.4GHz for mid-range and 4G or satellite for long range. This gives always the right solution for every application*

- Schneider Electric is not just a Process Automation Provider, we are your IIOT partner
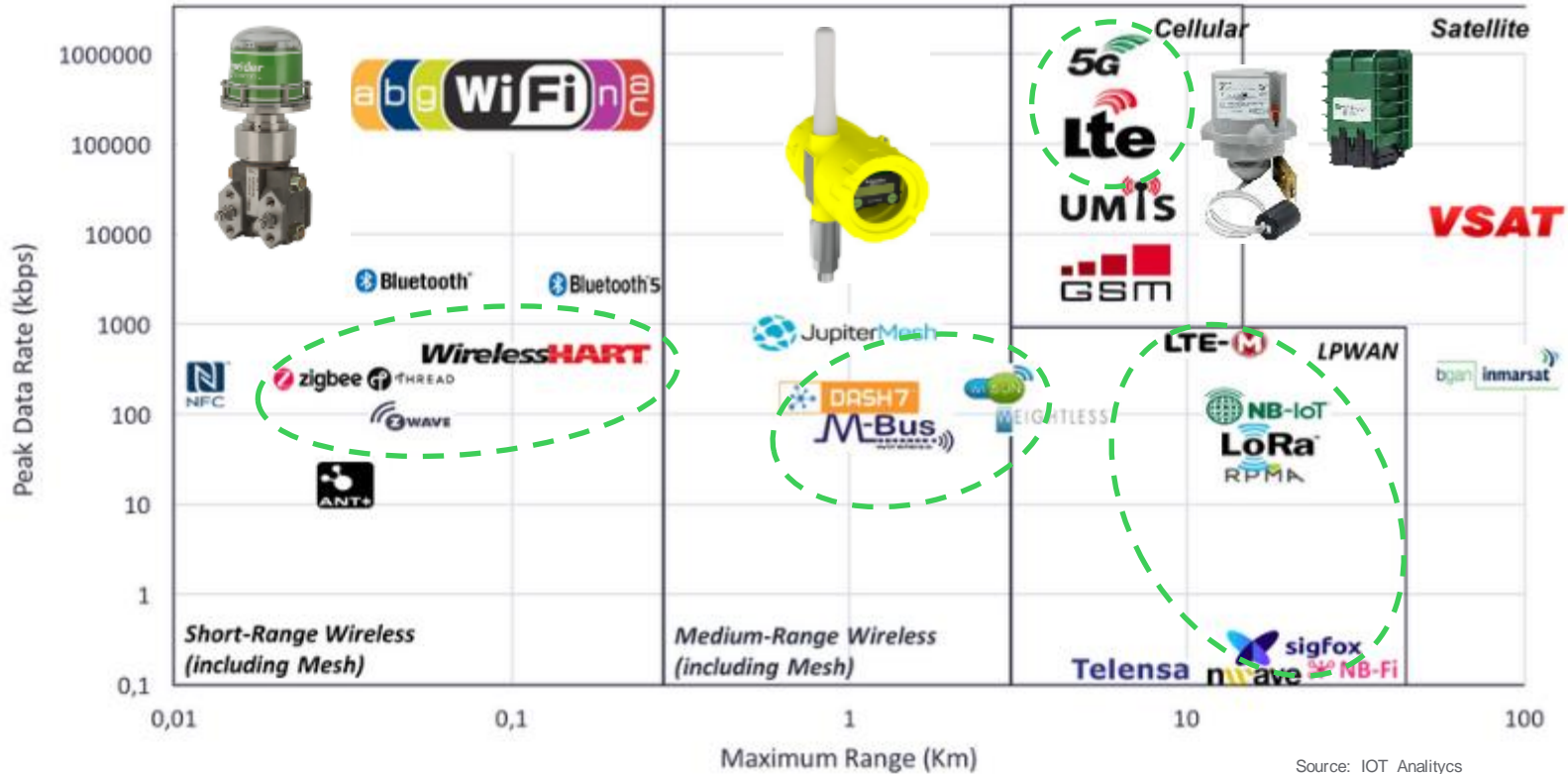
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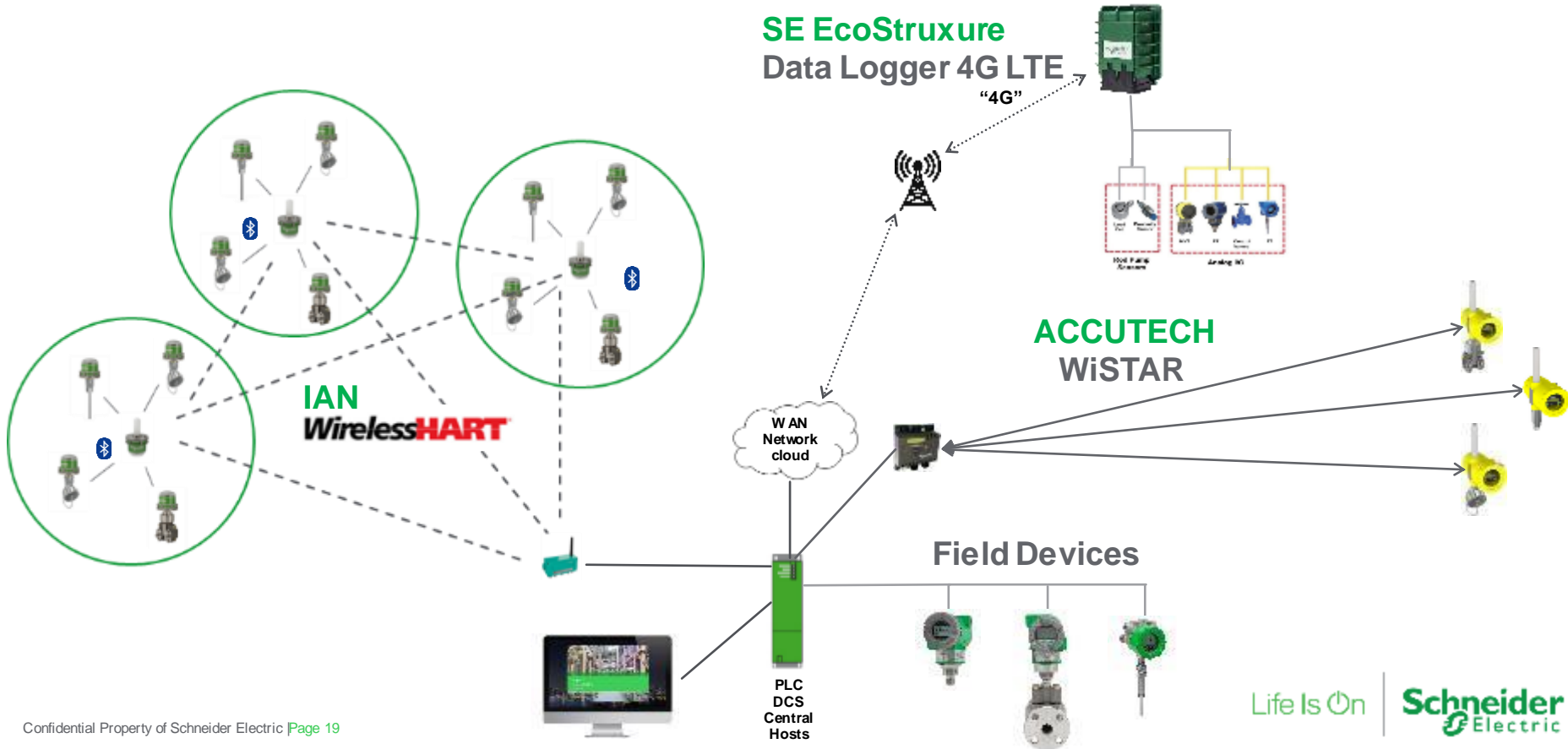
# Introduction

