ISA100 WIRELESS COMPLIANCE INSTITUTE™

Your webinar time:
8am Houston, Chicago, Mexico City
9am New York, Santiago
10am Rio de Janeiro, Buenos Aires
2pm London, Dublin, Edinburgh, Lisbon
3pm Paris, Amsterdam, Berlin, Rome, Stockholm, Vienna
4pm Athens, Bucharest
5pm Abu Dhabi, Muscat

ISA100 WCI Webinar

Webinar date & time:
Tuesday 22 September 2020 at 3pm (UTC+2) Amsterdam, Berlin

ISA100 Wireless™ Process Control and other Innovations

Audio for the Webinar:

Audio can be heard through your computer speakers. If you have audio issues, you may dial 1 (866) 545-8204.

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Presenter: Honeywell
Diederik Mols
Diederik.mols@Honeywell.com

About the speaker

"Today Industrial Wireless is increasingly deployed as an integral part of the Integrated Control and Safety Systems (ICSS)"

Diederik Mols

Chairman of the Board
ISA100 Wireless
Compliance Institute

Business Manager
Industrial Wireless
Honeywell Process Solutions

Diederik Mols is Chairman of the Governance Board at the ISA100 Wireless Compliance Institute since October 2017. Prior to that he served two years as Vice-Chairman. Diederik also is an active team member of the WCI EMEA Marketing Team.
Diederik got involved with Industrial Wireless back in 2009 in a business development role for the EMEA region. Currently Diederik is leading the Industrial Wireless business development efforts at Honeywell Process Solutions in a Global capacity.
Diederik started his career as an officer in the Royal Dutch Navy and over the years he gained solid business skills with a number of multi-national organizations in various roles across Engineering, Sales, Marketing and General Management. Diederik holds Degrees from the Royal Dutch Naval Academy and the Delft University of Technology, the Netherlands.

Agenda

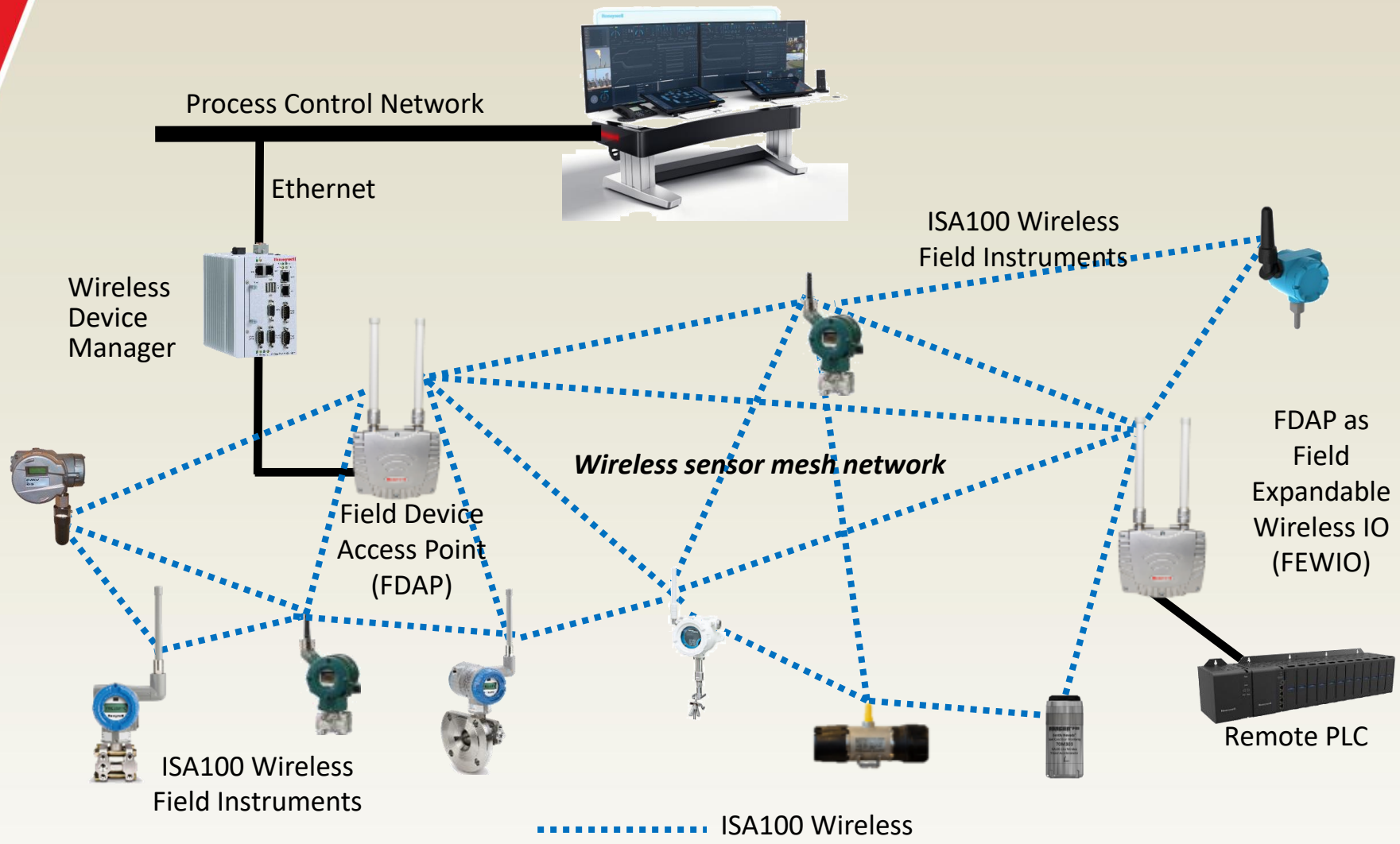
1. Introduction Industrial Wireless
2. ISA100 Wireless™ Industry Standard
3. ISA100 Wireless™ Process Control
4. ISA100 Wireless™ Further Innovations
5. Use Cases
6. Summary
7. Q&A

Honeywell

Typical Project Challenges

- HSE Compliancy
- Improve
  - workforce efficiency
  - productivity
  - asset availability
- Reliable, cyber secure infrastructure
- Fast and cost-effective commissioning
- Tight budgets to execute projects

