

Digitalizirajmo se iz "polja" –
procesna instrumentacija novog doba!

Sudjelovanje

Opće napomene

SIEMENS
Ingenuity for life



Molimo sve sudionike da isključe svoj mikrofon.



Pitanja su uvijek dobrodošla.
Pitajte ih na kraju ili upišite svoja pitanja u chat.



Prezentacija će biti poslana svim sudionicima.



Koristite LAN mrežu.

Pregled tema



Digitalizacija se prožima kroz sve aspekte industrije, ali otkuda krenuti? Kako u doba "novog normalnog" odrađivati servisne aktivnosti i puštanje u pogon uređaja iz polja iz udobnosti doma?

Predstavljamo vam nove trendove iz područja mjerne opreme, ali i neke "zaboravljene" tehnologije koje u doba sve većom potrebotom za podacima mogu sjajno doći do izražaja.

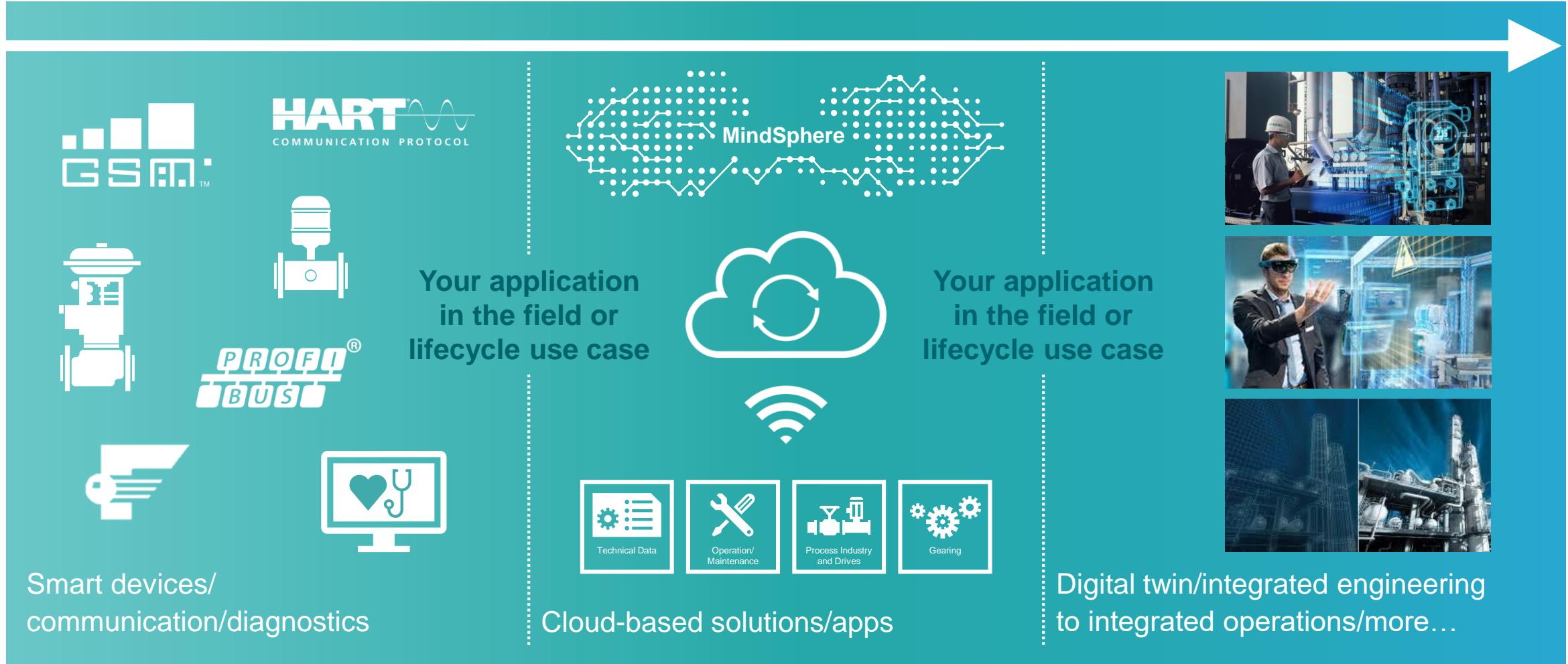
HART komunikacijski protokol - kako iskoristiti sve prednosti i dobiti korisne podatke o procesu.

Parametriranje i puštanje u rad uređaja preko bluetootha i pametnog telefona. Slanje podataka na industrijski oblak Mindsphere.

Udaljeni pristup i podrška na terenu uz pomoć SIPIX platforme uštedit će vrijeme i novac (zaista!) i to bez socijalnog kontakta. Uz SIPIX SD tablet, naočale za proširenu stvarnost i tehničke eksperte iz Siemensa uspješno ćete riješiti problem. Veliku važnost pridajemo i kibernetičkoj sigurnosti tako da ne morate brinuti oko možebitno vidjeti ili pohraniti vaše podatke iz postrojenja!

What is digitalization for the process industries?

Where does it begin for you?



Digitalization – key innovation fields in the digital age... but there is already potential right in front of us

Digitalization Innovation Fields



Data
analytics



Artificial
intelligence



Simulation
tools



Cloud and platform
technology



Secure
connectivity



Cybersecurity

0 1 0 1 0
1 0 1 1 1
1 1 1 0 1
1 0 0 1 0
0 1 1 1 1

How to
create value
out of it?

1 0 1 0 1
0 1 1 1 0
1 0 0 1 1
0 1 1 0 1
1 1 1 1 0

Current situation



... although talking HART ...

85% of 25 million
HART devices may only transfer
1 process value
via 4 to 20 mA to the operator
or asset manager.



Source: HART Communication Foundation (HCF)

So yeah...I get it ...there is plenty of data already
available NOW!
But how to access them?

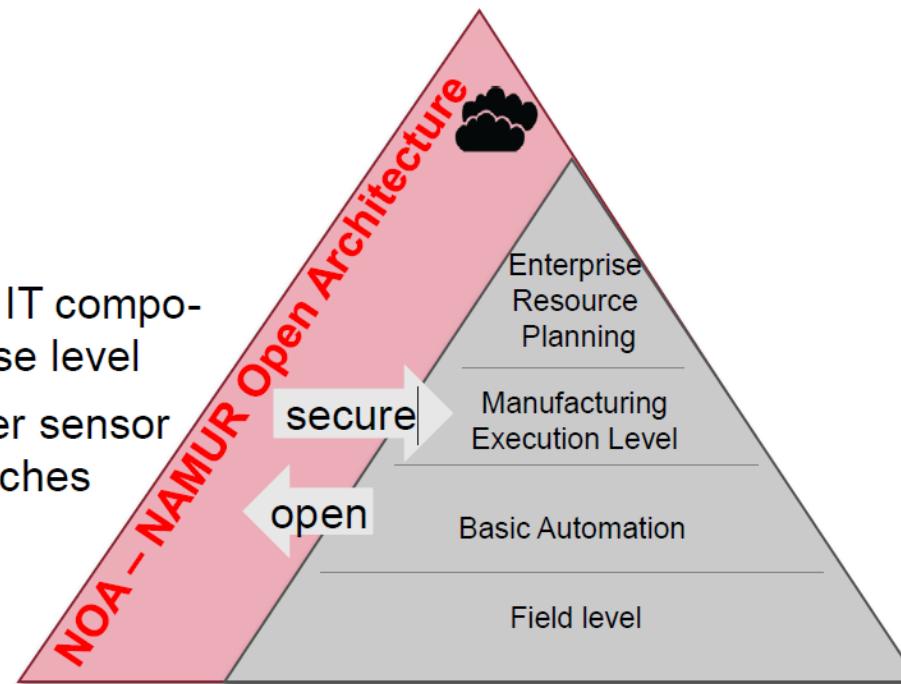
The Siemens instrumentation approach based upon NAMUR guidelines

NOA – NAMUR Open Architecture



Enhancement of existing approaches as a baseline for the efficient and flexible utilization of Industrie 4.0 with the process industry

- Additive to existing structures
- Open for new approaches within Industrie 4.0
- Based on existing standards
- Simple integration of fast changing IT components from field level up to enterprise level
- Significant improvements of cost per sensor due to open and integrative approaches
- No risk of availability and safety of installed base