## How WINS fit into EcoStruxure

# Comparison Wireless Technologies

Peak Data Rate vs Maximum Range



Source: IOT Analitycs

# Wireless Information Network Solutions



SE EcoStruxure
Data Logger 4G LTE
"4G"

ACCUTECH
WiSTAR

IAN
WirelessHART

WAN Network cloud

Field Devices

PLC DCS Central Hosts

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# Instrument Area Network - IAN

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# Process Instrumentation Wireless HART Platform IAN

IAN Transmitters are managed through the **concentrator WiFi interface**, the Gateway or from the Host.

Longest battery life **over 10 years- Maintenance free!)**

Simplest network to deploy **Only 2 clicks!**

**Powerful LED lights** are used in the transmitters and concentrators to indicate connectivity during deployment.

**Web enabled configuration**, No vendor specific costly handheld devices needed

**Increased Mesh Network & gateway flexibility**

Native configuration environments in gateways offer access through to transmitters.
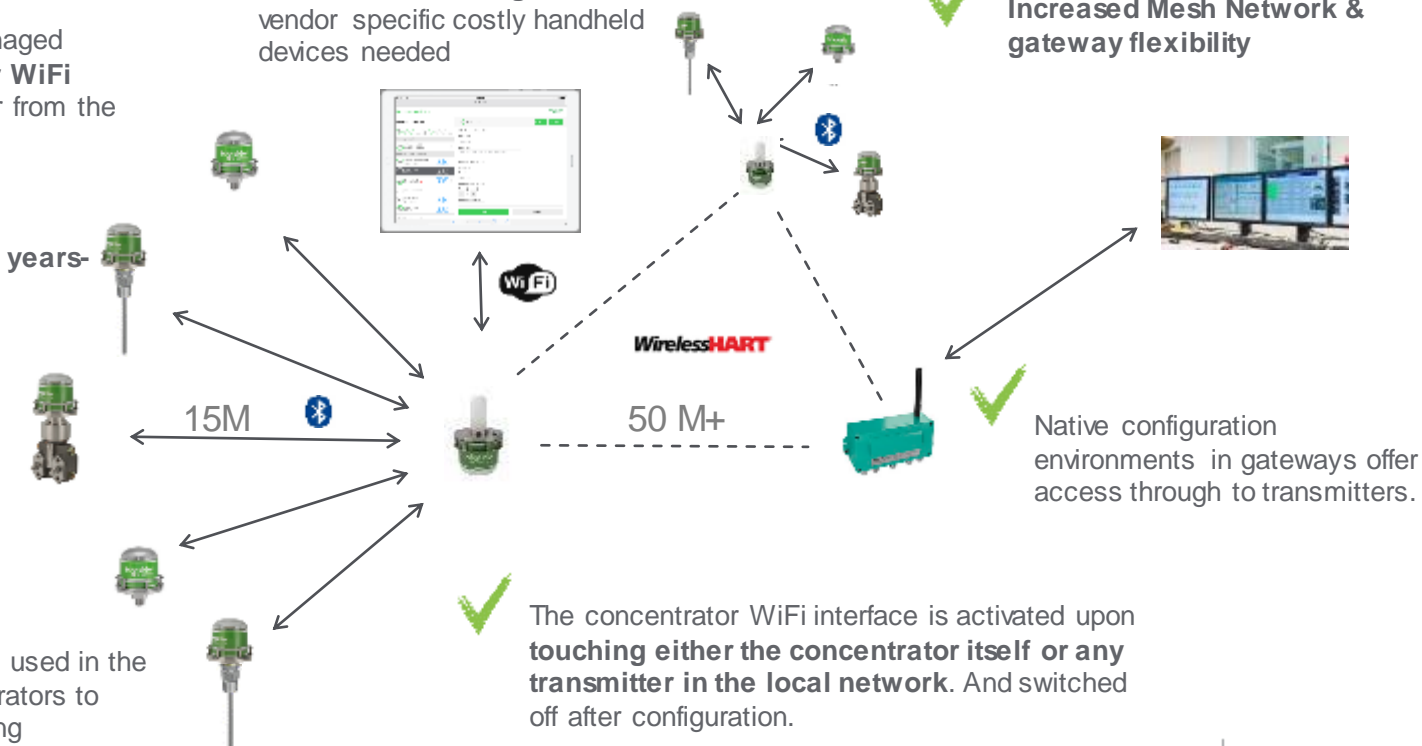
The concentrator WiFi interface is activated upon **touching either the concentrator itself or any transmitter in the local network**. And switched off after configuration.