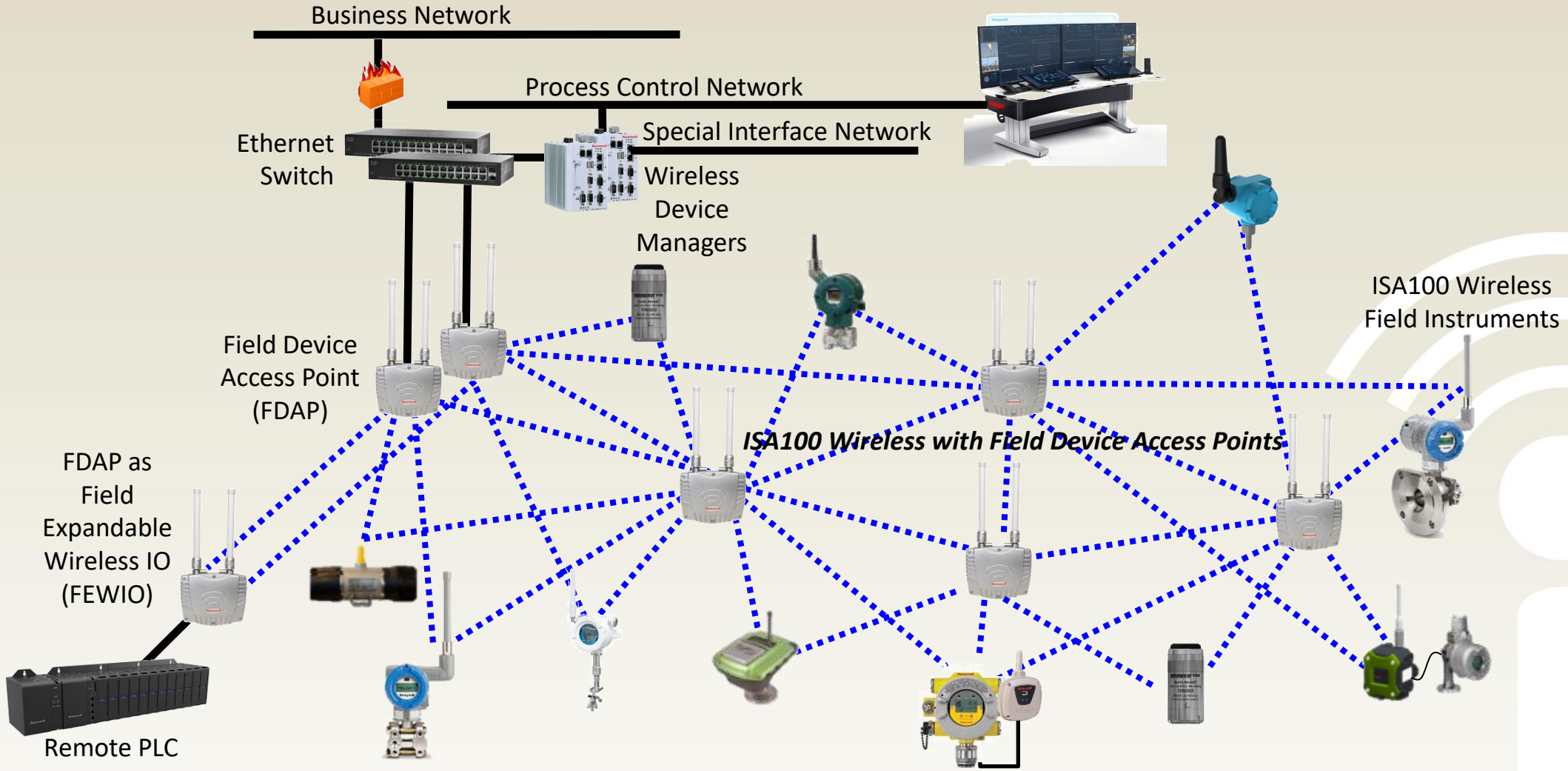
Introduction to industrial Wireless



Applications examples

- Machine health monitoring
- Basic process control
- Monitoring of well heads
- Remote process monitoring
- Leak detection monitoring
- Diagnosis of field devices
- Condition monitoring of equipment
- Environmental monitoring
- Tank level monitoring
- Gas detection
- Fuel tank gauging
- Steam trap monitoring
- Open loop control
- Stranded data capture
- And more

ISA100 Wireless with Field Routers



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ISA100 Wireless Fast Facts

- International standard IEC 62734 since 2014
- Complies with ETSI EN 300 320 v1.8.1 (LBT)
- End-User Driven Standard - meeting all current and future industrial needs
- Sensor routing or field routers for best performance – Freedom of choice
- Broad Multi-Vendor Portfolio of ISA100 Wireless Devices
- ISA100 Wireless enables SIL-2 Certification
- Ensured Interoperability - best-in-class solutions from best-in-class suppliers
- Readily available ISA100 Wireless Modules and Stacks
- Enable fast-track development and go to market

Benefits of ISA100 Wireless Instrumentation

Cost Savings	• Up to 90% of installed cos of conventional measurement technology can be for cable conduit and related construction • Typically: 1/2 the costs, 1/5 of the time • New and scaled applications are now economically feasible
Improved Reliability	• Wired sensors may be prone to failure in difficult environment • Wireless can add redundancy to a wired solution
Improved Visibility	• Condition monitoring of secondary and remote equipment • Process monitoring, fast additional data for trouble shooting
Improved Control	• Add wireless to existing processes for more optimal control
Improved Safety	• Safety related alarms - end to end SIL2 certifiable

ISA100 Wireless Product Portfolio

Infrastructure

Independent Gateway
- Honeywell, Yokogawa

Access Point (AP)
- Honeywell, Yokogawa

Integrated Gateway/AP
- Honeywell, Yokogawa, CDS, Nexcom

GW/AP + Recorder
- Yokogawa

Adapter (HART, etc.)
- Honeywell, Yokogawa

Measurement & Control

Temperature
- Honeywell, Yokogawa

Pressure / Flow
- Honeywell, Yokogawa

Level
- Honeywell, Yokogawa

DI/DO, AI
- Honeywell, Yokogawa

Valve Position
- Eltav, Flowserve, Honeywell

HSE + Life cycle

Corrosion
- RCS , Honeywell

Steam Trap
Spirax Sarco, TLV, Armstrong, Bitherm

Vibration
- GE's Bently Nevada, Divigraph

Gas
- GasSecure, Scott Safety, New Cosmos, Riken Keiki

pH
- Honeywell, Yokogawa

ISA100 Wireless Adoption Development Eco-system

WCI ISA100 Wireless Rapid Development Kit (RDK)

- Everything you need to develop an ISA100 Wireless (IEC 62734) connected field instrument
- Develop ISA100 Wireless (IEC 62734) compliant and certifiable field instruments with minimal effort using application layer code provided
- Includes reference hardware design for ISA100 Wireless (IEC 62734) field instrument implementation
- Certified WISA modules run ISA100 Wireless communication stack
- User friendly SPiN development board includes OLED display and a large variety of sensors

https://centerotech.com/product/wci-isa100-rapid-development-kit/

Online resources

www.isa100wci.org

- Learning Center with White Papers
- Articles, End-user stories, Forum
- Receiving over 20,000 web views per month
- Full list of certified/registered ISA100 Wireless devices
- And more useful content for you and your business

ISA100 Wireless Interest Group

- Latest news, end-user and expert discussions, insights
- 900+ members and growing; please join and invite your peers to join as well !
- Receiving over 5,000 web views per month
- Limited Time Offer: Join the group and you will be entered in a prize draw to win a new iPad

ISA100 Wireless LinkedIn Interest group

Limited Time Promotion

SCAN ME

Scan the QR code and join the ISA100 Wireless Linkedin group. **If you join during our limited time offer**, you will be entered in a prize draw to win a new iPad!