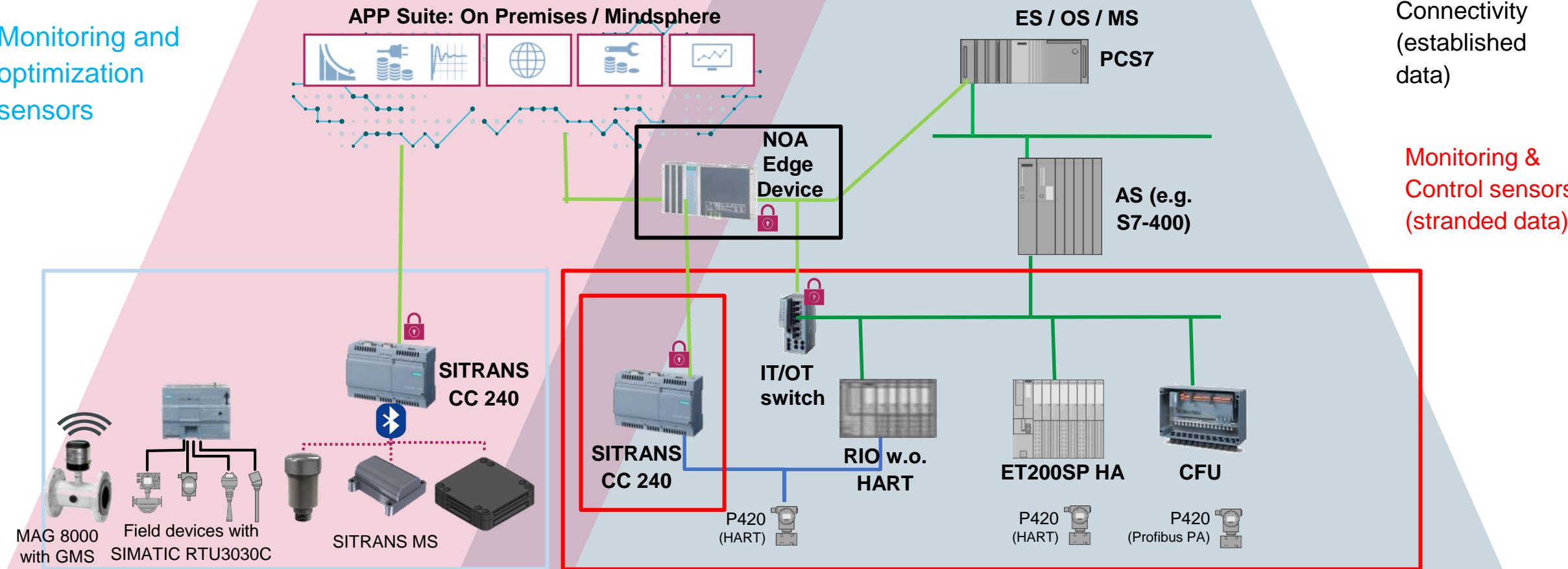


NAMUR proposes NAMUR Open Architecture (NOA) Various options of connectivity

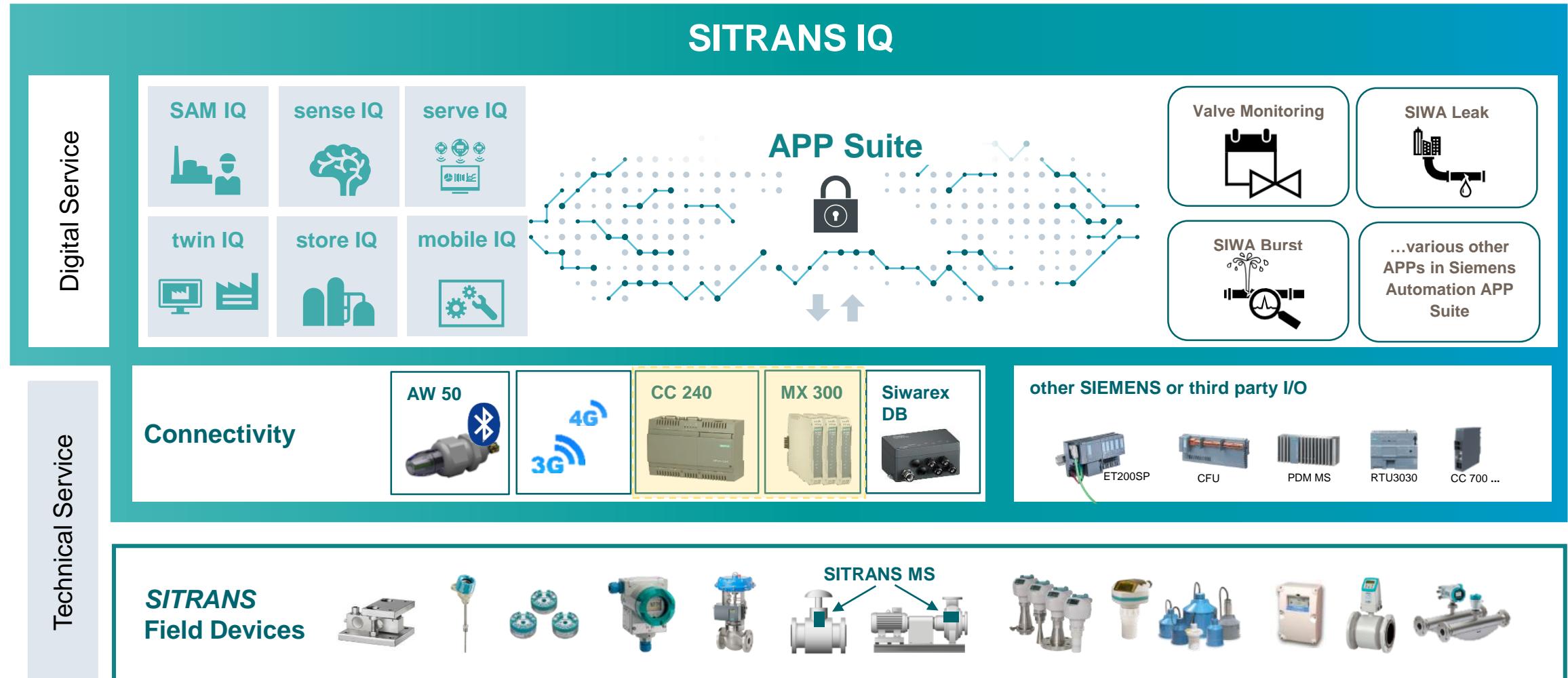
high reliability
IT infrastructure

Monitoring and optimization
sensors

Monitoring and optimization



SITRANS IQ overview

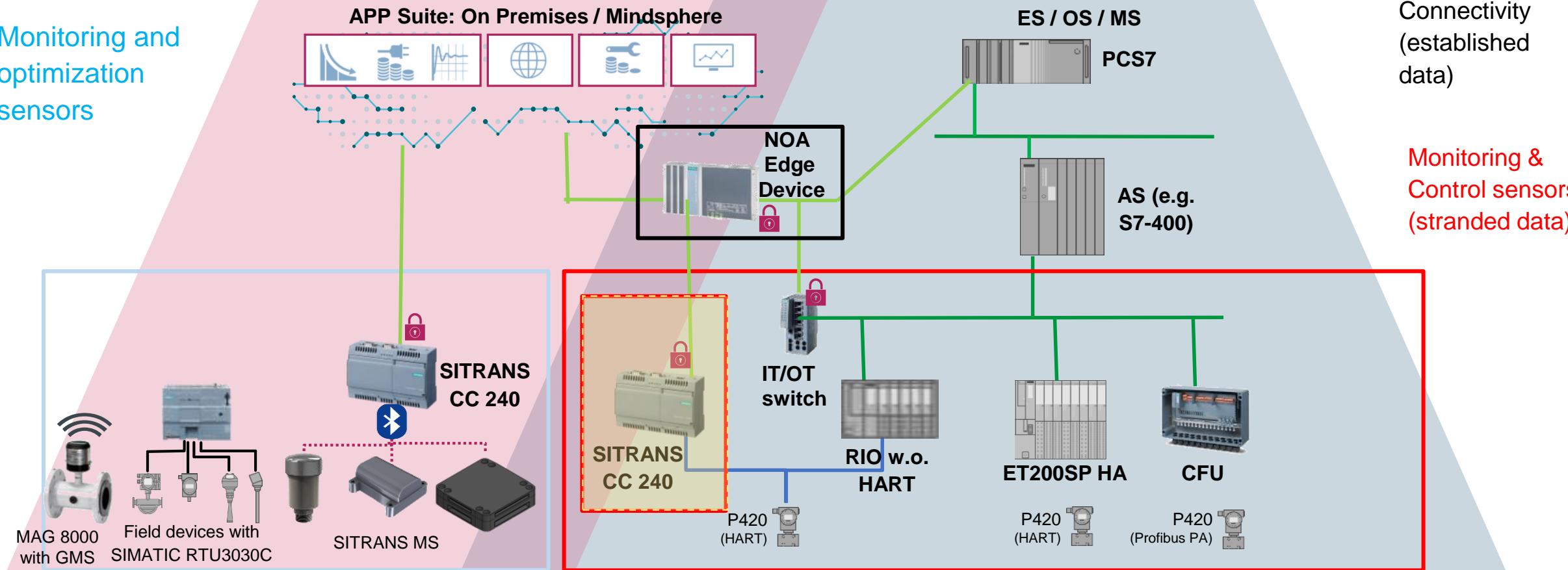


NAMUR proposes NAMUR Open Architecture (NOA) Various options of connectivity

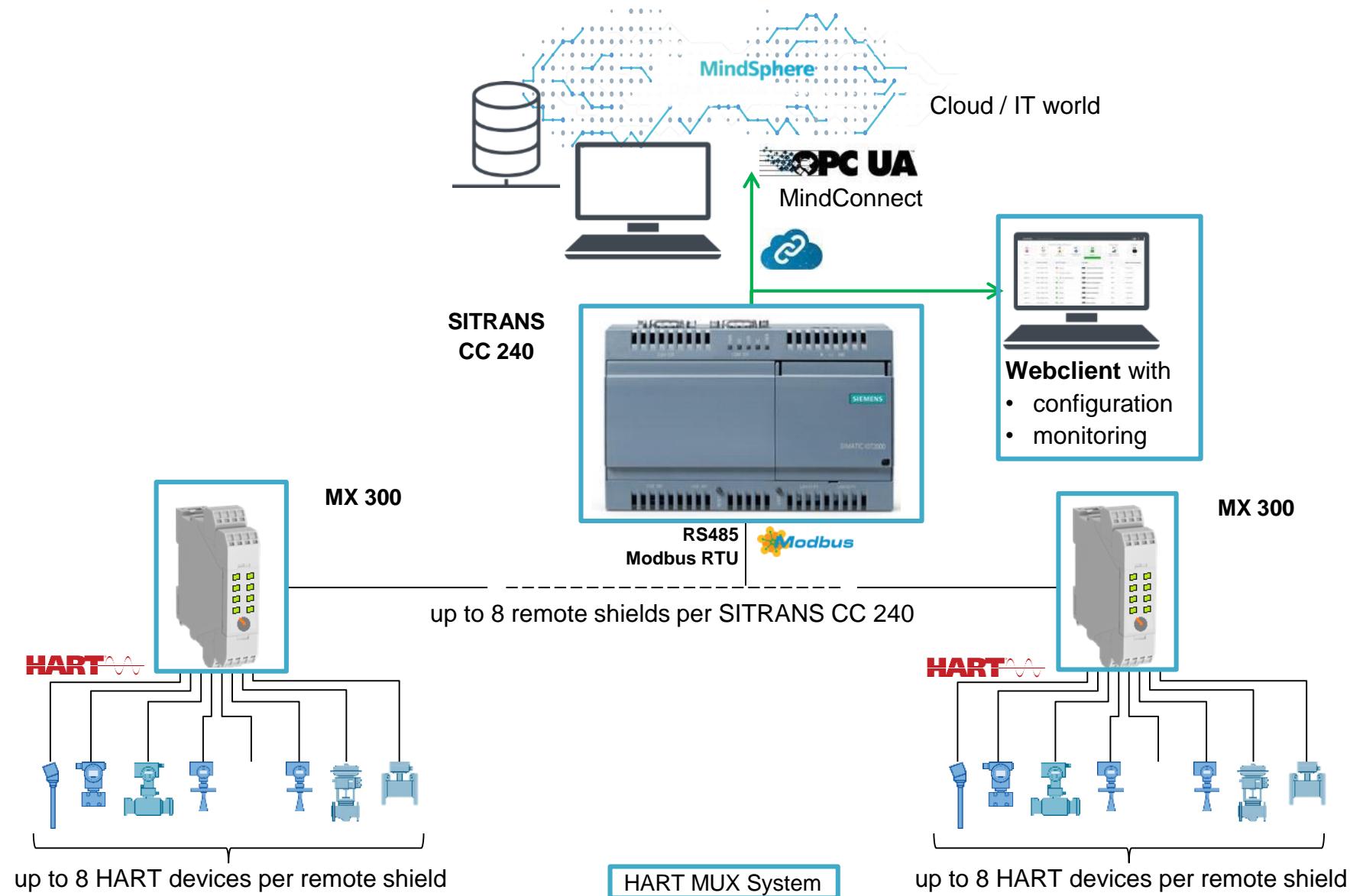
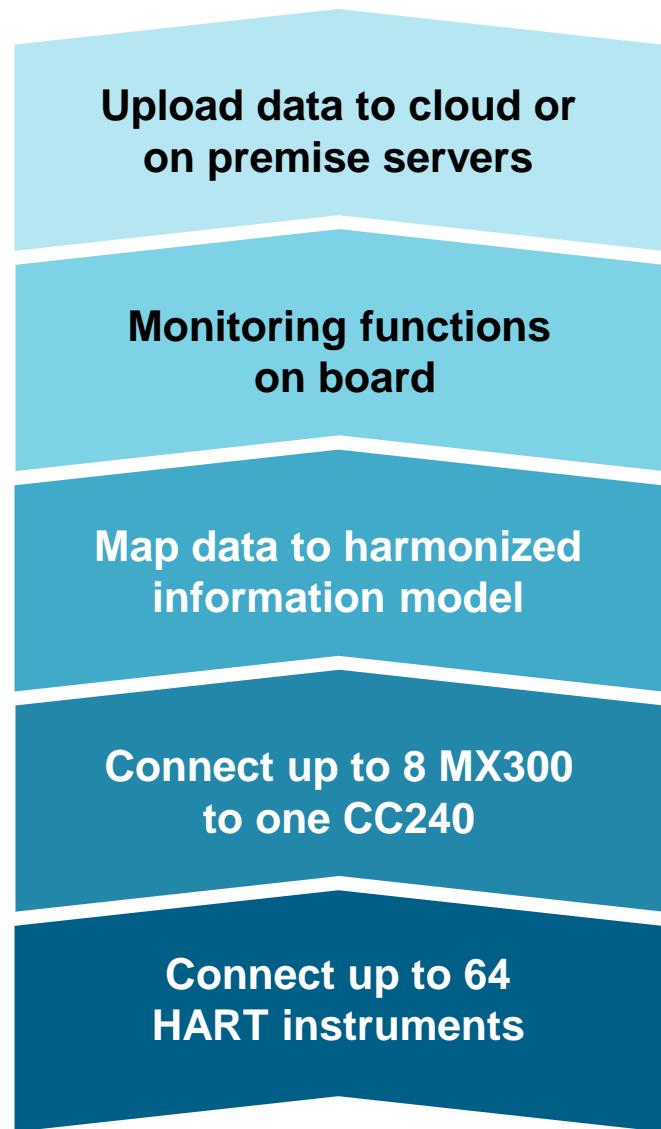
high reliability
IT infrastructure

Monitoring and optimization
sensors

Monitoring and optimization



SITRANS CC 240 / MX 300 – Topology and functionality



SITRANS CC 240 / MX 300 – Topology and functionality

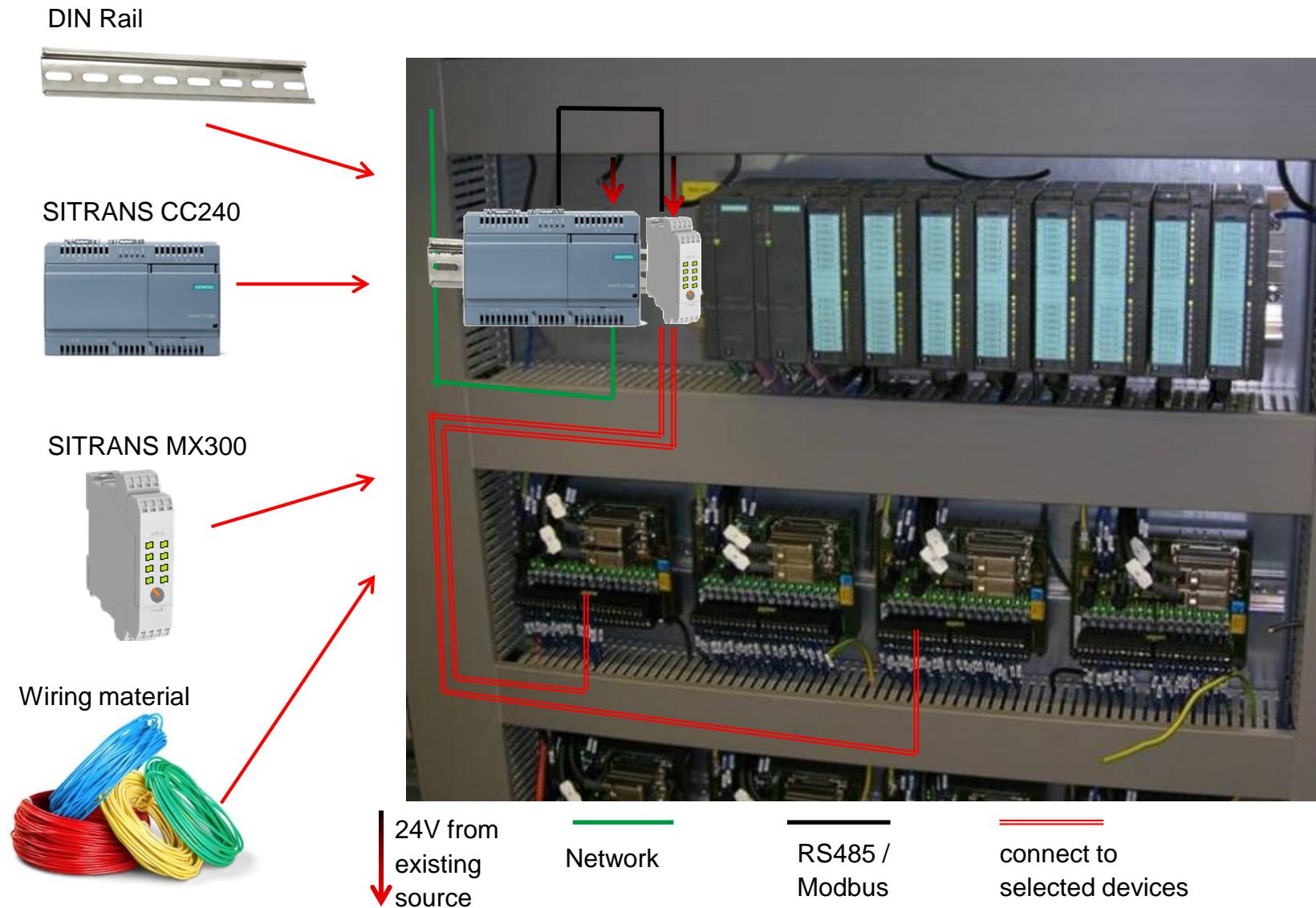
Upload data to cloud or on premise servers