15M

50 M+

WirelessHART

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# IAN Family



**End Node EN**

**Central Concentrator CC**

**Features**

- Plant wide network capability

- 64 Gbit Flash memory – storage capabilities

- Foreign EN Bluetooth support – growth opportunity

- CC can handle 8 EN's

- Configurable / Readable via tablet

- NAM & ATEX Transmitters Certifications

- EN - Battery life is 10 years*

- CC - Battery life is 5 years*

- Pressure, DP, Temp (+ Non-Invasive)

\* Battery life based on reference conditions

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# Process Instrumentation Wireless HART Platform IAN

New approach to wireless sensor networks

- **Extend Autonomy**
  - Low power BT technology
  - 10-year battery lifetime
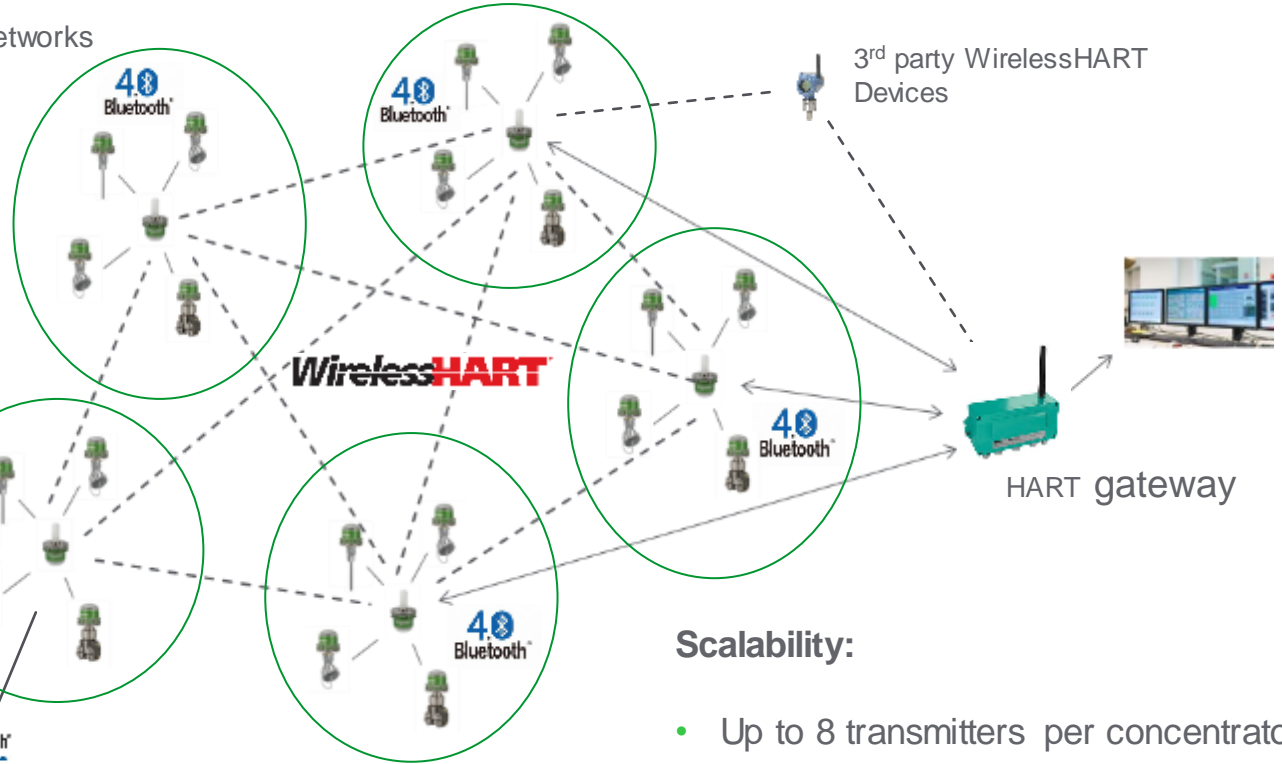
- **Increase Flexibility**
  - Hybrid network
  - Wireless HART & BLE