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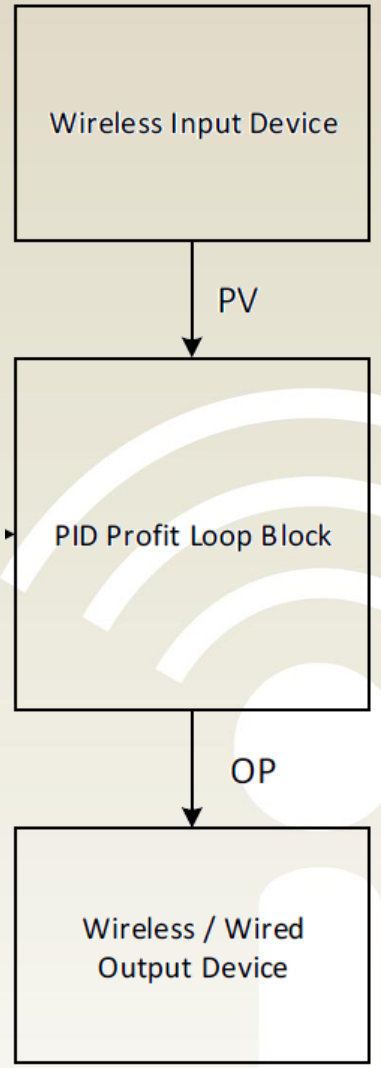
Control over ISA100 Wireless

- ISA100 Wireless systems can be used for control applications
- ISA100 Wireless AO devices supported
- For PID loops
- Input device can be wireless
- Output device can be wireless

Type	Class	Type Based on Industry	Recommendation
Control	1	Closed loop Regulatory Control (Critical control loops)	Not Recommended
	2	Closed Loop Supervisory Control (Set Point Change, Process Optimization)	Recommended
	3	Open Loop Control (Based on Requirement/ Operator In-Person)	Recommended
Monitoring	4	Event Action/ Sequence based (Based on Event /Small operation task)	Recommended
	5	Uploading/Downloading (Requirement based Task/ Action)	Recommended

