Do You Still Need to Worry About A Wireless Standard?

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Honeywell Internal
Agenda

• Do You Still Need to Worry About A Wireless Standard?
• What is the innovation and how do we do it?
  - Technical Overview
• What’s More in OneWireless R300
• Key Applications
• OneWireless @ HUG 2017
• Q&A
The Maslow’s Hierarchy of Needs (Modern Twist)

Wi-Fi / Internet !!!
Challenges in Choosing Industrial Wireless Solution
Leading The Industry Through Innovation

OneWireless™

Industry’s First Dual Purpose Wireless Network

2011

OneWireless™ Network
Multiprotocol Wireless IO

Industry’s First Multiprotocol Wireless I/O & System

2016

Most Versatile Network for All Applications
Introducing Honeywell’s Multiprotocol Wireless IO & System

• Lowest Cost of Ownership
  - $$$ savings due to single infrastructure

• Abstraction from Technology
  - Open choice of instrumentation

• Software-Only Field Upgradable Solution

• Highly Scalable – Up to 250 Devices per Network
  - Lesser infrastructure and networks
  - Lesser cost and maintenance

• Control Ready Performance with Line-Powered Infrastructure
  - Implement control applications over wireless
  - Better battery life

• Native Experion Integration
  - 50% faster commissioning, no data mapping
  - Seamless user experience, no additional training needed

• Cyber Secure and Reliable
  - Segregation of instrumentation and Wi-Fi traffic through VLANs
  - Truly redundant with no single point of failure design
  - Provisions to support credits for safety applications
100% Freedom of Choice

- All Key Wireless Standards Supported
- Single network infrastructure to support ISA100 Wireless, WirelessHART and Wi-Fi
- Standards compliant and interoperable solution
- Flexibility and choice of instrumentation
  - ISA100 Wireless
  - WirelessHART
  - Both
- Support for Wi-Fi and Ethernet devices on same network
- Field Upgradable Solution on existing hardware
- $$$ savings
  - 50% cost effective vs a 3 network solution
  - Annual savings on maintenance
Highly Scalable and “Power”- Packed

- 250 devices (ISA100 / WirelessHART/ Mixed)
- Start with Wi-Fi and then add instrumentation or vice-versa
- Wider coverage and lesser networks to manage
- Line powered infrastructure (vs battery powered mesh)
  - More reliable
  - Faster latencies
  - Control ready performance
  - Was not available for WirelessHART before!!
- $$ Savings
  - Lesser number of networks to deploy and manage
  - More value out of investments as same network can be used for instrumentation and Wi-Fi
  - Enhanced battery life of instruments
  - Lesser maintenance
Enabling Process with Seamless Data

• Native Experion Integration
  - Auto discovery, minimal configuration
  - No data mapping / conversions

• Seamless User Experience
  - Uniform data representation – wired or wireless
  - Alarms / Events reported in Station
  - No new learning curve for engineers / operators

• Plug and Play Integration with Instrument Asset Management Systems
  - Honeywell Field Device Manager
  - Configure / Maintain all wired / wireless devices from single workbench
  - DDs / DTMs

• Take the data to field with Mobility tools such as Mobile Station

• $$ Savings
  - No new skill set / trainings for using data out of wireless devices
  - 50% faster commissioning compared to unproductive data mappings
  - Faster turnarounds
Reliable, Safe and Cyber Secure

• Truly Cyber Secure Network with End-to-End Data Encryption, VLANs, Security and Session Key Rotation
• Dedicated VLANs for Segregating Process & Wi-Fi Data
  - Process data goes to DCS
  - Wi-Fi data goes to IT via Firewall
• Well Defined Experion – Network Integration
• End to End Redundant Network with No Single Point of Failure
• Most Secure Provisioning
  - No human ever eye sees the security keys even for WirelessHART devices
• Network Metrics As Per ISA84 – TR To Allow Safety Credits IPL, Under THE LOPA Scheme – Non SIS Applications
• $$ Savings
  - Safety against cyber security threats
  - Independent Protection Layer at a lower cost
The OneWireless Network – Multiprotocol Wireless I/O & System
The Best Got Even Better – With No Change!!