Monitoring functions on board

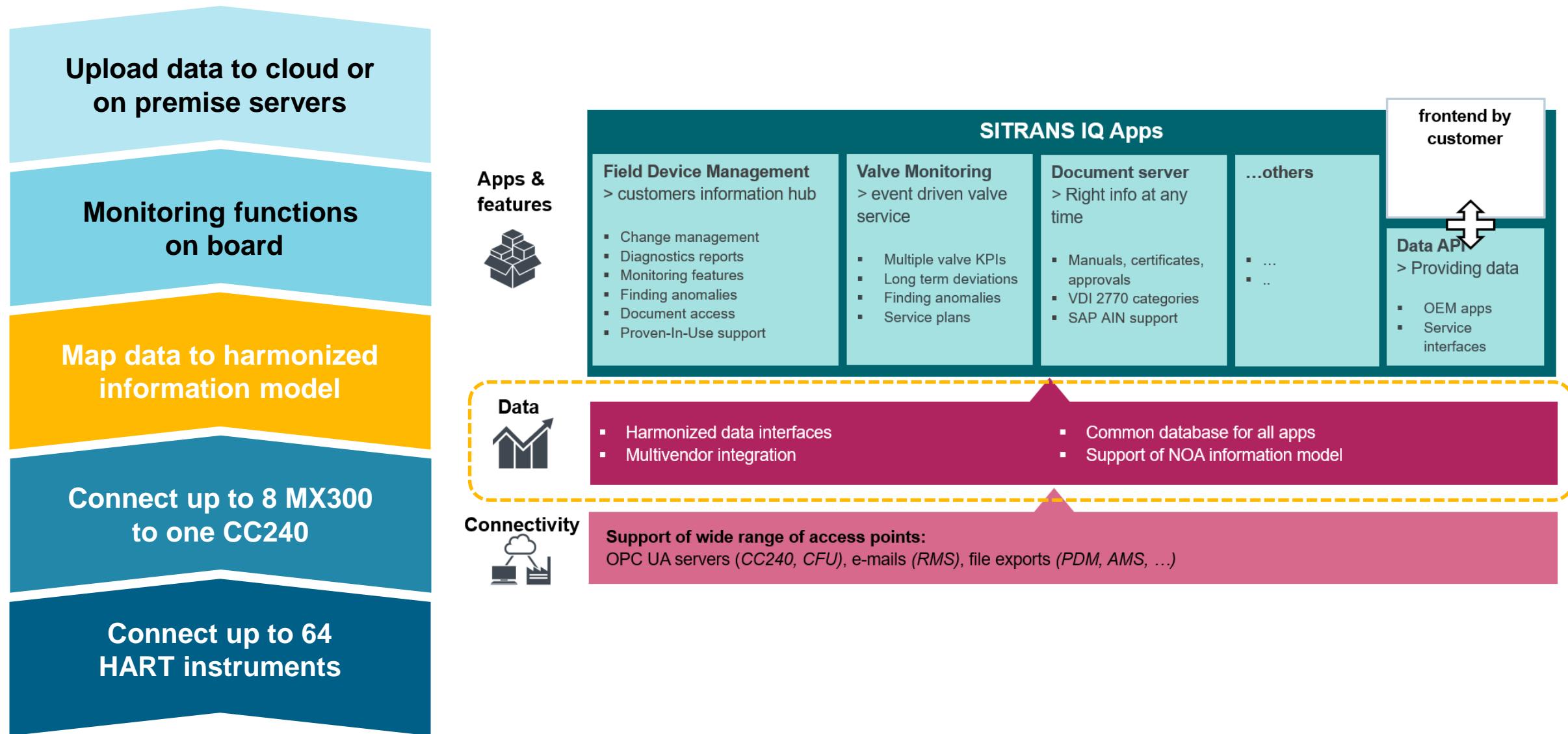
Map data to harmonized information model

Connect up to 8 MX300 to one CC240

Connect up to 64 HART instruments



SITRANS CC 240 / MX 300 – Topology and functionality



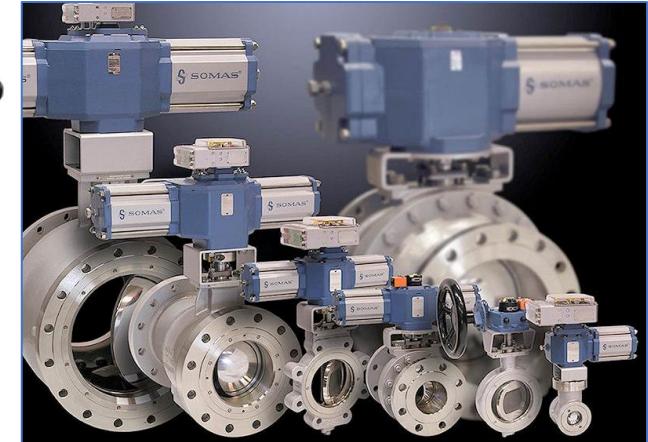
#GetDigiWithPI

SITRANS CC240 – some info on the pilots in scope

SOMAS

Sweden // Manufacturer of valves // Shipbuilding, Pul & Paper, Energy industry focus

- Test installation in own lab firstly
- Afterwards: Installation in paper application to get additional data to plan maintenance
- In future: verify installations for marine applications



SIRIS + Northumbrian Water

UK // MCERT inspector for water authorities

- collecting flow data for remote applications
- existing remote devices / No DCS
- on top offer various services in regards of monitoring, alarm handling and reporting



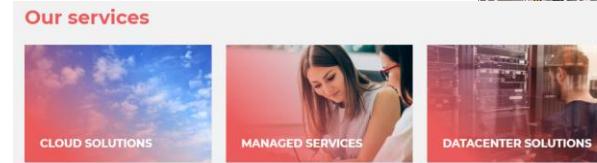
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SITRANS CC240 – some info on the pilots in scope

Itzertis

Spain // IT company // Edible oil plants

- Measurement of storage tanks
- No PLC planned, cloud solution needed
- Only need data, would set up / develop own system



Hain Daniels

UK // Food company // Boiler room automation

- “old” setup – no automation available at all
- All recorded currently manually
- Customer requires from Siemens for complete/advanced solution linking data via OPC/UA

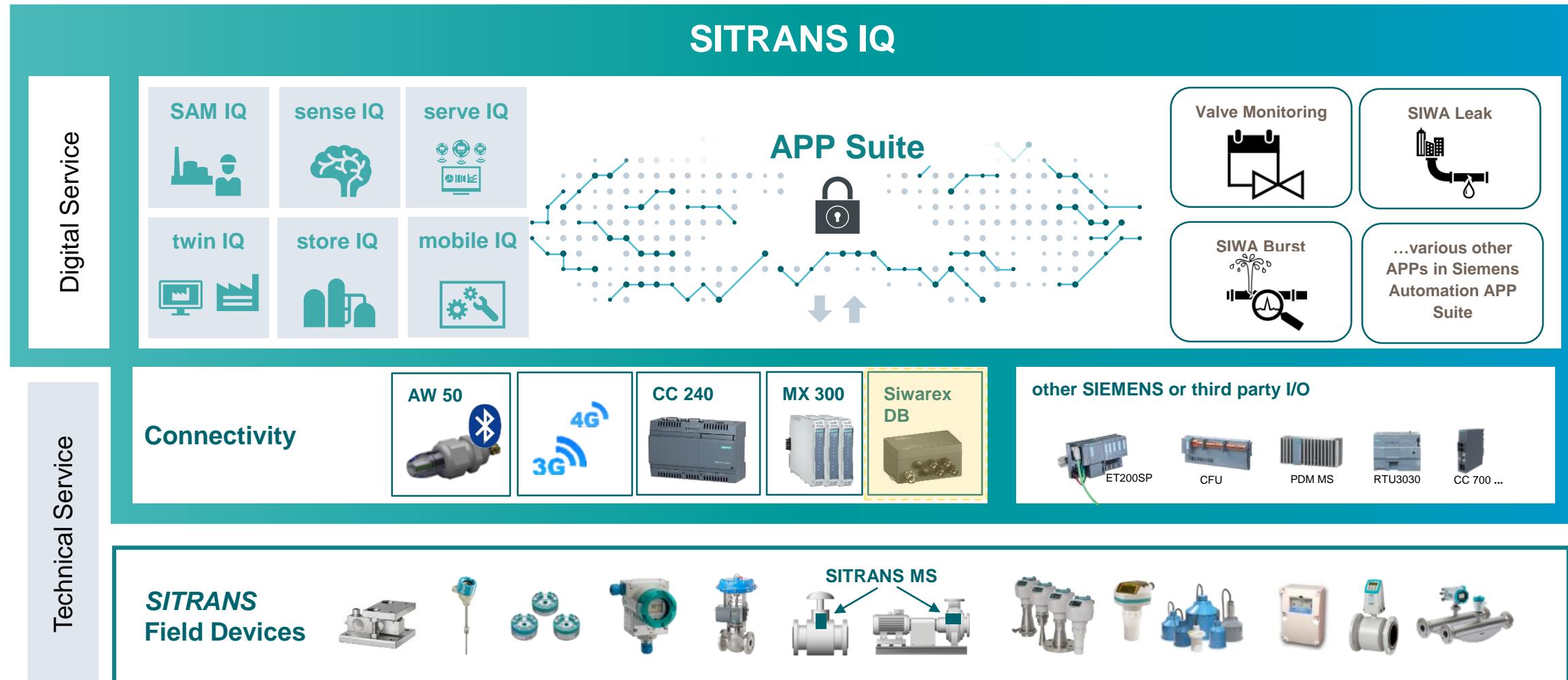


Various accounts in Chemical industry

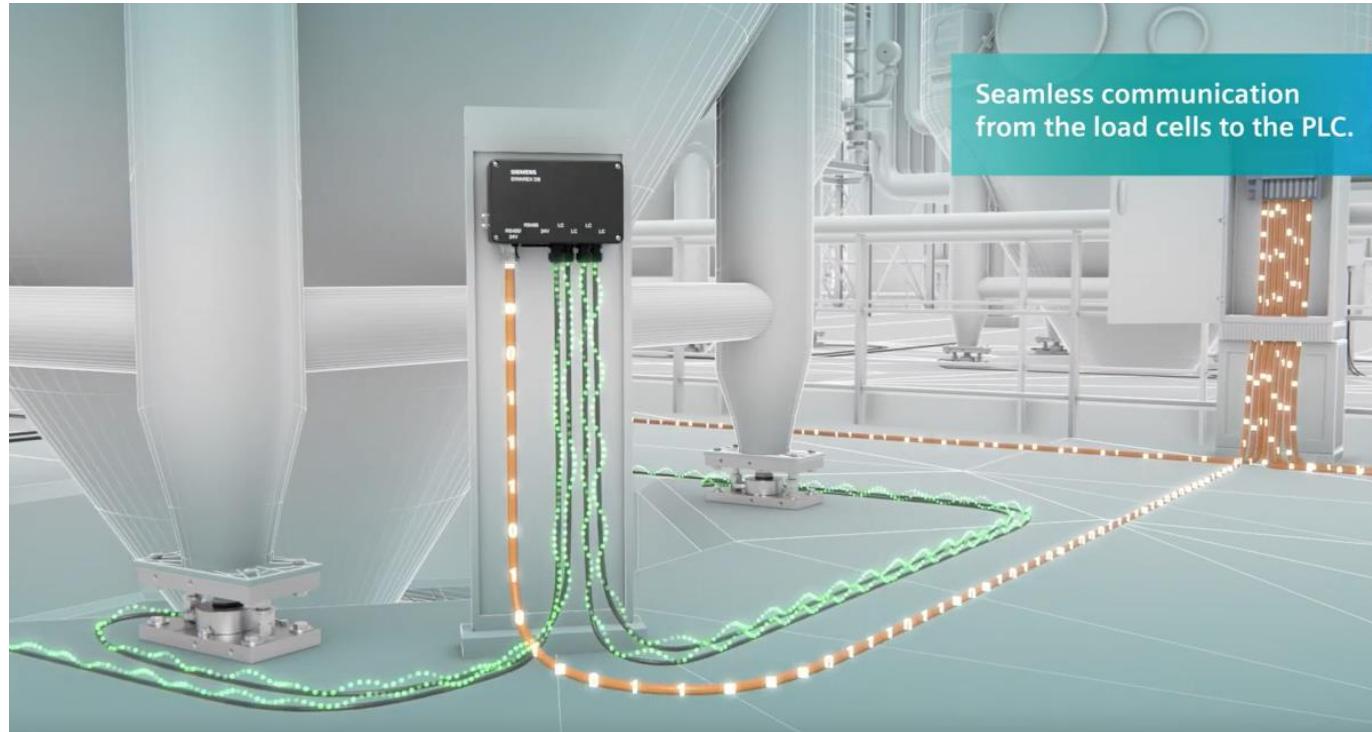
- NAMUR based, etc.
- Installations in test labs & sites