- **Eliminate blind spots**
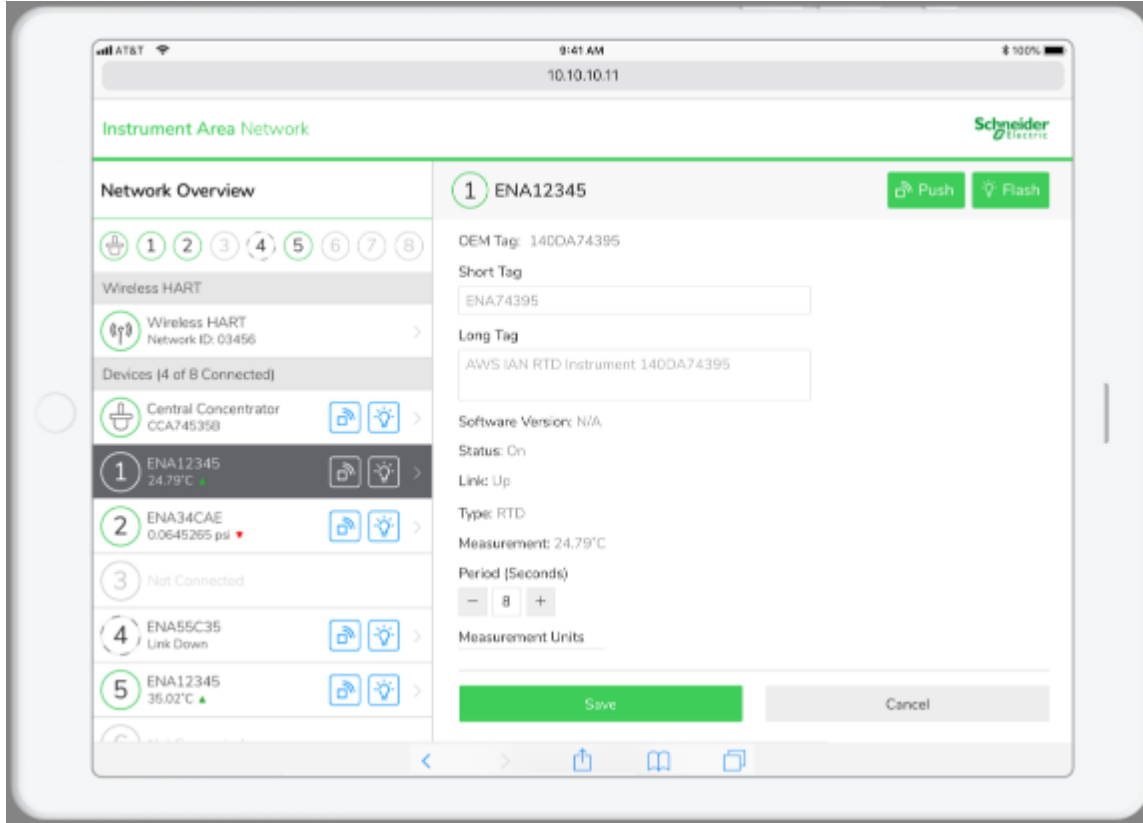  - Architecture optimizes radio paths

3rd party WirelessHART Devices

WirelessHART

HART gateway

Foreign Nodes – Use Your Imagination

**Scalability:**

- Up to 8 transmitters per concentrator.

- Networks are scalable to hundreds of transmitters.

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# Webpage HMI



- HMI IAN (Admin Node)
- Easy touch and feel
- For tablet, desk/laptop and smart phone
- No Expensive handheld needed

# Measurements for Plant Utilities, Used Case

## Challenge:

The customer needs to measure the steam temperature in remote parts of his plant. 15 measurements in different places. The current wired solutions available are too costly to deploy.

## Solution:

Use the IAN model WRT10 and a model WCC10 central concentrator. The IAN solution uses Bluetooth Low Energy to communicate to the central concentrator which communicates WirelessHART to a WirelessHART gateway connected to their PLC using Ethernet/IP.

## IAN Model Numbers:

- WRT10 + ECEPCO210002

- WCC10 and a P&F WirelessHART Gateway



## Markets:

- All Markets

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# Your value from IAN

- Maintenance-, Asset- and other advisers are all hungry for process data. IAN is a perfect fit to make this data (information) available in a cost-effective way, in all markets.

  - *IAN provides the lowest cost wireless solution without compromising performance.*

  - *IAN is the simplest wireless network to deploy. (just 2 clicks and you're connected)*

  - *IAN has the longest battery life. (maintenance free for over 10 years)*

  - *IAN uses Smart Phone, Tablet or PC for configuration. (requires no costly handheld devices)*

  - *IAN is full integrated in EcoStruxure*

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# Accutech

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# Process Instrumentation long distance Wireless Platform

- Accutech Battery Powered Wireless Sensor Network

- Long distance 1000+ m

- Wi-Star communication Protocol

- Long life battery 5 years of operation

- 1 radio with 100 Field Sensors

- Wide range of Sensors

- License Free ISM bands 2.4 GHz

- License Free ISM bands 900 MHz

- -40 to + 85 °C

- CE, ATEX, IECEx -ia
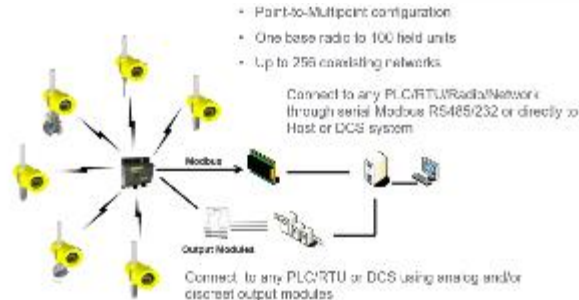
# Worldwide Certifications