No Hardware Change

Software Innovation

Field Upgradable

Delivering More Value on CAPEX and Existing Investments
**Multiprotocol Wireless I/O & System**

- Support for ISA100 Wireless, WirelessHART and Wi-Fi on the same network infrastructure
- No hardware change required, field upgradable firmware
- 250 devices system capacity
- An optional – licensable offering
- Configurable at system level
- Infrastructure nodes still identify as ISA100 (Innovation)
  - Allows faster network setup compared to pure WirelessHART network
- Seamless integration into Experion
- Single Handheld for Provisioning and Troubleshooting – MC Toolkit
- WirelessHART devices configurable as
  - Sensor + Router
  - Sensor only
- Exploit the reliability and performance of line powered infrastructure
Provisioning Device – Security Begins Here

• All handheld platforms with a Windows Mobile 5.0 or higher operating system and an Infrared Red (IrDA) port (for ISA100 Wireless devices) and/or a HART Modem interface (for WirelessHART devices)
• HAZLOC certifications as per requirement
• If ONLY ISA100 Wireless is the requirement
  - HSM Dolphin 99Ex
• If ONLY WirelessHART is the requirement
  - Any handheld supporting a HART modem connection
    ▪ Honeywell MC Toolkit
    ▪ Emerson 475
• If BOTH ISA100 Wireless and WirelessHART are the requirement
  - Honeywell MC Toolkit is THE recommended handheld
• Of course – Over The Air (OTA) Provisioning continues for ISA100 Wireless
So Why Did We Do It?

- Honeywell customers needed a solution to bring data from all standard industrial wireless devices into Experion the same way we do for wired devices such as Foundation Fieldbus, HART, PROFIBUS and so on
- Support for ISA100 Wireless, WirelessHART and Wi-Fi on the same network
- Emphasizes our commitment towards IIoT solutions for Connected Plant
- HPS provides “Open” systems and protocol-agnostic solutions
- A software solution allows customers to do more with less CAPEX and OPEX
- Provide customers with flexibility to chose the devices for their specific applications and use the data for improving
  - Safety
  - Reliability and
  - Efficiency
- Without worrying about the technology
Wait, There’s More…

• Access and Identity Management System (AIMS)
  - Unified management of user roles / credentials for OneWireless and Experion through Windows Enterprise Security model – Single Sign On (SSO)
  - WDM can be accessed via SSO from any EPKS Console or Flex station via browser
  - Security key generation and transfer without physical access to WDM

• OneWireless for IPL (Independent Protection Layer)
  - Network metrics and data to comply with ISA84 Technical Report on using wireless for non-SIS applications (** Subject to finalization of the TR)

• Scalability and Capacity Enhancements
  - Capacity increase on ISA100 Access Points / Router to improve the scalability of the network
  - Maximize the return on investment on infrastructure
Wait, There’s More…

- Remote Backup and Restore
  - No physical access required to WDM – enhances security
  - Better disaster recovery management

- ISA100.11a-2011 Support
  - Compliance to the latest revisions in ISA100 standard per IEC 62734
  - Support for both ISA100 2009 and ISA100 2011 devices under the same network

- Slower Update Rate Support
  - Slower update rates beyond 1 minute
  - Conserve battery for applications which require slower or event driven updates
Independent Protection Layer (IPL) - Support

- Provides statistics per device (ISA100, Wired & Wireless HART) and at WDM level. These statistics are compliant with ISA-dTR84.00.08-2016. These statistics independently tell about performance and reliability of the system.