SITRANS IQ overview

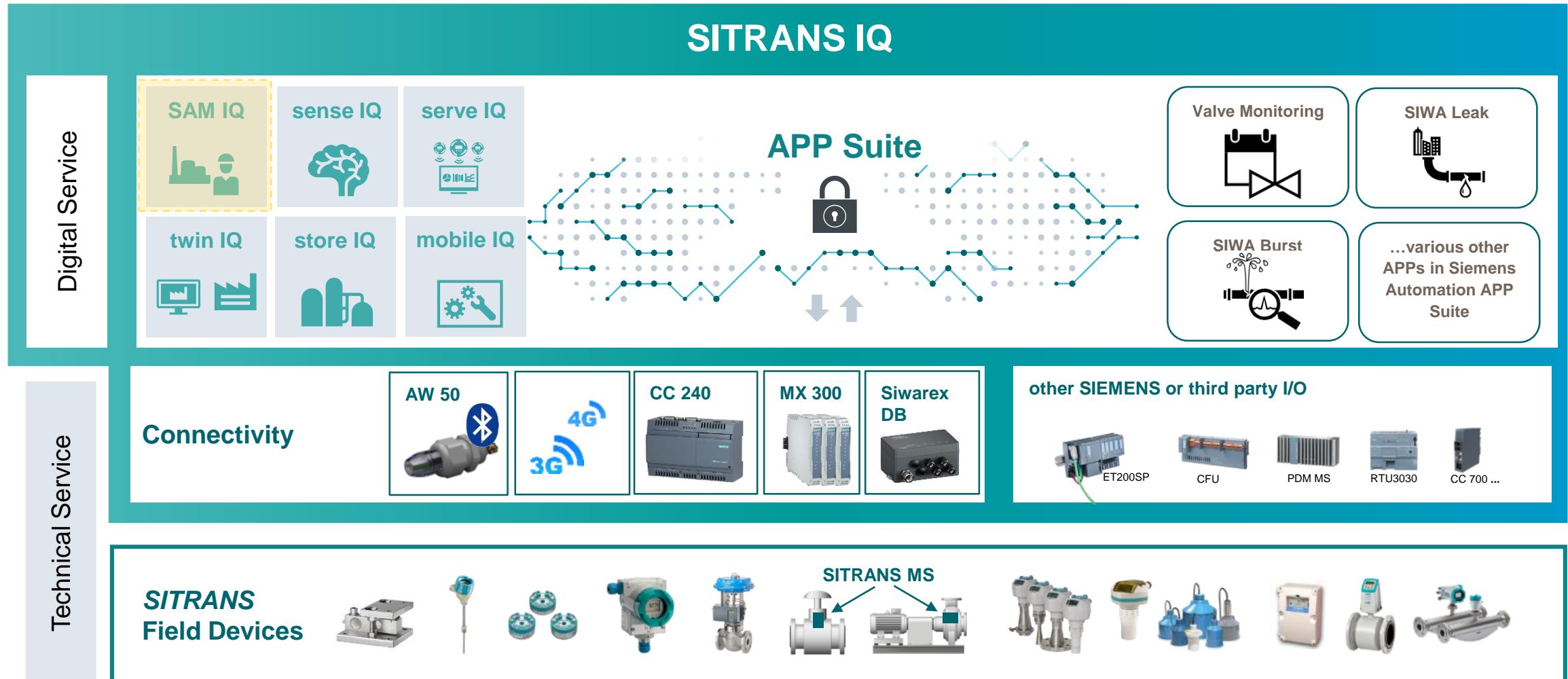


SIWAREX DB



- Additional diagnosis possibilities due to analysis of single load cells
- Integration in SIMATIC via connection to SIWAREX weighing module
- Seamless communication between command and field level, supports tracking of order number and location code
- Easy exchange against analog junction box
- Use in harsh environments due to IP66
- Simplification of service: no multimeter necessary anymore
- fast initial diagnosis via LEDs

SITRANS IQ overview



With SITRANS SAM IQ you can...



... make unused but valuable data available



... manage all your field device data, with comprehensive possibilities of diagnostics and monitoring



... reduce device failures by overviewing the health state of each field device and event-based device management



.... validate device measurements by applying device-specific diagnostics of process values and customized multiparameter dashboards

SAM IQ - Device List

SIEMENS Smart Asset Management

Device List

All devices | 94 Failure | 43 Check | 0 Out of Spec. | 3 Maintenance | 1 Normal | 47

Tag	Manufacturer	Product Name	State	FW Version	HW Version
C3_LT104_02	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.01.00-01
LT_MS04	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.00.00-00
LT_MS63	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.01.00-01
LT_MS07	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.00.00-00
M1_2LT111	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.00.00-00
LT_MS03	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.00.00-00
LT_MS09	SIEMENS AG	SITRANS LR560	Failure	01.00.02-14	1.01.00-01
LT_MS11	SIEMENS AG	SITRANS LR560	Failure	01.00.02-14	1.00.00-00
LT_MS02	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.00.00-00
LT_MS10	SIEMENS AG	SITRANS LR560	Failure	01.00.02-14	1.00.00-00
LT_MS01	SIEMENS AG	SITRANS LR560	Normal	01.00.02-14	1.00.00-00
LT_MS113	SIEMENS AG	SITRANS LR560	Failure	01.00.02-14	1.01.00-01
HY_K2_F01	SIEMENS AG	SIPART PS2	Failure	5.00.02-00 / E1	FBG 7 LP 3
HY_DV9_4	SIEMENS AG	SIPART PS2	Failure	5.00.04-02 / E1	FBG 11 LP 4
HY_DV4_1	SIEMENS AG	SIPART PS2	Failure	5.00.02-00 / E1	FBG 7 LP 3
CV505_00	SIEMENS AG	SIPART PS2	Normal	6.00.00-14	FBG 13 LP 04
HY_FT09	SIEMENS AG	SITRANS F M MAGFLO	Normal	04.04	2
HY_FT11	SIEMENS AG	SITRANS F M MAGFLO	Normal	04.04	2



Overview of all your field instruments with essential device information



Device health state at a glance

SAM IQ – Event List

SIEMENS Smart Asset Management

Devices Events Analyses

Events

All events | 187 Unacknowledged | 187

Date	Tag	Product Name	State	Change Type
2019-10-14	HY_F017	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-14	LT_MS03	SITRANS LR560	✗ Failure	Device state changed to Failure
2019-10-14	HY_F014	SIPART PS2	◆ Maintenance required	Device state changed to Maintenance requ...
2019-10-13	LT_MS61	SITRANS LR560	✗ Failure	Device state changed to Failure
2019-10-13	HY_DV4_3	SIPART PS2	◆ Maintenance required	Device state changed to Maintenance requ...
2019-10-12	LT_MS64	SITRANS LR560	✗ Failure	Device state changed to Failure
2019-10-12	CV505_00	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-11	HY_F012	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-11	HY_F010	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-11	HY_DV1	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-11	HY_DV1	SIPART PS2	◆ Maintenance required	Device state changed to Maintenance requ...
2019-10-11	LT_MS09	SITRANS LR560	✗ Failure	Device state changed to Failure
2019-10-11	HY_F014	SIPART PS2	◆ Maintenance required	Device state changed to Maintenance requ...
2019-10-11	LT_MS05	SITRANS LR560	✗ Failure	Device state changed to Failure
2019-10-11	CV505_00	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-10	HY_F010	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-10	HY_DV2_4	SIPART PS2	✗ Failure	Device state changed to Failure
2019-10-10	HY_DV2_4	SIPART PS2	◆ Maintenance required	Device state changed to Maintenance requ...

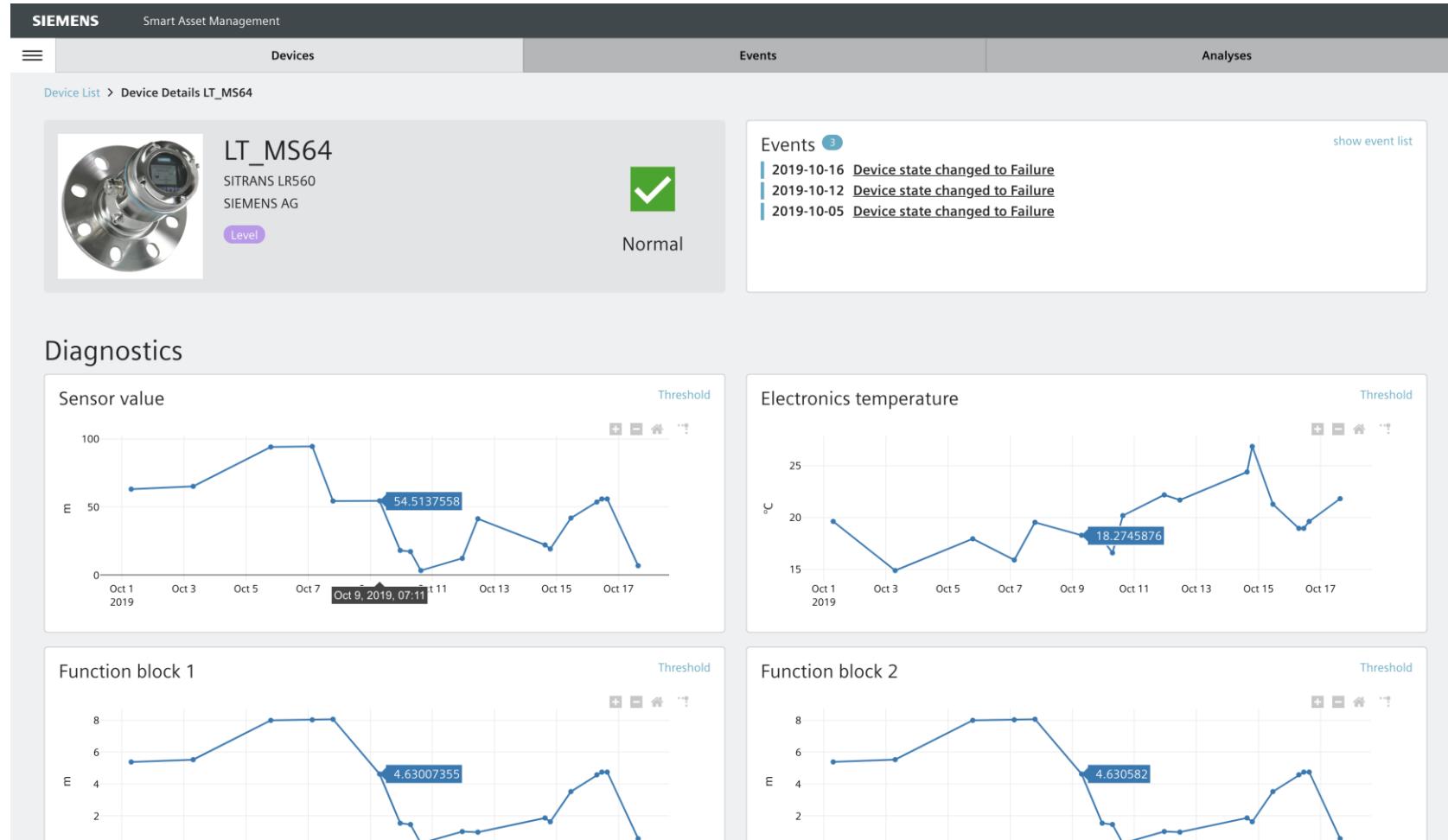


Detection of unauthorized device or configuration changes



Track device replacements and configuration changes over the entire lifecycle of a measurement point