**Radio use: Licence free ISM bands:**

| | | |
|---|---|---|
| 2.40 GHz - 2.484GHz | Global (ETSI, FCC, countries as required) |
| 902MHz - 928MHz | North America (FCC) |
| 915MHz - 928MHz | Australia |

**Environmental / Performance Certifications:**

**Field Devices**

NEMA4X aluminum enclosures.

Intrinsically safe, Class I Div1

CE, ATEX/IECEx -ia (intrinsically safe)

**Base Radios**

**BR20:**
CSA Class I Div 2.
ATEX/IECEx-n (Zone 2)

**BR10:**
CSA Class 1, Div 1

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# Basic Network Architecture

Accutech Instrument Network

**Instrument Network**

Omni Antenna

~ 1km

Serial Modbus

**To RTU or any host network interface module. Modbus Master**

Accutech BR20

11-30VDC

This is the basic setup of an Accutech network up and running

**Accutech Manager**
Instrument network configuration
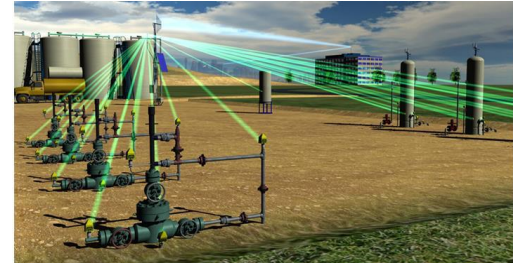
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# Used Cases

- Wellhead monitoring
- Water pressure monitoring
- Storm water monitoring
- Etc

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# Your value from Accutech



- *Accutech is the robust and proven technology in many upstream O&G applications.*

- *The solution collects measurement and operational data from devices spread across geographical – dispersed assets using low power with a long battery life of 5 years*

- *Accutech delivers the data over a wide area secured communication infra structure*

- *Data can be used for supervision, Analysis and business decision-making*

- *Accutech is fully integrated in EcoStuxure*

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# 4G-LTE Datalogger

Connecting your process information to the cloud

# Datalogger Family

| | PRemium | LiTe | Intrinsic Safe |
|---|---|---|---|
| Analogue inputs | 4 | 2 | 3 |
| Digital inputs* | 5 | 2 | 3 |
| Serial Inputs RS485, RS232, SDI-12, Modubus and ASCII protocols supported | 16 | 16 | 16 |
| No of SIM cards | 2 | 1 | 2 |
| GPS | Yes | No | Yes |
| Atex certified | No | No | IECEx ATEX |
| Ingress protection IP68 / NEMA 6P | Yes | Yes | Yes |
| Alarm notification per SMS, email | Yes | Yes | Yes |
| Communication (4G/3G/2G), Bluetooth connectivity | Yes | Yes | Yes |
| Communication through NB-IOT end of Q2 | No | NB-IoT | No |
| In-Cloud or On-Premise solution | Yes | Yes | Yes |
| Battery (5+ years) | Yes | Yes | Yes |
| Available for Sales | **YES** | **YES** | **Q3** |

\* 2 x DI can be programmed as DO

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# Data Hub, User Interface

- The Data Hub is a secure method of visualizing the data provided by the datalogger. There is a secure login and access portal to access the data, status and configuration from the datalogger, or group of dataloggers.