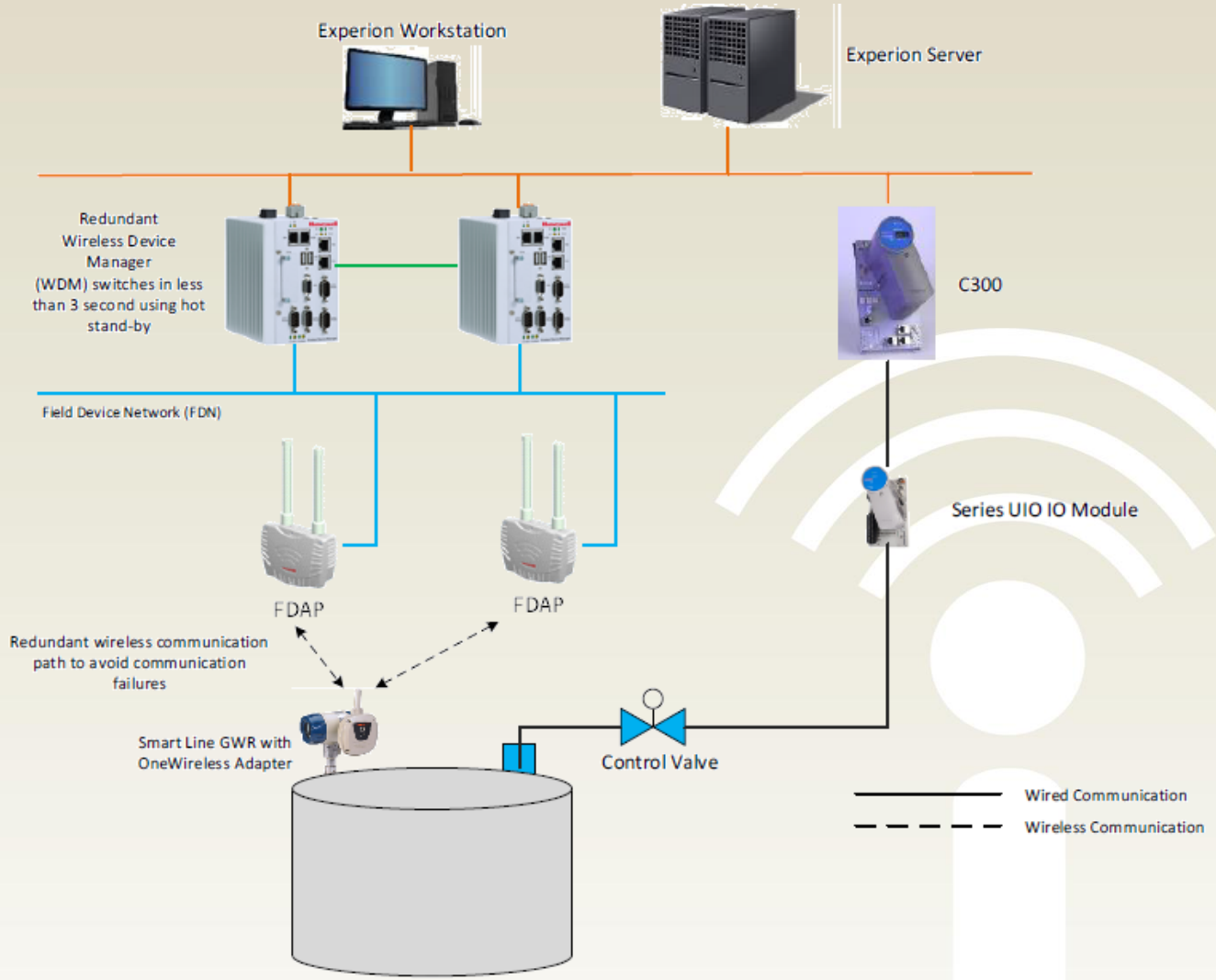


Control over ISA100 Wireless

Topology Example I

4 Seconds or Faster Loops

- Multi HOP network
- Input is Wireless
- Output is Wired

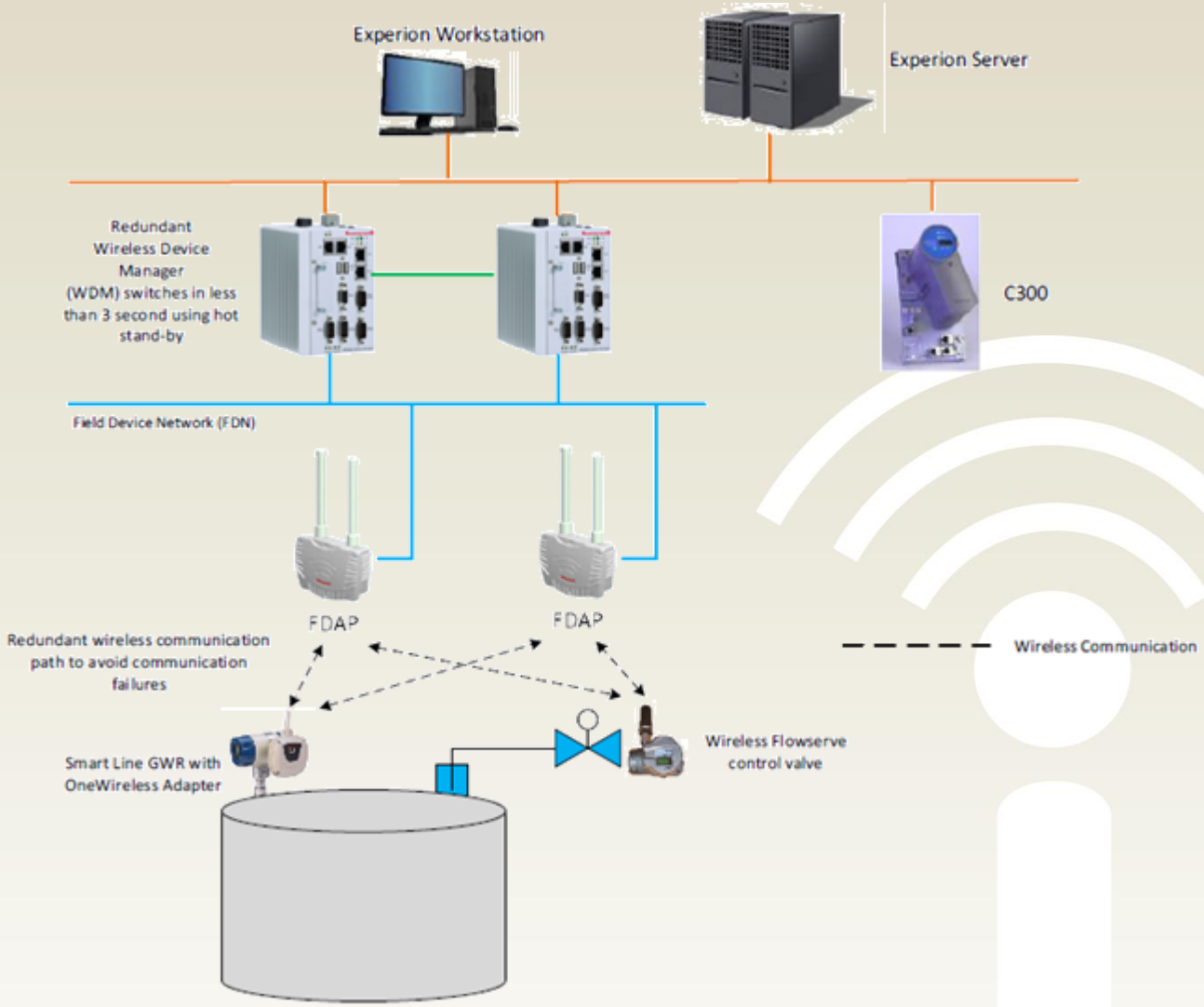


Control over ISA100 Wireless

Topology Example II

1 Second or Faster Loops

- Single HOP network
- Input is Wireless
- Output is Wireless

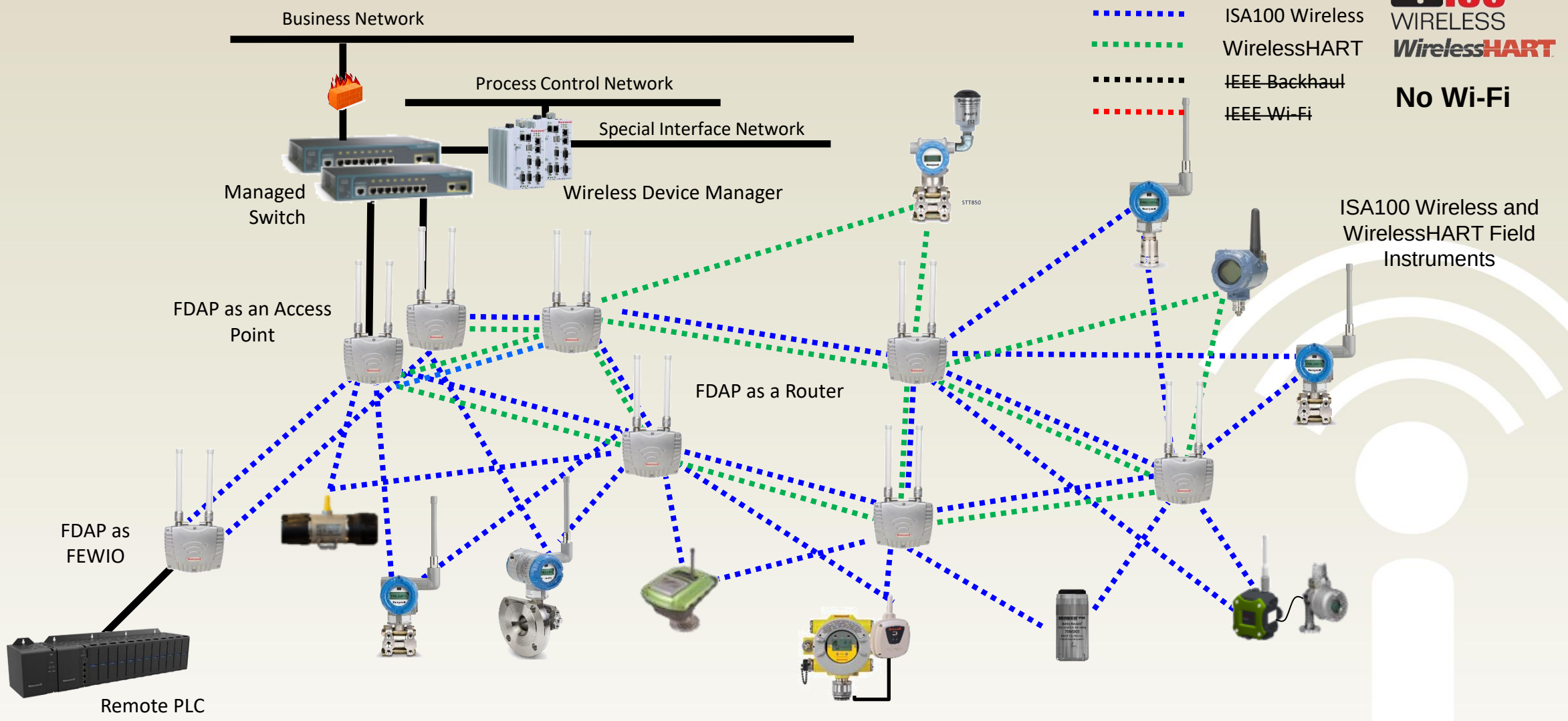


Honeywell FDAP Gen3 and Gen3 PLUS

Honeywell Field Device Access Point (FDAP) Generation 3

- Multiprotocol
- ISA100™ Wireless (IEC 62734)
- WirelessHART (IEC 62591)
- Supports both protocols simultaneously
- IP66 and IP67 rated
- HazLoc Class 1 Division 2 certified
- Light weight and compact size
- Improved temperature range: -50C to 75C