SAM IQ – Device detailed view



 Detailed monitoring and trending of all process values and diagnostic data

 Access to device-specific KPIs

 Easy comparison of actual working range with measurement range of the device

SAM IQ – Analysis

SIEMENS Smart Asset Management

Devices Events Analyses

Analyses > Analysis_Level radars

Analysis_Level radars

Created on 2019-12-12

Description

Echo confidence should be below 5!
-> Clean lens
-> Recalibrate the device

Devices: LT_MS07 (SITRANS LR560)

Echo confidence

Date	Echo confidence
Sep 28, 2019	7.0
Oct 1, 2019	7.5
Oct 2, 2019	8.5
Oct 3, 2019	6.5
Oct 4, 2019	7.0
Oct 5, 2019	7.5
Oct 6, 2019	6.5
Oct 7, 2019	8.0
Oct 8, 2019	8.0
Oct 9, 2019	7.5
Oct 10, 2019	8.0
Oct 11, 2019	7.5
Oct 12, 2019	10.5
Oct 13, 2019	11.0
Oct 14, 2019	11.5
Oct 15, 2019, 11:55	12.0
Oct 16, 2019	11.0
Oct 17, 2019	7.5

Devices: LT_MS63 (SITRANS LR560)

Echo confidence

Date	Echo confidence
Sep 28, 2019	19.5
Oct 1, 2019	20.0
Oct 2, 2019	20.5
Oct 3, 2019	15.0
Oct 4, 2019	5.0
Oct 5, 2019	18.0
Oct 6, 2019	14.0
Oct 7, 2019	16.0
Oct 8, 2019	15.0
Oct 9, 2019	18.0
Oct 10, 2019	16.0
Oct 11, 2019	18.0
Oct 12, 2019	14.0
Oct 13, 2019	11.0
Oct 14, 2019	10.0
Oct 15, 2019, 11:55	10.0
Oct 16, 2019	17.0
Oct 17, 2019	20.0

Devices: LT_MS04 (SITRANS LR560)

Echo confidence

Date	Echo confidence
Sep 28, 2019	14.0
Oct 1, 2019	13.5
Oct 2, 2019	13.0
Oct 3, 2019	13.0
Oct 4, 2019	13.0
Oct 5, 2019	13.0
Oct 6, 2019	13.0
Oct 7, 2019	13.0
Oct 8, 2019	13.0
Oct 9, 2019	13.0
Oct 10, 2019	13.0
Oct 11, 2019	13.0
Oct 12, 2019	13.0
Oct 13, 2019	12.0
Oct 14, 2019	11.0
Oct 15, 2019, 11:55	10.0
Oct 16, 2019	11.0
Oct 17, 2019	11.5

Devices: HY_DV4_1 (SIPART PS2)

Direction changes

Date	Direction changes
Sep 28, 2019	64.9M
Oct 1, 2019	64.95M
Oct 2, 2019	65.0M
Oct 3, 2019	65.05M
Oct 4, 2019	65.1M
Oct 5, 2019	65.1M
Oct 6, 2019	65.1M
Oct 7, 2019	65.1M
Oct 8, 2019	65.1M
Oct 9, 2019	65.1M
Oct 10, 2019	65.1M
Oct 11, 2019	65.1M
Oct 12, 2019	65.1M
Oct 13, 2019	65.1M
Oct 14, 2019	65.1M
Oct 15, 2019, 11:55	65.1M
Oct 16, 2019	65.1M
Oct 17, 2019	65.1M

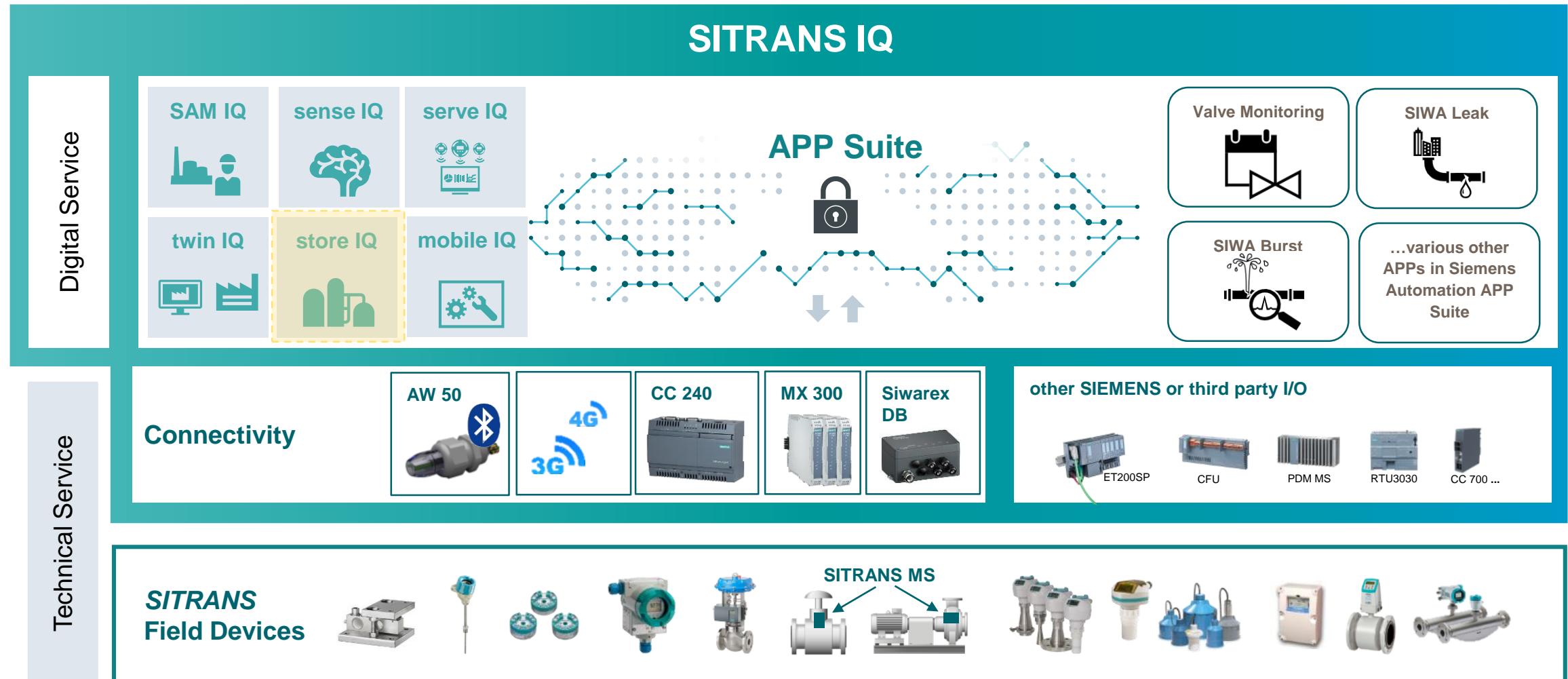


Create your own dashboards to compare values between devices

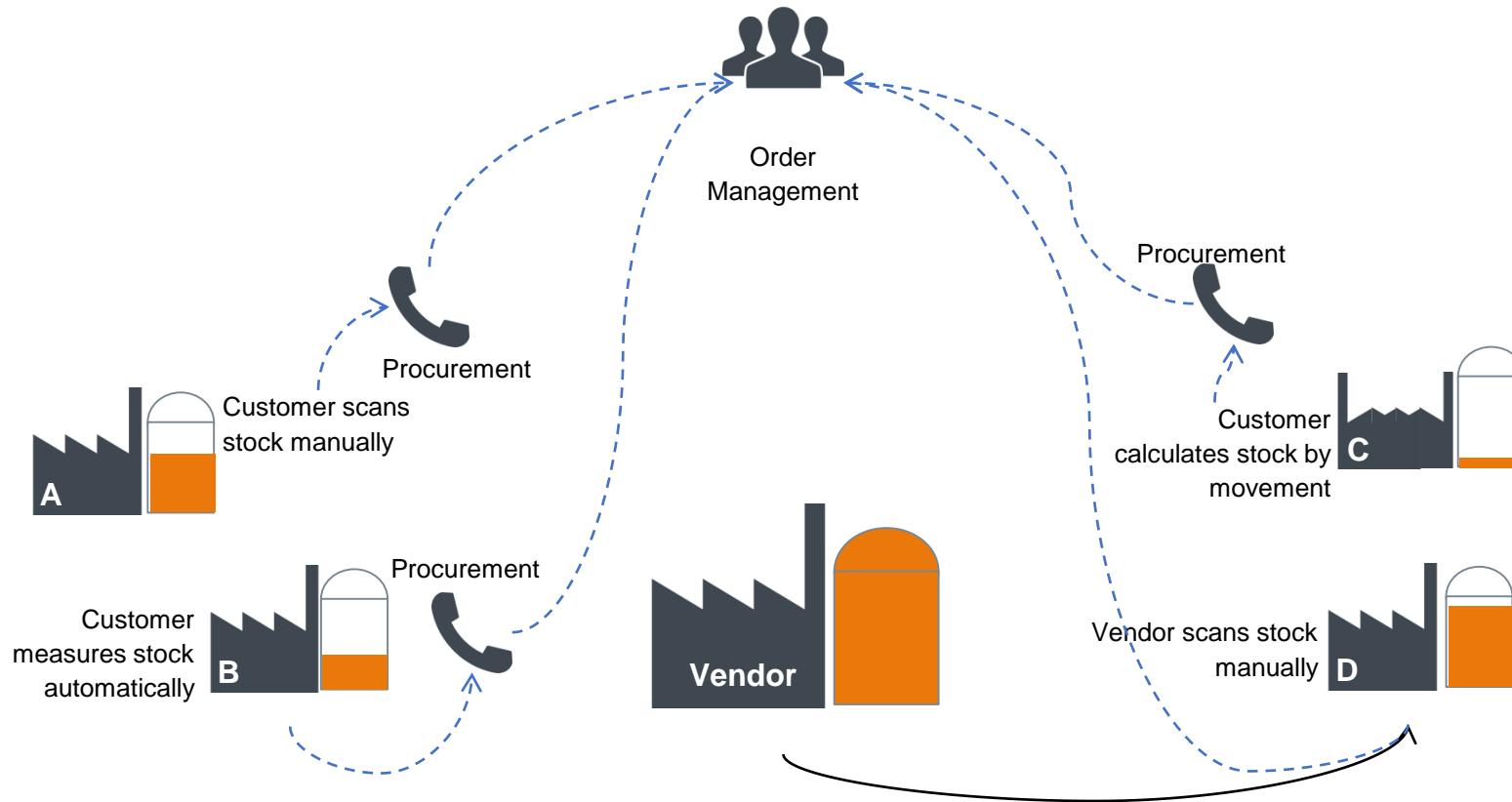


Perform customized plausibility checks of measurements for one or more devices

SITRANS IQ overview



Supply chains are lacking efficiency through poor information on inventory levels and high effort in managing such



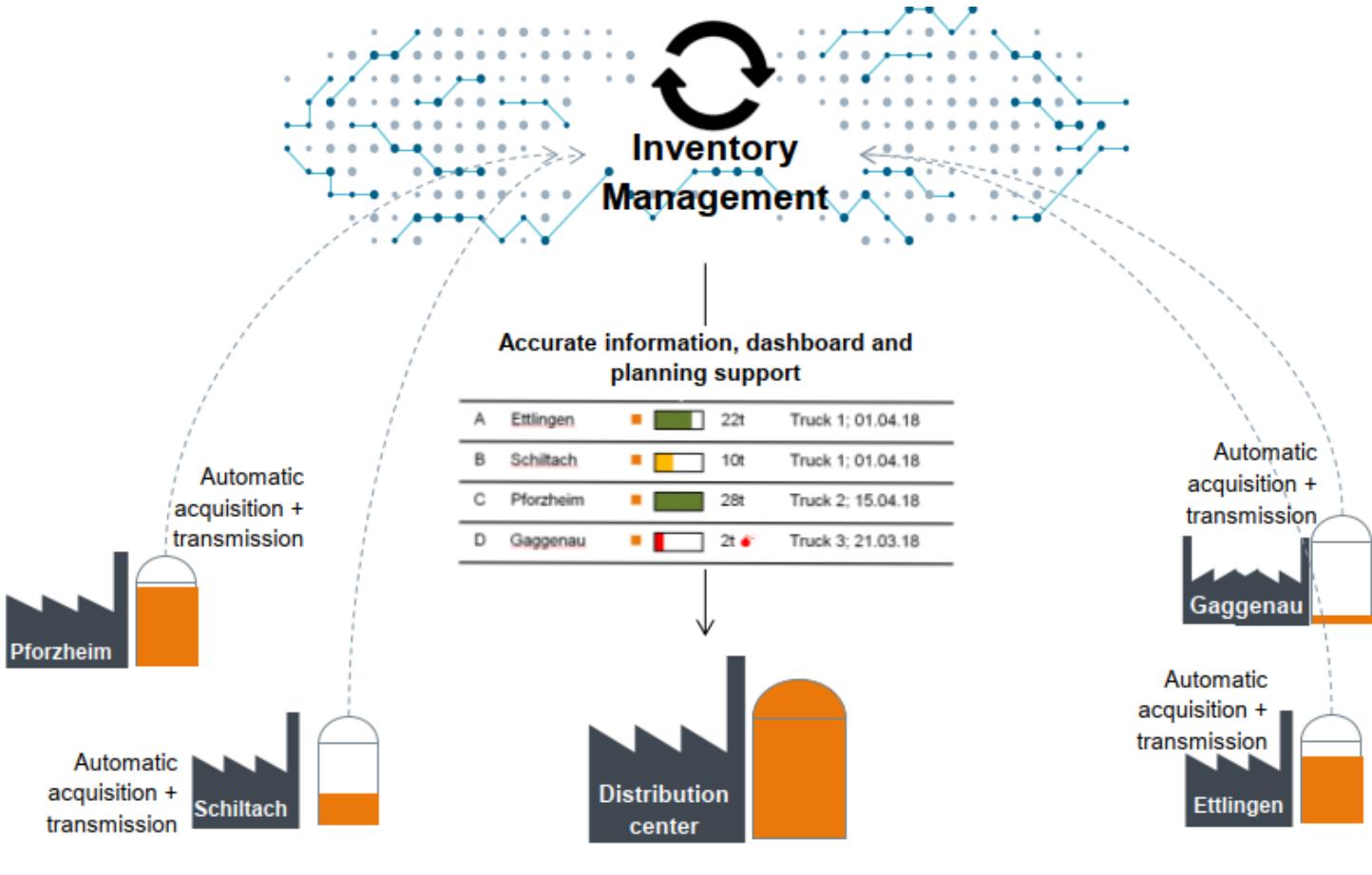
- High effort in scanning stocks manually
- Uncertain information on stock level leads to inefficiency
- Extra cost – deadheads, excess and express deliveries, etc.
- Bound capital through safety stocks
- Production shut downs in worst case