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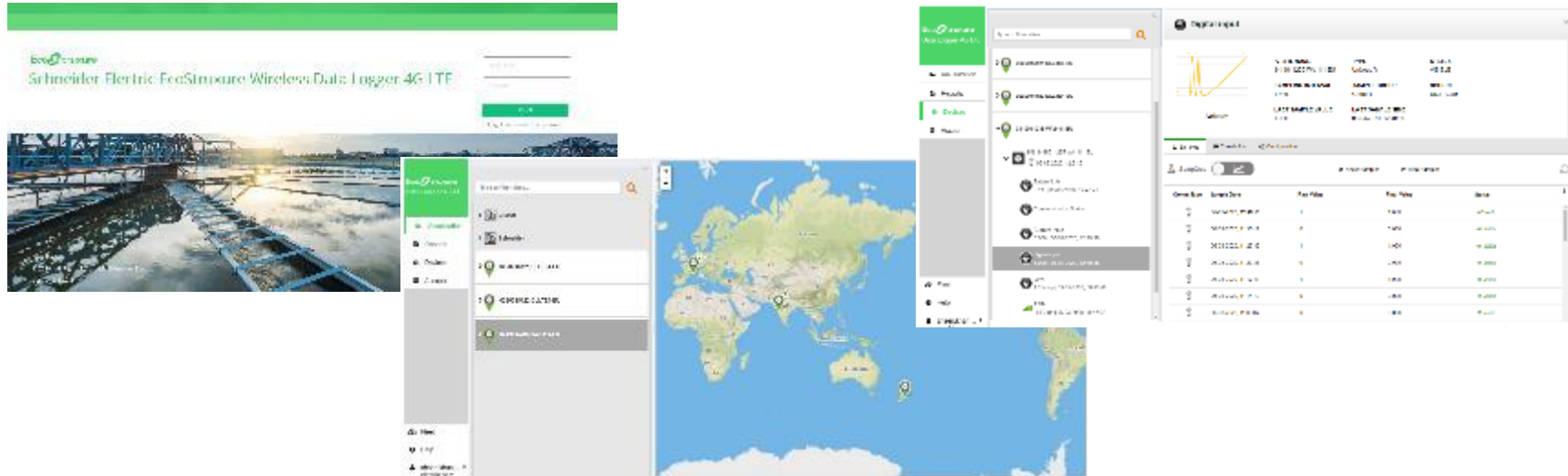
# Datalogger Architectures
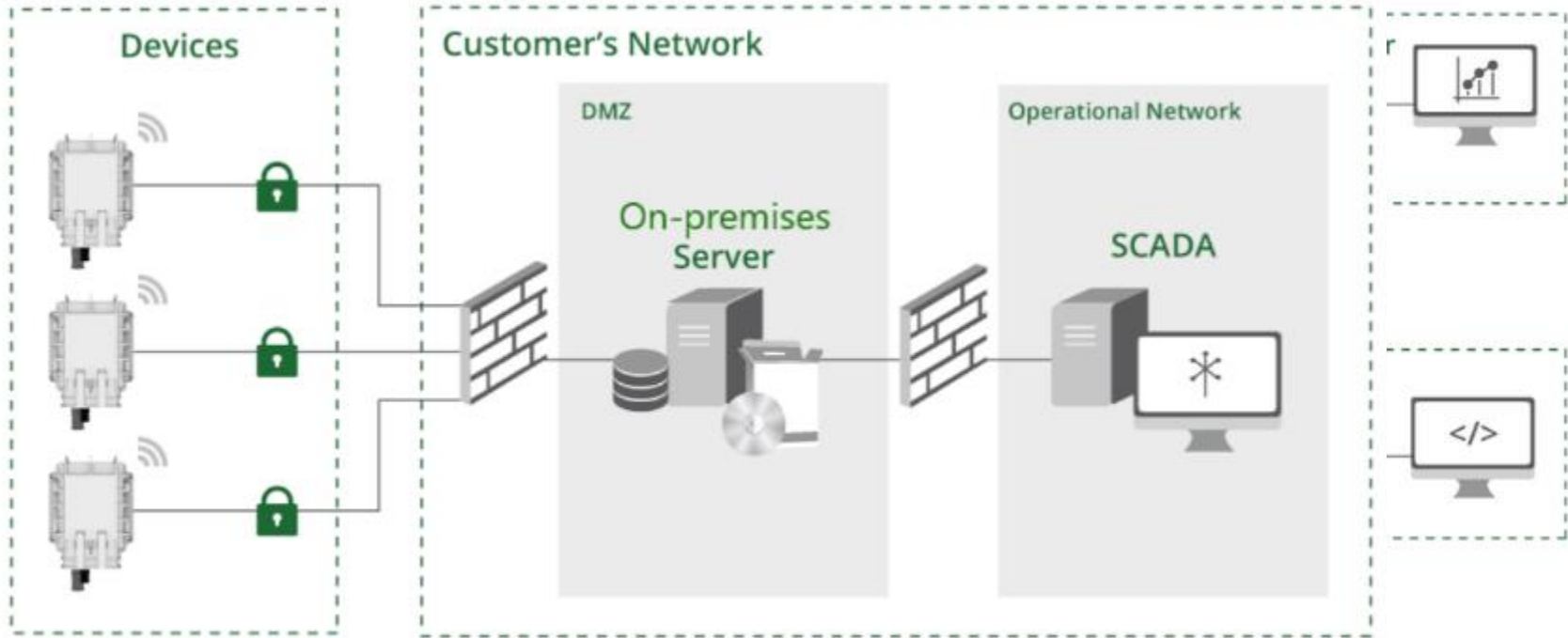
- Different Architectures possible