- Bolt-on and powered by Cisco IW6300 AP
- Native integration, seamless extension of Experion PKS
- Qualified for control over Wireless of continuous non critical control applications

OneWireless architecture – FDAP

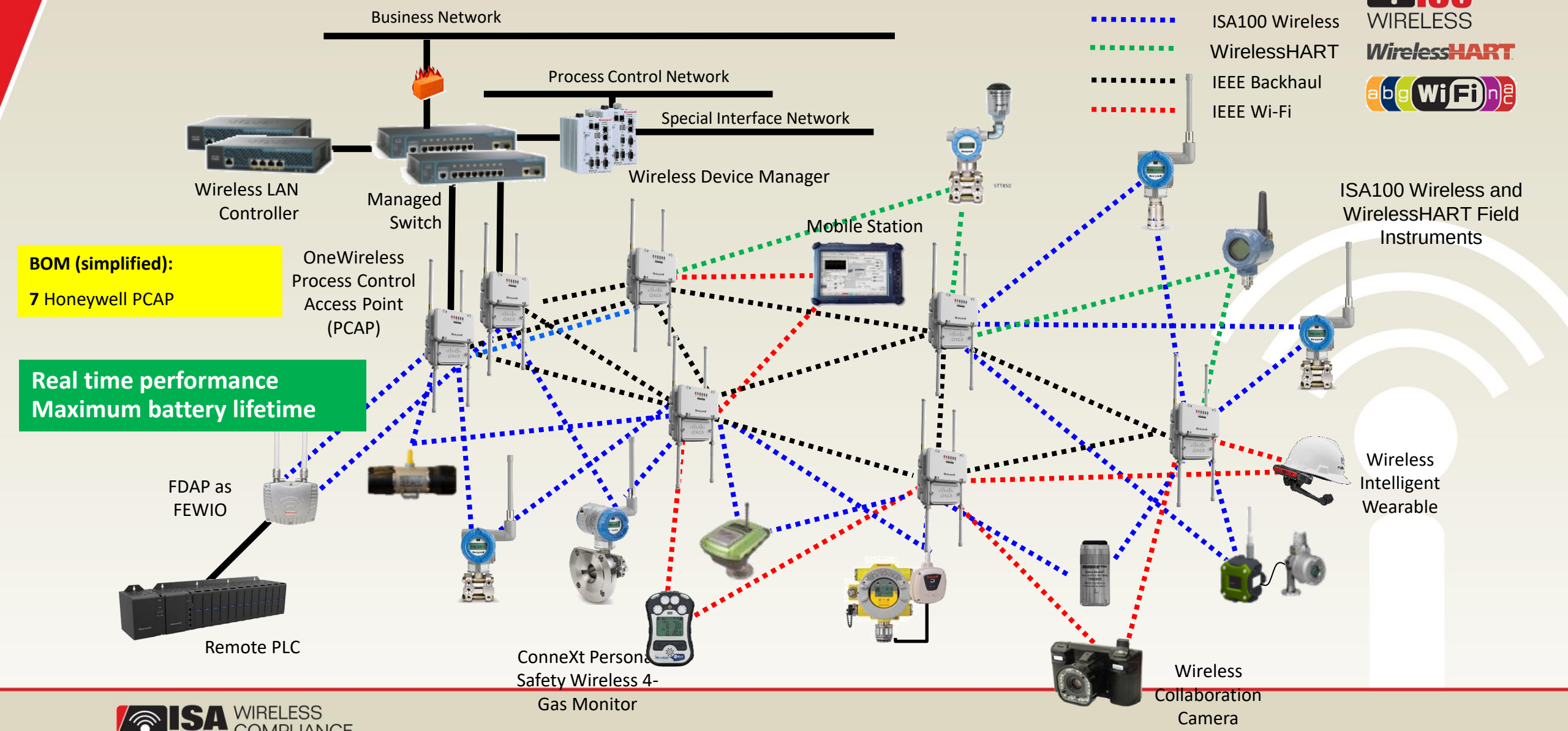


Honeywell PCAP

Honeywell Process Control Access Point (PCAP)

- Multiprotocol
- ISA100™ Wireless (IEC 62734)
- WirelessHART (IEC 62591)
- Wi-Fi (IEEE802.11ac-wave2)
- Supports all protocols simultaneously
- IP66 and IP67 rated
- HazLoc Class 1 Division 2 certified
- Light weight and compact size
- Improved temperature range: -50C to 75C
- Native integration, seamless extension of Experion PKS
- Qualified for control over Wireless of continuous non critical control applications