Solution Overview

Vision: “Digitalization in Real time Inventory Management for process and hybrid industries”

Use case value proposition

Our	Inventory Management suite	Product and services
Helps	customers in process and hybrid industries storing materials at distributed locations	Customer segments
Who want to	know accurate and current values of their materials and know by when they must order replenishment or deliver replenishment to a customer	Jobs to be done
By	continuously measuring inventory levels and automatically process into reports and planning support for ordering and delivery	Addressing pain
And	by that avoiding wrong, excess or short deliveries, avoiding production stop and improving logistics efficiency	Enabling gains
Unlike	manual acquisition of inventory levels, proprietary, supplier specific and technology bound systems.	Competing value propositions



store IQ – MindSphere based solution for inventory monitoring and management



store IQ delivers dashboarding, alarming and notifications functionality browser based for desktop and smartphone usage.

Connect and onboard your devices to MindSphere via MindConnect hardware like MindConnect IOT2040 or MindConnect Nano

Use standard level and weighing devices to measure fill levels of bins, silos, tanks. Add auxiliary measurements e.g. temperature to monitor additional parameters of interest.

Overview at a glance, events, totalized materials

SIEMENS SITRANS store IQ

Monitoring Events

All | 70 Critical | 20 Major | 30 Minor | 20

10 Connected 3 Disconnected

Name, Customer, Subsystem, Type

Asset Name Status Grouped by Site

CustomerName

Site 002

Site 002

Events | 250

Date	Name	Asset	Process Value	Severity	Description
2019-01-16	HILevel	Site 001 Area 002	Level	Critical	Level > 100 ft
2019-01-16	LowVolume	Long Site Name 001 ... Storage Unit Name	Volume	Major	Volume is too high
2019-01-16	HIHI	Site 001 Area 002 Storage Unit 2	Volume	Critical	-
2019-01-16	LOWWeight	Site 001 Area 004 Storage Unit 2	Weight	Critical	Weight is less than 1200kg
2019-01-16	HITemp	Site 004 Area 002 Storage Unit 2	Temperature	Warning	Temperature in Warning Zone
2019-01-16	LowTemp	Site 001	Level	Warning	-
2019-01-16	HIHILevel	Site 001 Area 002	Volume	Major	Check Volume

Material

Rye	Corn	Barley	Millet	Material 4					
2200 t	57 %	700 t	30 %	570 t	85 %	1800 t	98 %	150 t	15 %
Material 5									
④ Missing Information									

Navigating down the hierarchy provides detailed information about particular assets

SIMENS SITRANS store IQ

Monitoring Events

All | 70 Critical | 20 Major | 30 Minor | 20

Name, Customer, Subsystem, Type

Site 001 | Area 001 | Storage Unit 2
100 Technology Drive, Alpharetta, GA 30004, USA

Static Details

Events | 156

Date	Name	Asset	Process Value	Severity	Description
2019-01-16	HILevel	Site 001 Area 002	Level	Critical	Level > 100ft
2019-01-16	LowVolume	Long Site Name 001 ... Storage Unit Name	Volume	Major	-
2019-01-16	HIHI	Site 001 Area 002 Storage Unit 2	Temperature	Critical	Weight in critical zone
2019-01-16	LOWWeight	Site 001 Area 004 Storage Unit 2	Weight	Critical	Weight < 100kg

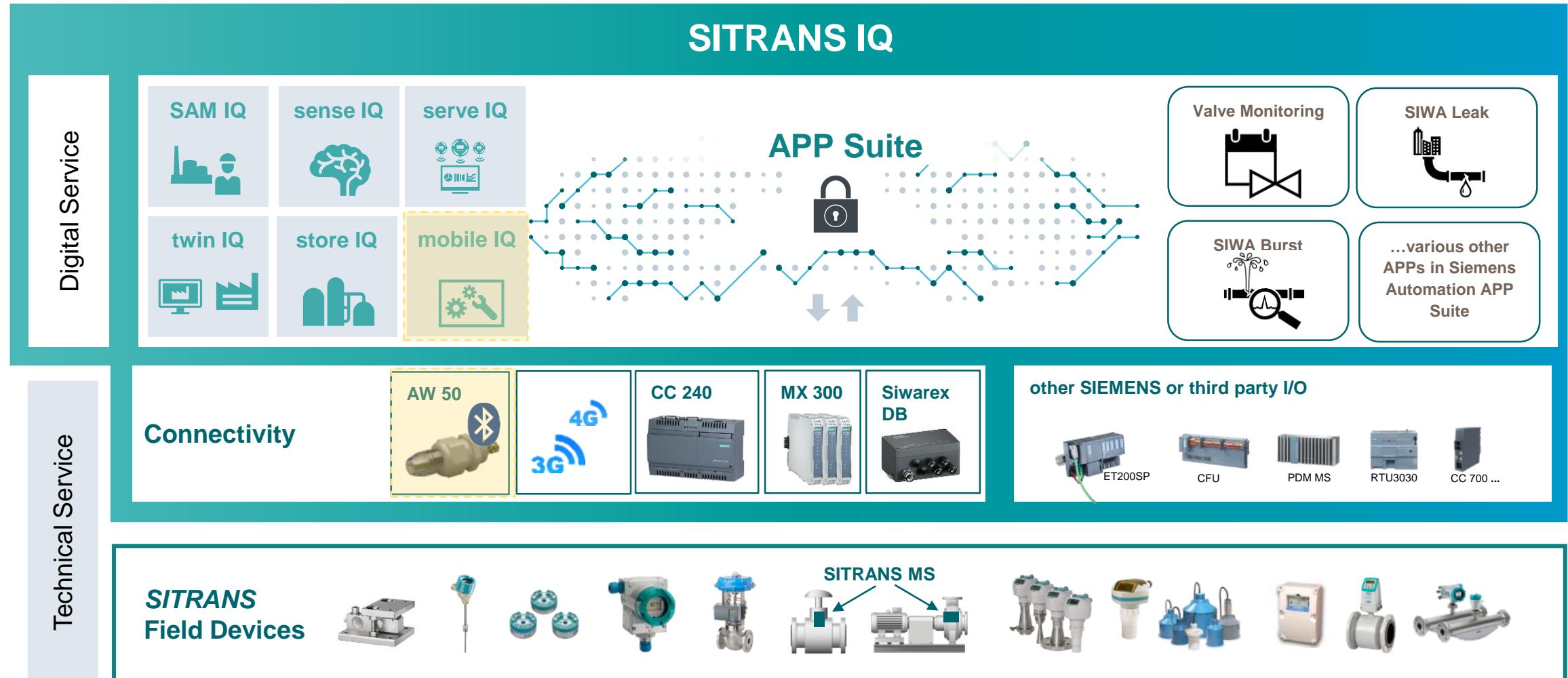
Process Values

- Level: 120 ft (250 Average Value in ft | 24 h) (02-10-2019 09:00:00)
- Weight: 83 t (250 Average Value in t | 24 h) (02-10-2019 09:00:00)
- Temperature: 45 °C (250 Average Value in °C | 24 h) (02-10-2019 09:00:00)
- Generic Card: 254 unit (250 Average Value in unit | 24 h) (02-10-2019 09:00:00)
Threshold settings are missing
Updated on : 02/10/19 09:00

Diagnostics

- Device 1: 254 unit (Updated on : 02/10/19 09:00:00)
- Device 2: OFF (Updated on : 02/10/19 09:00:00)

SITRANS IQ overview



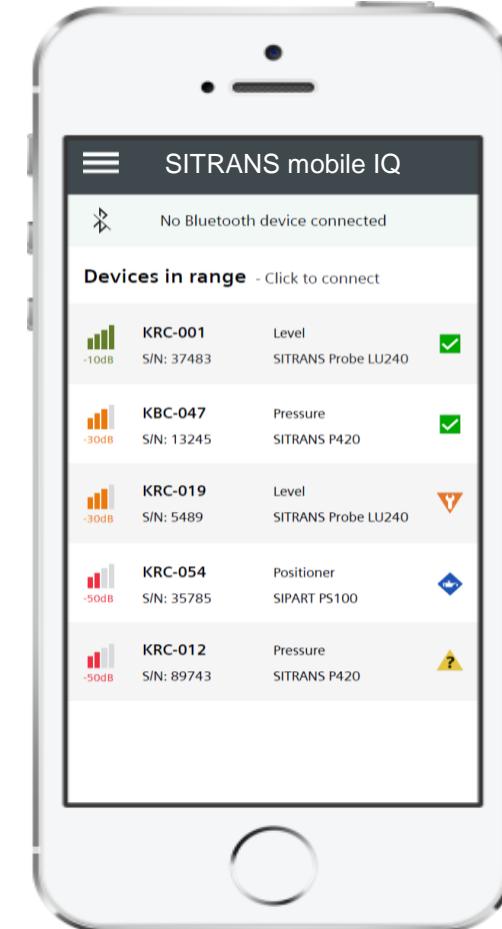
Bluetooth add on module – Second data channel for commissioning and diagnosis

Access to Field devices in the plant is often difficult

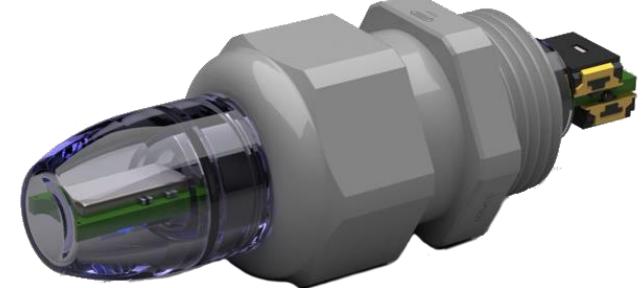


- Devices on top of a tank
- No direct access
- Limited information on local display
- Difficult access to up-to-date manuals and drivers

Intelligent field devices inform about asset status



Fast and simple access to devices information



- Direct access devices
- App for Android, iOS and Windows
- Build in device drivers
- Configuration, Diagnosis and cloning of parameters