Figure 2: On-premises server

# Datalogger Cloud and On-Premise Solutions

- The datalogger has the highest level of cyber security with TLS 1.2 and a 256-bit AES encryption

- The most flexible soliton within our portfolio for Remote data acquisition and simple control

  - (Can work as a remote RTU for eg pump controlling (on/off), valve control (open close) etc)

- Data can be stored in the Cloud or On-Premise through CSV, DNP-3 or OPC UA*

- Different data packages available for Cloud solution

- Different support packages available for On-Premise solution

- Bluetooth connection to App

- Great integration within EcoStruxure

- *OPC-UA available from July 2021

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# What do you get in Datalogger box

- Comes standard with External Antenna, mounting bracket, mounting materials and sensor connectors



- Accessories (Solar panel etc) and Level sensors will be added to portfolio in Buy Automation

- PR + LT version Available, IS version becomes available in Q3

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# Centeron tank monitoring

# Centeron

4G Products

- Schneider Electric Centeron is wireless solution for tank level monitoring, asset tracking and data provision

- **Primary markets** (wholesale) suppliers of fuels, lubricants, LP Gas, liquid fertilizers and chemicals using above ground storage tanks.

- 5G and Satellite solutions available

Guided wave Radar　　　　Hydrostatic Pressure　　　　Float pickup

# Centeron LevelTrack

## GPS & Satellite Products

- Centeron LevelTrack allows level management and **global** asset tracking using BLE (Bluetooth Low Energy), **GPS, and a simplex satellite modem**

- Battery-operated, with an expected battery life of greater than three years under normal operating conditions

- Compatible with Centeron WebView for customized reports and monitoring

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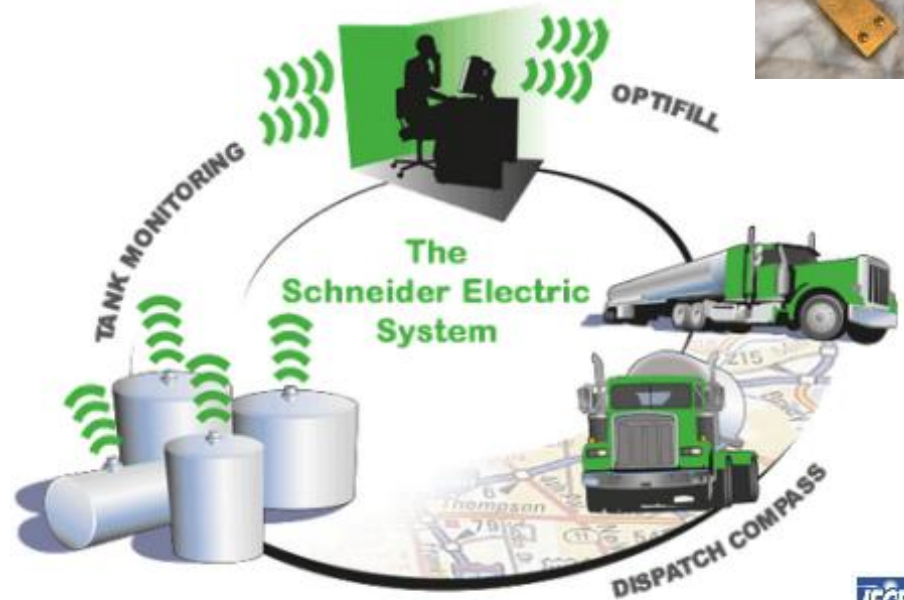
# Centeron WebView

Secure Web-based inventory and delivery management solution

- Provides you with up-to-date inventory statuses that support optimal delivery decisions

- Easily review current and historical tank level information

- Track your progress towards achieving more efficient operations

- Alerts help you eliminate costly run out situations

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