Typical OneWireless architecture – PCAP



Sensor mesh versus Honeywell ISA100 Wireless

Wireless sensor mesh network

- Signal latencies of up to a minute
- Battery costs up to 30 times more

Transmitter

Transmitter

Transmitter

Transmitter

Transmitter

Gateway

0.5 km

- Real time performance
- Maximum battery lifetime

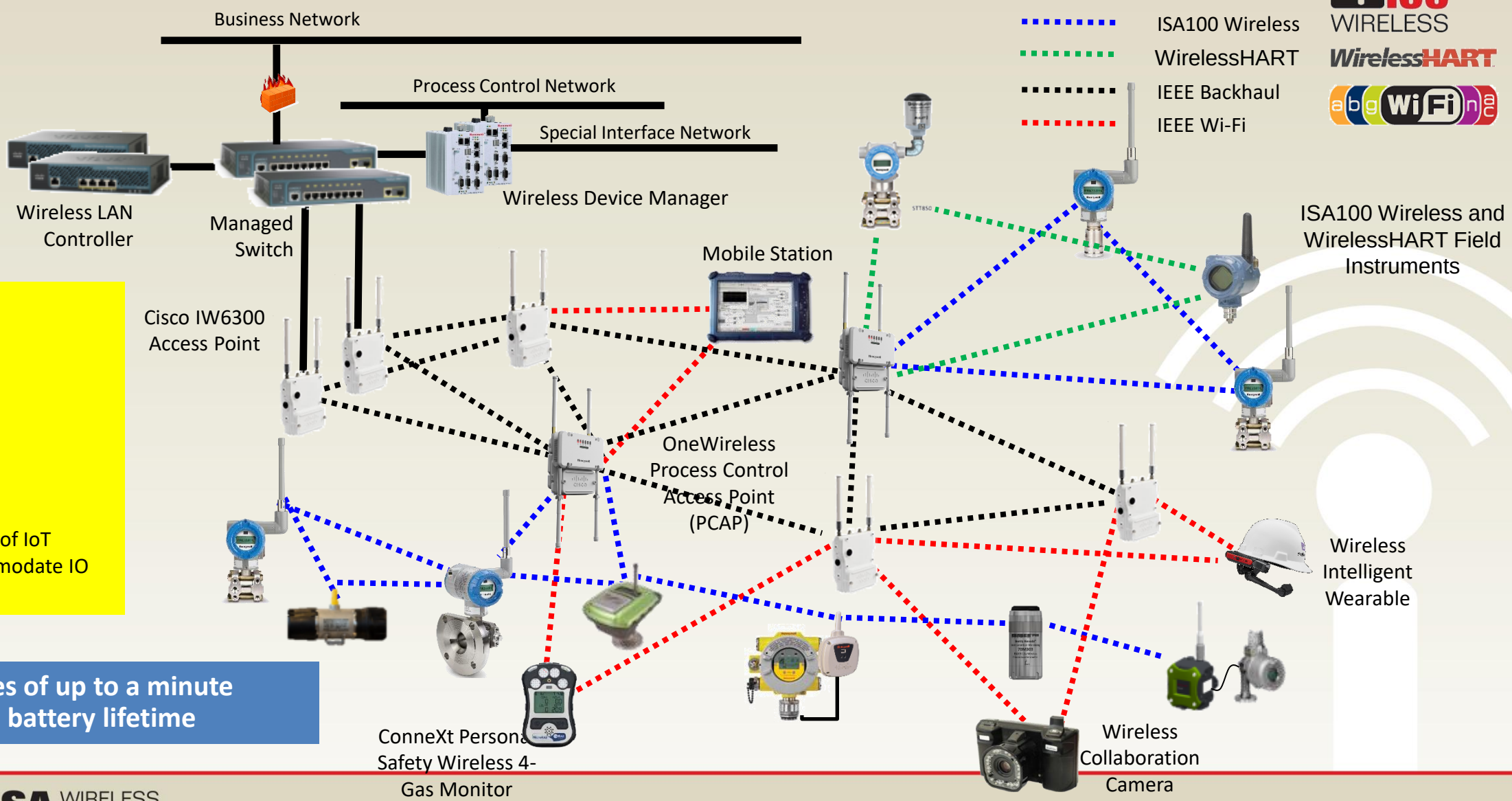
Transmitter

Gateway

ISA100 Wireless with Field Device Access Points (FDAPs)

Different solution …… Different performance

Sensor mesh architecture – next best



BOM (simplified):

2 Honeywell PCAP

5 Cisco IW6300

Lowest costs

Sensor mesh

Minimum amount of IoT modules to accommodate IO count

Signal latencies of up to a minute
Compromised battery lifetime

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Other Unique Features

Special Interface Network (SIN)

- Segregate Data From PCN Network – IIOT and Asset Management solutions
- External Interfaces allowed over SIN – Modbus, Enraf, OPC, GCI, HART

Field Expandable Wireless IO (FEWIO) - a new device type

- FDAP as router can be converted to a Field Expandable Wireless IO (FEWIO)
- Data collected over RS485 & transmitted to control room over wireless
- FEWIO Supports
  - Modbus RTU
  - RS-485 serial Interface used for connecting to serial interface devices
  - Modbus TCP

Use case example of SIN

Cost benefits

Plant rotating assets data pushed to the cloud

Vendor experts analyze the data

and provide advise, how to:

- Avoid unplanned downtime
- Increase asset availability
- Save maintenance costs.