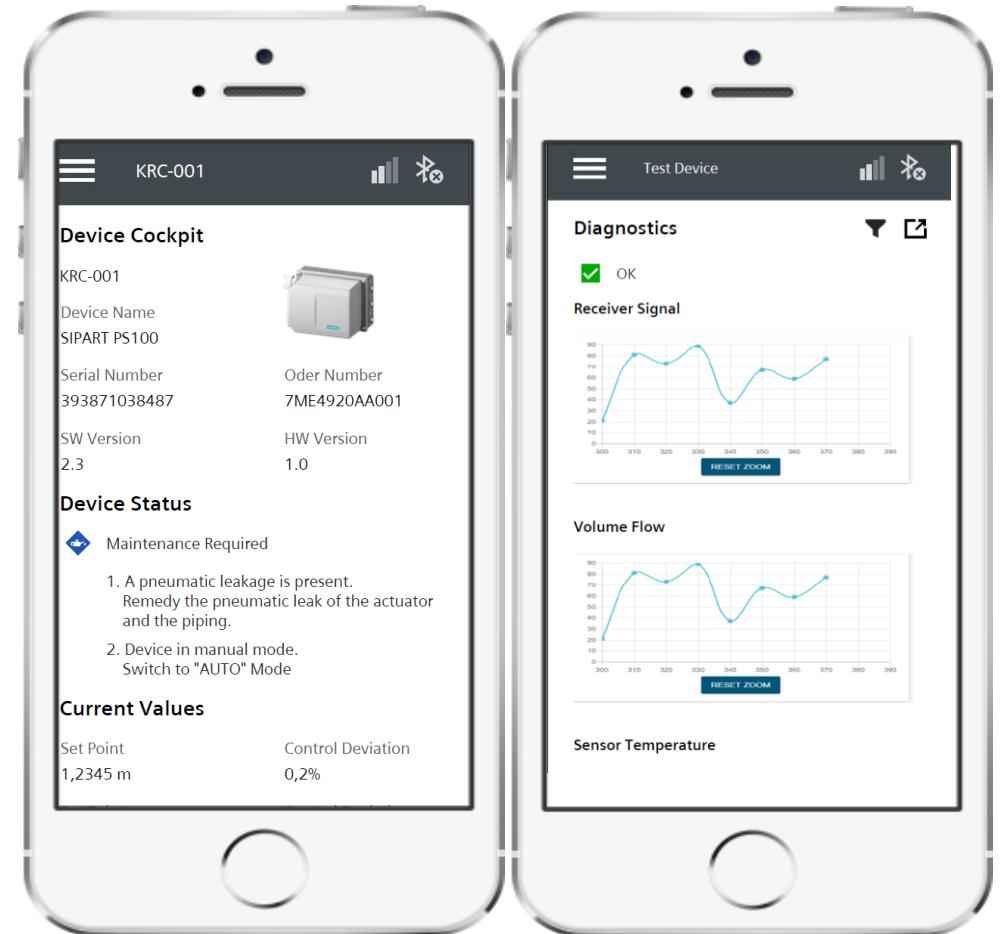
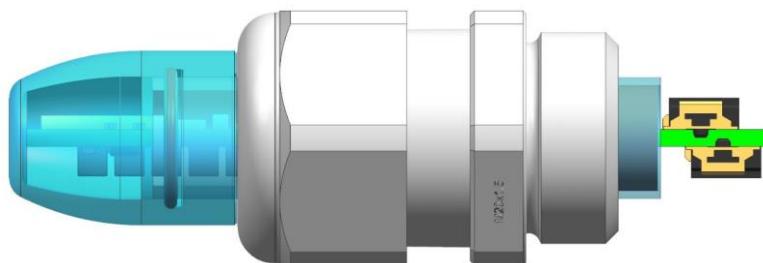
SITRANS mobile IQ

The mobile App for field devices

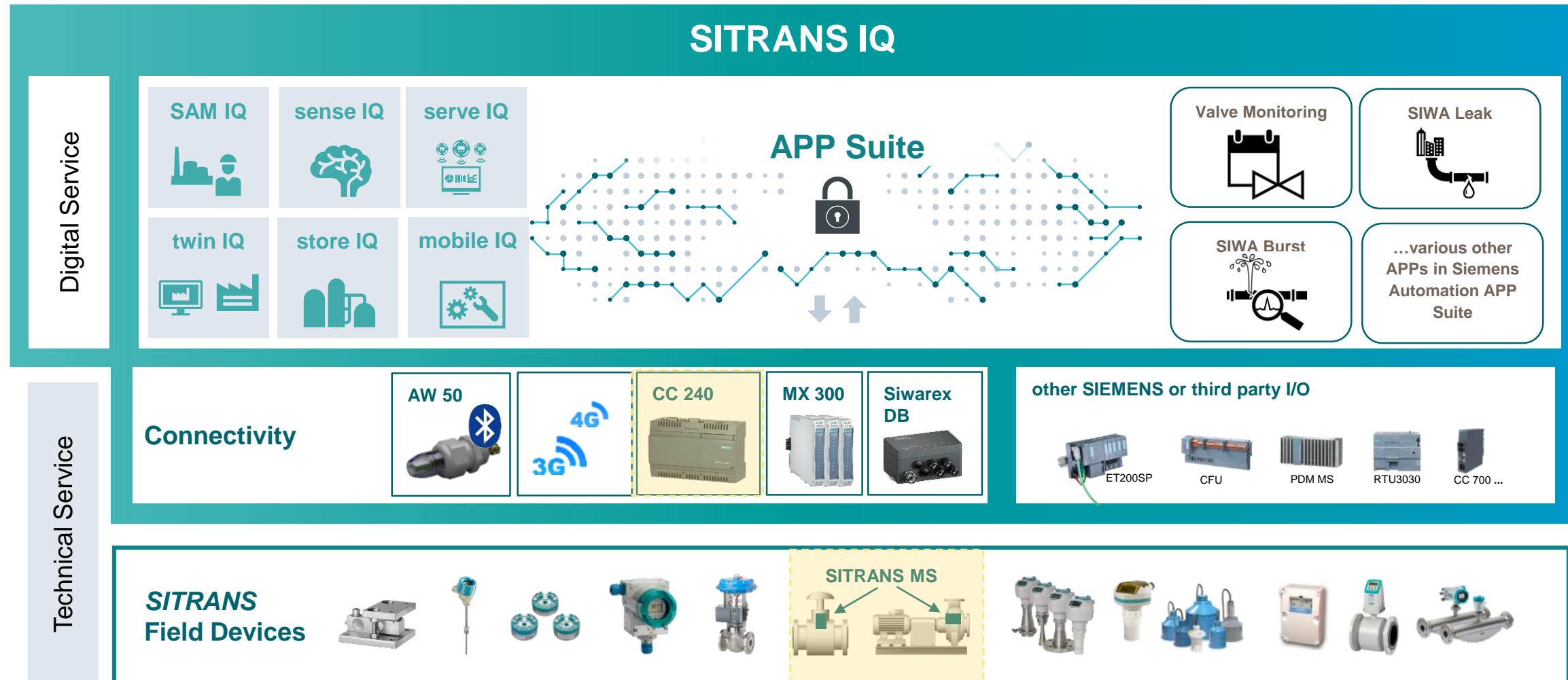
Application for Android, iOs and Windows supporting
Bluetooth enabled Sitrans field devices



- Parameterization and set-up
- Diagnosis information
- Copy parameter sets from device to device
- Access to documentation (as QR-Code)



SITRANS IQ overview

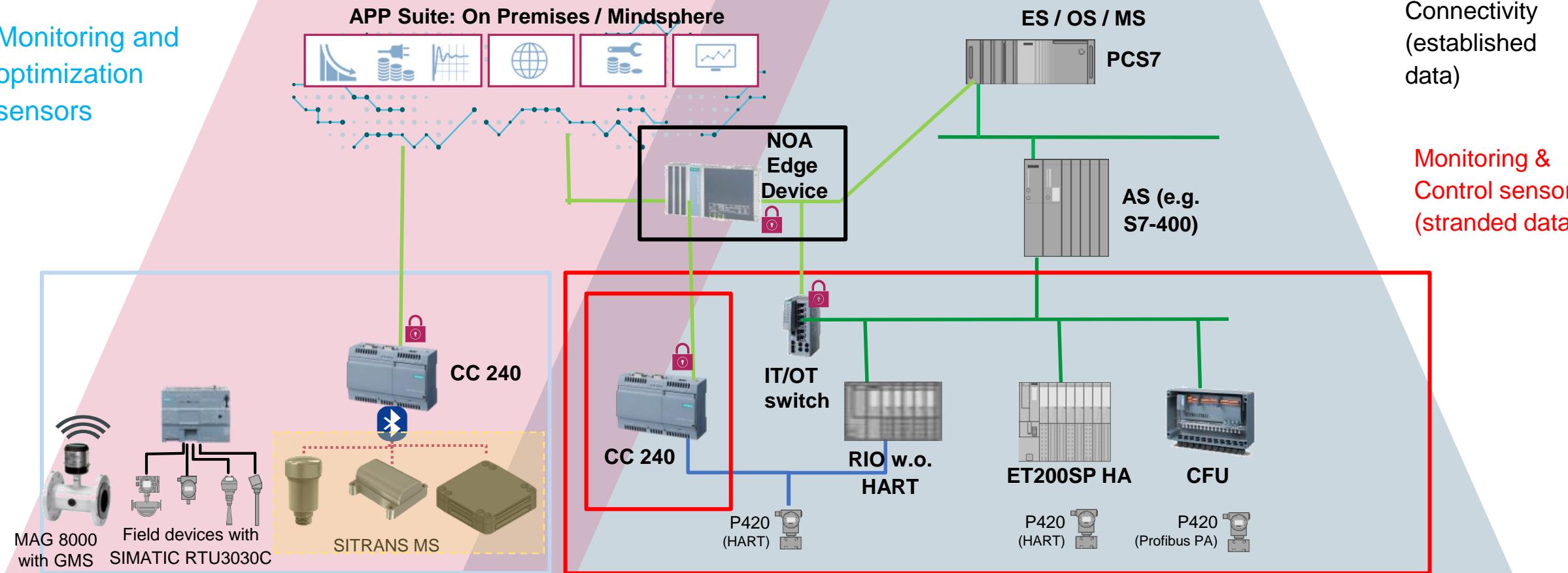


NAMUR proposes NAMUR Open Architecture (NOA) Various options of connectivity

high reliability
IT infrastructure

Monitoring and optimization
sensors

Monitoring and optimization



Distributed
Control System

Connectivity
(established data)

Monitoring &
Control sensors
(stranded data)

SITRANS MS – Multi Sensor will come in three enclosure types



SITRANS MS-XL



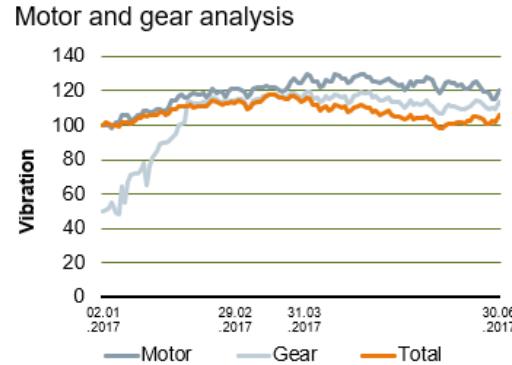
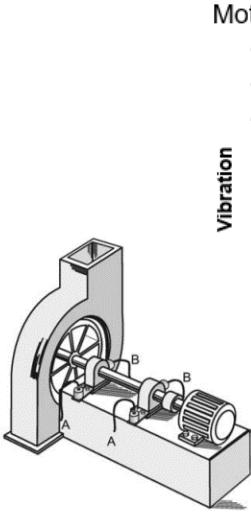
SITRANS MS-M



SITRANS MS-S

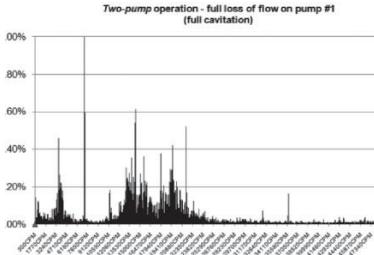
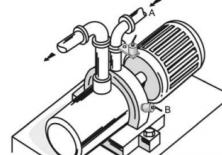
General	<ul style="list-style-type: none">▪ Ambient temperature: -40°C ... 85°C▪ Explosion protection: EEx i▪ Battery power: 5y▪ Flash memory for data storage
Connectivity	<p>Blue tooth low energy (BLE)</p> <ul style="list-style-type: none">▪ Local configuration via mobile IQ▪ Local network via SITRANS CC240 <p>Option: 4G</p> <ul style="list-style-type: none">▪ Long range GSM network
Sensors	<ul style="list-style-type: none">▪ Vibration: 3 Axis accelerometer▪ Temperature▪ Others / interfaces tbd.
Enclosures	<ul style="list-style-type: none">▪ Connection box (XL), Compact (M), Round (S)▪ Plastic / metal

SITRANS MS – MultiSensor for vibration monitoring customers for a big variety of use cases



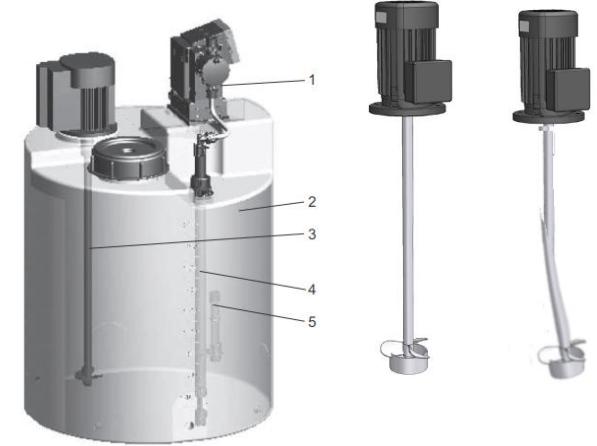
Motor and gear **condition monitoring** for bottle filling plants

- Preventing a stop of complete bottle filling machine



Cavitation and dry run detection of booster pumps to increase plant safety

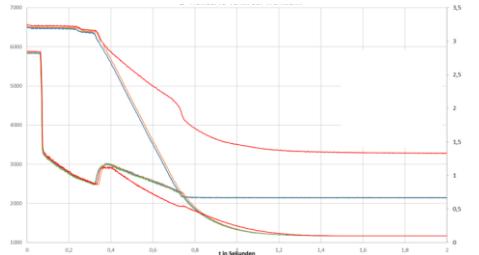
- Cavitation destroys the impeller of the booster pump
- Dry run destroys the shaft sealing of the booster pump



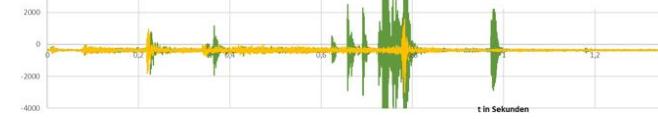
Monitoring of agitators in containers to **prevent from dry run**

- Otherwise mixer can be damaged causing severe downtime

SITRANS MS – MultiSensor for vibration monitoring customers for a big variety of use cases



Vibration in digits



Monitoring of on/of valve status via additional pressure data logger

- Verifying if safety is secured
- Utilizing additional sensor



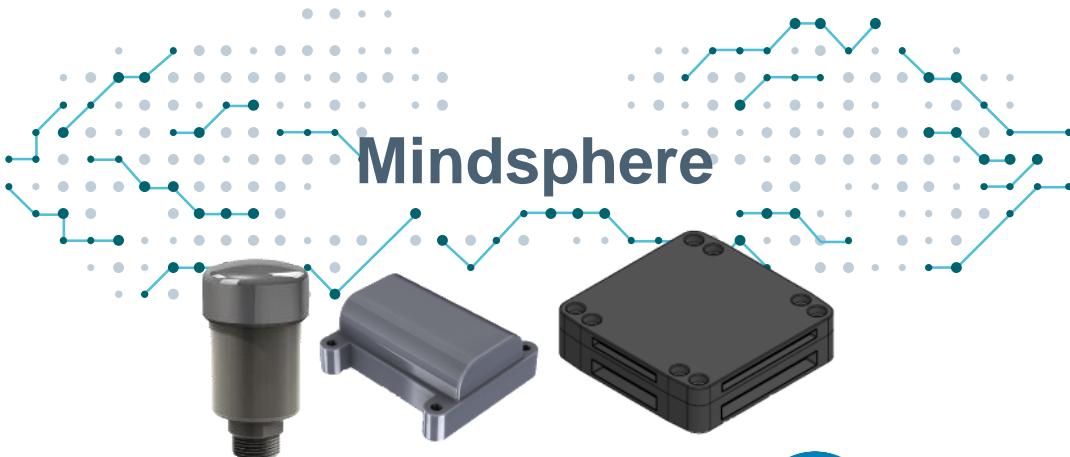
Burst detection for pipelines

- Cost efficient solution on defining where possible burst is taking place
- Solar panneld sensors for measuring vibration or pressure

Various others....

- Of what can you think?

SITRANS MS – MultiSensor for vibration monitoring customers for a big variety of use cases



Pumps

Valves

Gears

Systems

Portfolio

SIPIX SD - Siemens Process Industry Expert Service Devices



Desktop sharing

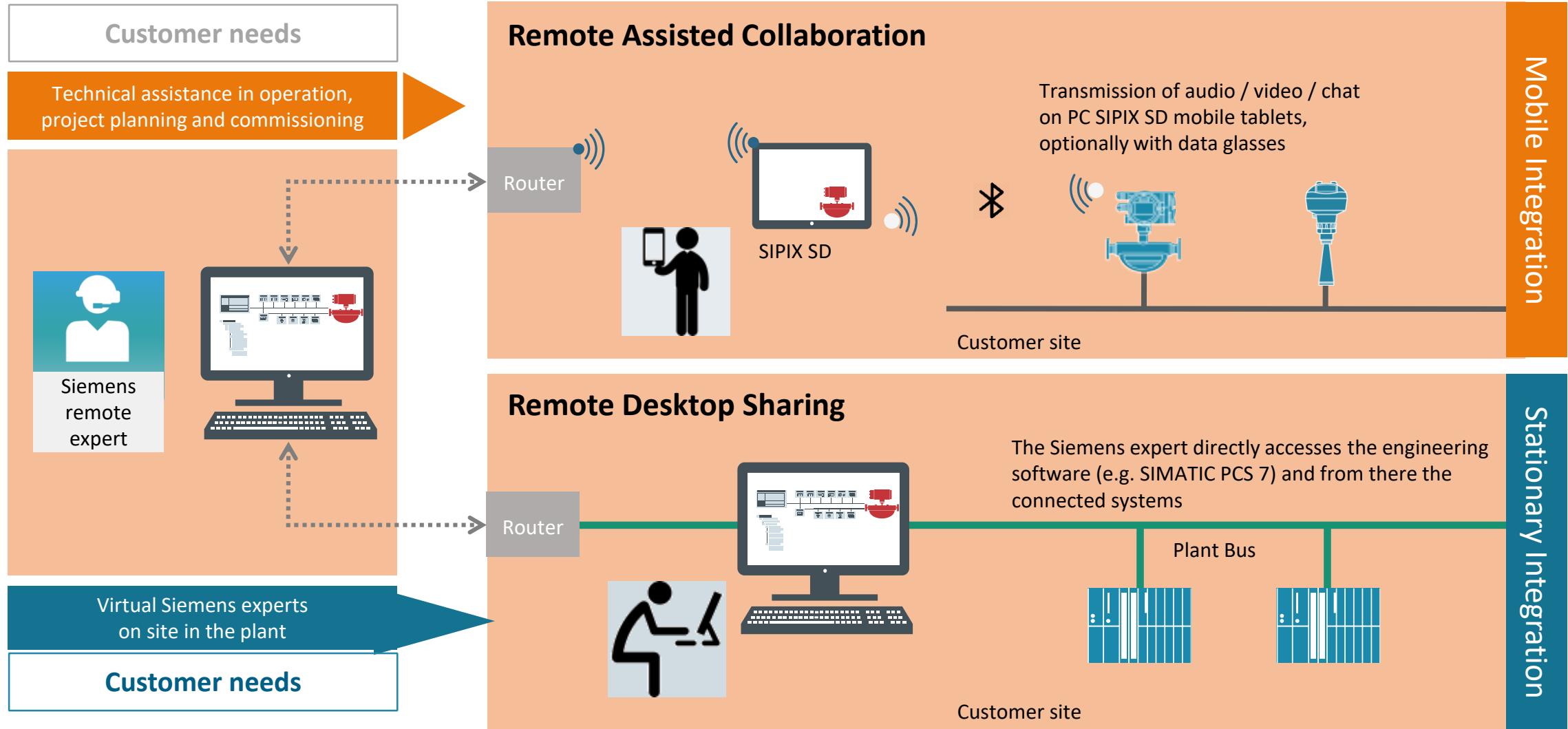
- Remote control of SIPIX SD by an expert
- Compliance with current industrial security standards
- Reporting of remote sessions via logging and audit trail reports
- File transfer functionality for data sharing
- Multiple experts can access one SIPIX SD at the same time

Assisted collaboration

- Video collaboration enables an expert to guide the service technician
- Independent VPN channel for desktop sharing session
- Audio/voice transmission is possible without using a mobile phone
- Enhancement with data glasses
- Live chat with more communication features
- YouTube video share

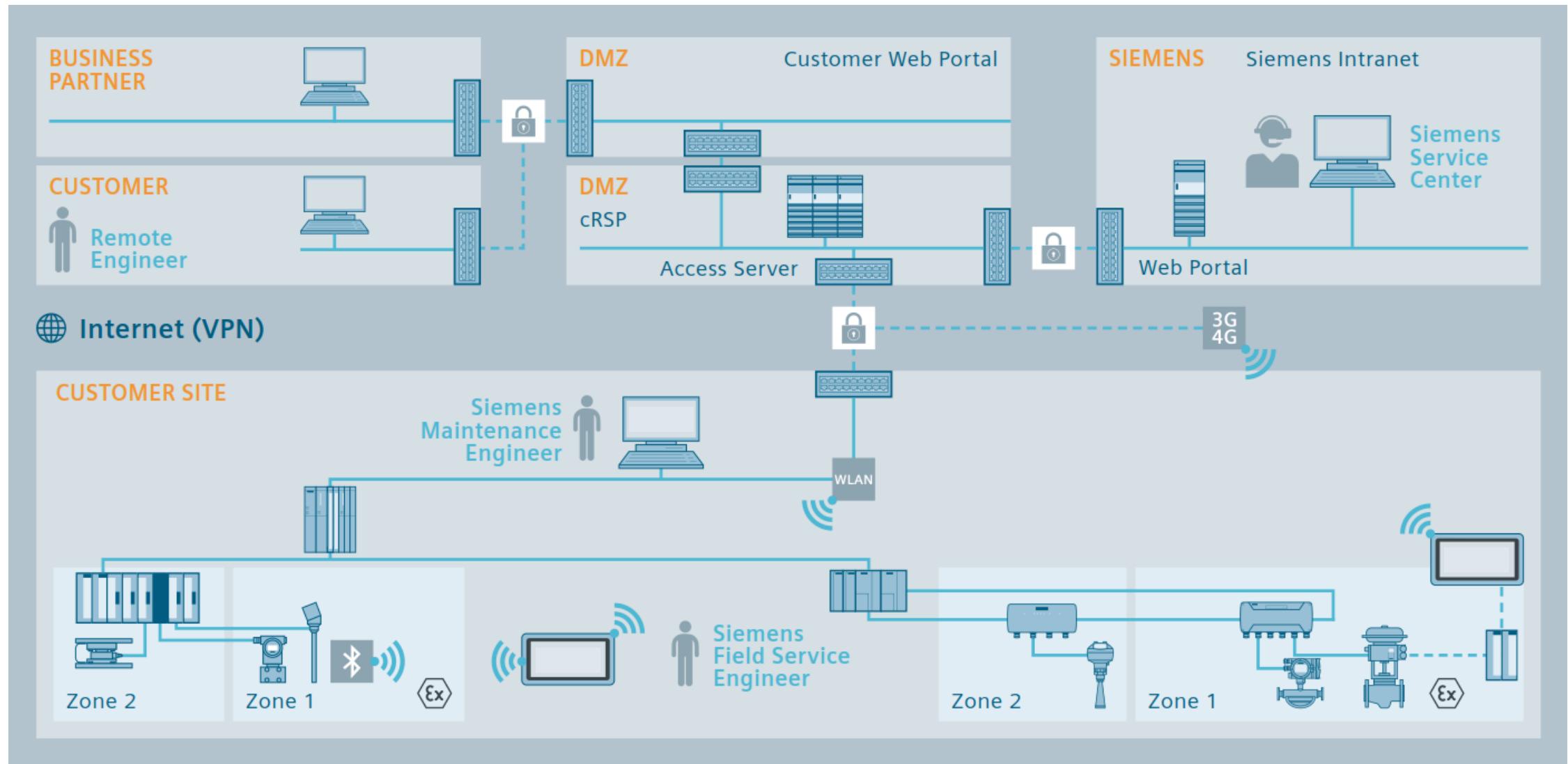
Portfolio

Use cases for Remote Services



Portfolio

Platform-based remote service infrastructure



Portfolio

Technology-based services: Remote Assisted Collaboration



Remote Assisted Collaboration

With this service, a Siemens expert assists the service technician on site in the plant, also based on the Siemens common Remote Service Platform (cRSP).

Using the PC SIPIX SD Tablet (service device), video images can be transmitted and audio communication and live chat can be performed via an independent VPN channel. The on-site expert is guided through the service process with the aid of instructions drawn on the camera image (AR functions).

In addition, using data glasses enables the service technician to work on field devices with both hands because the Siemens expert displays text and/or transparent images within the service technician's field of vision or gives audio instructions.

Portfolio

Technology-based services: Remote Desktop Sharing



Remote Desktop Sharing

Remote Desktop Sharing allows the Siemens expert to access the parameterization software (e.g. SIMATIC PDM or SIMATIC PCS 7 ES) and from there the systems and field devices connected to this software – in full compliance with industrial security standards and safety regulations.

In this use case, the Siemens expert himself can transmit documents and perform the parameterization or configuration. With Desktop Sharing, moreover, more than one remote expert can access the software simultaneously.

Unlike Remote Assisted Collaboration, in this case a Siemens expert remotely accesses the parameterization environment and/or the connected systems and/or field devices directly.

Portfolio

SIPIX platform variants

SIPIX xx ZN



SIPIX xx Z2



SIPIX xx Z1



SIPIX SD 100



Z1 = EX Zone 1 approval

Z2 = EX Zone 2 approval

ZN = No EX approval

Service content	MO Z1 / Z2 / NZ	SD Z1 / Z2 / NZ	SD Plus Z1 / Z2 / NZ	SD 100 Z1 / Z2 / NZ
Microsoft Windows 10 IoT Enterprise - 64 Bit	X	x	x	
Microsoft Windows 7				x
Peli storm case		x	x	
Docking station	Optional	x	x	x
SIPIX Remote Collaboration V1.1 (SIPIX RC)		x	x	x
Remote Integrated (cRSP)		x	x	x
Secure desktop sharing via cRSP		x	x	x
Secure file transfer end-to-end encryption via cRSP VPN (no cloud storage)			x	x
Digital glasses for hands-free service as option		Optional	Optional	
SIMATIC PDM incl. license for PDM Service Basic			x	x
Mobile network 3G/4G module (EU / US)	Optional	Optional	Optional	x (EU)

Service Level 1Y incl. warranty extension				x
Service Level 2Y	x	x	x	x
Service Level 5Y incl. warranty extension	x			

Pitanja i odgovori

SIEMENS
Ingenuity for life



Hvala na pažnji!



Tihomir Zgurić

Ekspert za tehnička rješenja u
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