Cyber Secure

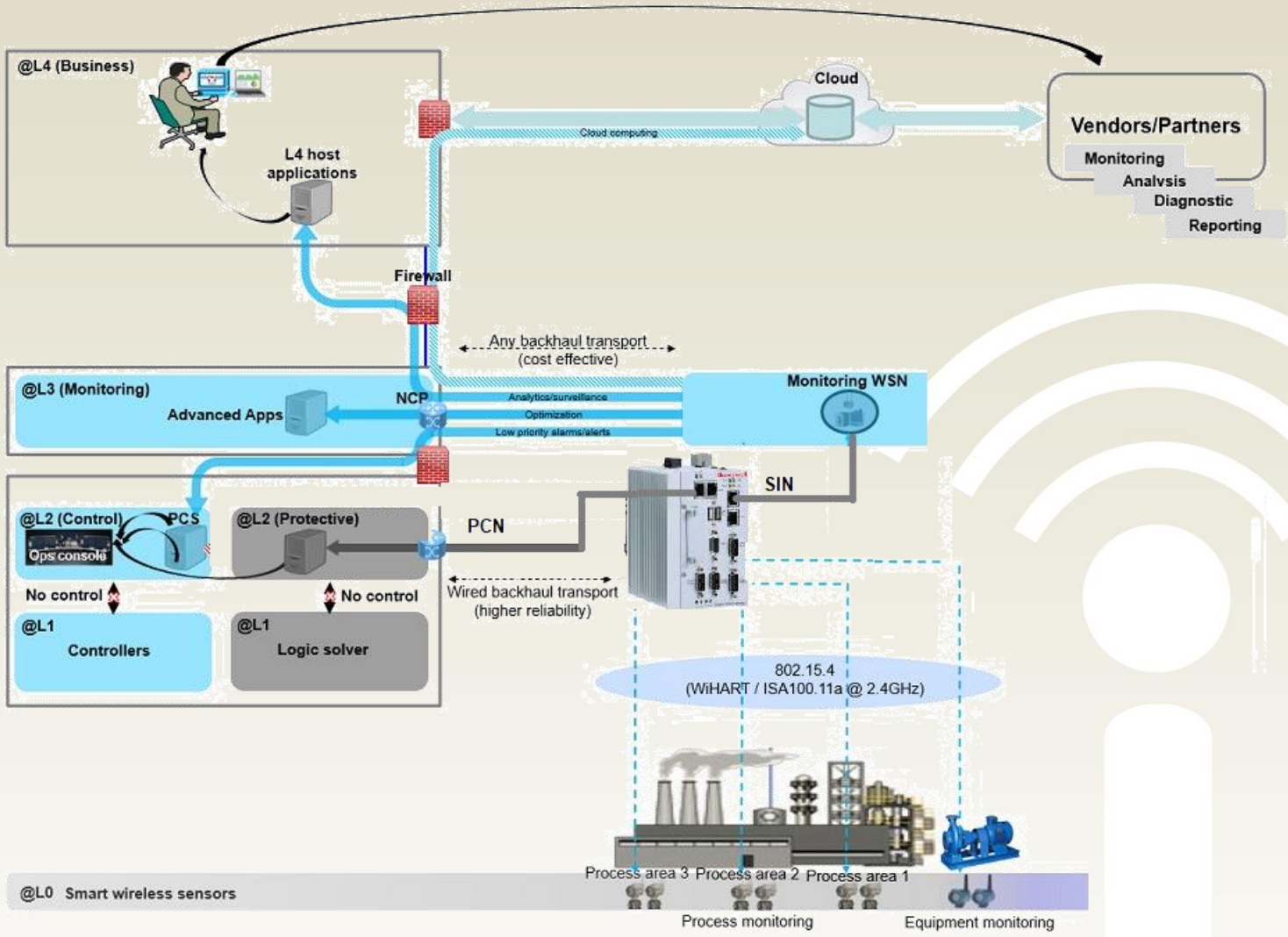
WDM build-in firewall

CDA enabled on PCN network

OPC enabled on SIN network

Each interface is independently and securely protected.

[ISASecure certified]



Use case example of FEWIO

Challenge

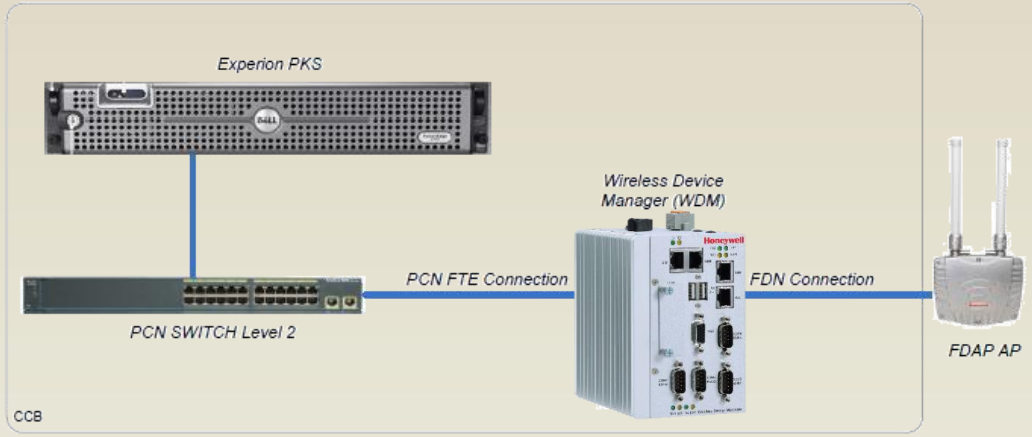
- Transfer multiple parameters from remote Flow Meters to Experion DCS
- Meet tight project budget
- Execute project in days rather than weeks

Solution

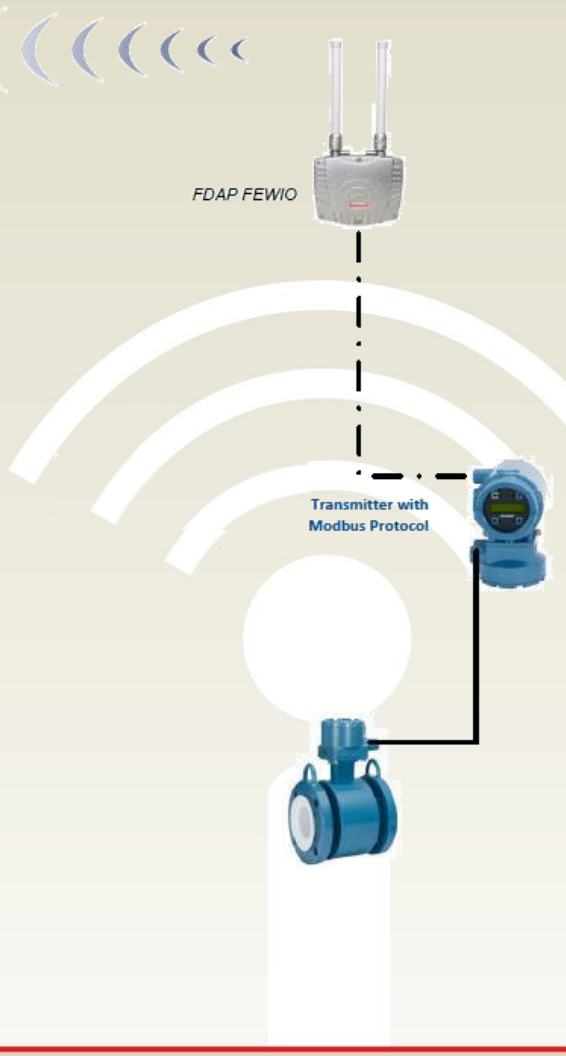
- Honeywell ISA100 Wireless Network
- Field Expandable Wireless IO (FEWIO)
- Existing flow meter with Modbus transmitter connected to FDAP (FEWIO) via RS-485 Serial
- Transfer multiple parameters from remote Flow Meters to Experion DCS

Cost benefits

- Cost-effective Modbus Data Acquisition
- 50% Project Cost Saving relative to traditional wiring
- Project execution completed in 1/5th of the time relative to a traditional wired project
- Increased Speed of Data to the operator, hours to milli-seconds
- Increased situational awareness.



Liquefied Natural Gas (LNG) plant in the Northern Territory of Australia



Ethernet Cable
RS-485 Serial
Sensor Cable

ISA 100 WIRELESS

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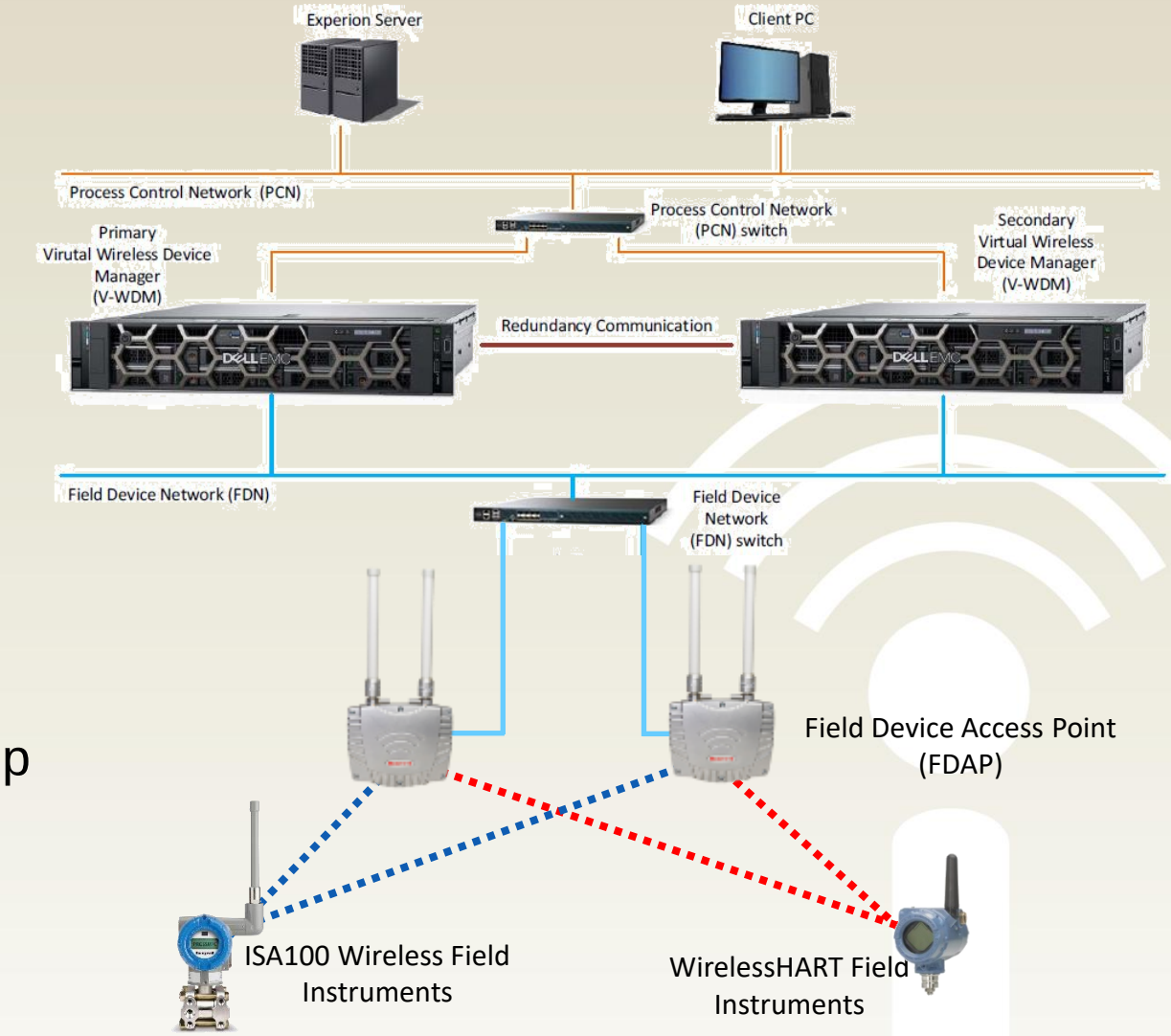
Tangible Project and Recurring Operational Cost Savings

Honeywell OneWireless – Virtual WDM

Virtual Wireless Device Manage (vWDM)

- Provides highly scalable OneWireless solution
- vWDM can support up to **3000 devices**
  - Single vWDM = 6 WDM
- Capacity managed via 500-device bundles
- Increased WDM OPC performance
- Hardware options for vWDM
  - Purchase new virtual appliance hosts
  - Leverage existing virtual host capacity
- Single Sign-On (SSO) to manage network of up to 3000 wireless IO



ISA Secure Level 1 Certified

Industry First!

Security Level 1

- Comprehensive, end-to-end integrated security system
  - Confidentiality
  - Data Integrity and Authenticity
  - Source Authentication
  - Protection to Reply Attacks
  - Advanced Key Management Service
  - Wi-Fi data goes to IT via Firewall

- Independently reconfirmed by a comprehensive hackathon
- WDM continuously and automatically logs all modifications, events, and changes
- Log file provides transparent network status end-to-end, offering additional protection and prevention of unwanted events

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Reduce project costs, increase safety and efficiency

Challenges	• Provide an engineered, secured, managed & integrated wireless network into Alcoa Alumina refineries process areas. • Supporting ISA100 Wireless instruments and sensors • Supporting mobile operators using handheld devices • Allow for wireless connectivity of mobile PCS/EHM equipment • Enabling IIOT and IOT in the future
Solution	• Site wide OneWireless networks at 7 refineries around the globe • Light weight wireless pressure transmitters • Wireless safety shower panic buttons • Wireless push button for operator rounds timestamping • ISA100 wireless FEWIO to connect remote PLCs
Results	• Typical conservative cost saving of $10k per wireless instrument over traditional hardwired installation • Speed of deployment – process data in just one day. • Mobility of sensors and instruments to be moved around to troubleshoot or perform trials as required • Support mobile operators out in the refinery process areas • Monitor moving equipment now possible with standard devices • New opportunities waiting to be found

ALCOA

World's largest bauxite mining and a leading alumina producer

ISA100 WIRELESS COMPLIANCE INSTITUTE™

“Installing to having process data: duration one day”

Perimeter Monitoring – Time Critical

LNG Facility in Middle East - Brownfield

Challenges

- Cost effective alarming system for detection of gas leaks
- Quickest deployment time
- Limited to no cabling
- Meet 3 seconds end to end alarm requirement.

Solution

- OneWireless network based on FDAPs
- Solar power panels
- XYR6000 Universal Transmitters
- Sounders, beacons

Results

- Improved site safety system on time and within budget.
- 3 seconds alarming requirement consistently met.
- Compliance to government regulations for HSE within given timeframe.

Reduce project costs, increase blending performance

Challenges	• Maintenance and obsolescence issues of
	  • Tank gauging equipment and
	  • Inventory management system
	• Tank farm spread over large 7 square miles area
	• Migrate to new system under 48 hour cutover

Solution	• OneWireless Network • 147 Wireless FlexLine Radar & Servo Gauges • 137 XYR 6000 Multi-channel transmitters • 60 Floating roof Tuning Fork & Float Switches • Mobile Station enabling operator mobility
Results	• 30% Project Cost Saving relative to traditional wiring • Increased System Reliability • Increased Speed of Data to the operator - minutes to seconds • Blending Performance Increased 18% (# of Blends per week)

PHILLIPS 66

Borger- TX Refinery

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Tangible Project and Recurring Operational Cost Savings

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Summary

Costs

- Typical conservative cost saving of $10k per wireless instrument

Speed

- Project execution in 1/5th of the time - data in just 1 day

Performance

- ISA100 Wireless enables near real time performance
- Process Control Qualified

Choice

- Large portfolio of ISA100 Wireless devices by multiple vendors

Innovation

- Up to 3000 IO in one network
- Special Interface Network (SIN)
- Field Expandable Wireless IO (FEWIO)

For Your Attention!

Questions?

www.isa100wci.org

ISA100 Wireless Interest Group

900+ members and growing; please join and invite your peers to join as well !

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