ISA100/WirelessHART Device Statistics

- Command Message Totals
  - Request: 52
  - Response: 51
  - Timeout: 2

- Publish Messages Totals
  - Publish Count: 315

- Availability
  - Available Since: 11/10/2016 19:21:15.3...
  - Availability: 94.202133%

- Other Statistics
  - Average Latency: 1.103587 sec
  - Average Turnaround Time: 4.808511 sec

Access Point Statistics

- Read Message Totals
  - Request: 1163
  - Response: 1163
  - Timeout: 0

- Write Message Totals
  - Request: 13
  - Response: 13
  - Timeout: 0

- Execute Message Totals
  - Request: 368
  - Response: 368
  - Timeout: 0

- Availability
  - Available Since: 11/14/2016 15:10...
  - Availability: 100.000000%

Wired HART Device Statistics

- Availability stats of ISA100, WiredHART, WirelessHART and Access Point
Field Expandable Wireless IO via RS-485 – Coming Soon!

- FDAP As a Modbus-RTU Master
- Talks to multiple PLC’s configured as Modbus Slaves
- Reads the Modbus register values from PLC’s Periodically and sends the data over Wireless
- Reads Maximum 100 Discrete Input registers & Coils and/or 100 Input Registers & Holding Registers
- Experion Integration
Wireless Tank Gauging

SmartRadar FlexLine
- Meshing capability
- Seamless integration with Entis Pro / Engauge / CIU
- Suitable for custody transfer (W&M approved)
- Highest accuracy over 75m (250 feet)
- Also transmits other local tank measurements over ISA100 Wireless
- Software upgrade over the air
- Provisioning over the air

Wireless Field Interface
- Able to connect existing gauging equipment to ISA100 Wireless network
- Zone1 capable hub
- Support for 854, 97x, 873, 811 GPU, 877 indicator
- Seamless integration with Entis Pro / Engauge / CIU
- Freedom of selecting appropriate gauge (Radar or Servo)
Wireless Steam Trap Monitoring

Energy Saving Potential of up to 3.500 USD per day = 1.000.000 USD per Year

- Accurate and rapid leak detection
- Accurate diagnostic algorithm
  - Trap performance
  - Steam loss data
- Lower installation costs
- Long-life battery
- Robust construction

Spirax Sarco STAPS, Armstrong ST6700
Both ISA100 Wireless

Energy Saving Potential of up to 3.500 USD per day = 1.000.000 USD per Year
Wireless Wellhead Monitoring

- CE RTU with Wireless I/O
- Powerful process control environment
- Non wireless AOs / Dos
- Comm Interfaces to MPFM, ESP, Downhole gauge, Solar panel
Wireless Wellhead Monitoring

Combined Wells
Wireless Vibration Monitoring

SKF CMWA 8800

GE wSIM

GE Ranger* Pro

Experion

Vibration Analysis
Summary

• Honeywell OneWireless Network is Field Proven
  - Billions of operating hours
  - Field deployed control applications

• Leading and Most Innovative Solution
  - First to introduce dual purpose network (ISA100 Wireless + Wi-Fi) - 2011
  - First to introduce Multiprotocol Network (ISA100 Wireless + WirelessHART + Wi-Fi) – 2016

• Enabling IIoT with Software Innovation
  - No change in hardware, maximum ROI

• Open, Reliable, Scalable and Cyber Secure

• Seamless Integration with Experion

• Future proof – start with one application, add others later

• You do not need to worry about wireless standards – Honeywell is taking care
OneWireless @ HUG 2017

• Presentations
  - Do You Still Need to Worry About a Wireless Standard
  - Guiding Deployment of Wireless Instrument Networks, 2016 ISA Site of the Year
    ▪ Stoney Lee, Phillips 66 (A-B Grand Oaks Ballroom)

• Workshop
  - How to Deploy a Wireless Network
    ▪ A-B Grand Oaks Ballroom

• Knowledge Centre
  - OneWireless Network and Solutions
  - Control Edge RTU – Wireless IO

• Consulting Corner
  - Please make a request
Thank You !!
Your Word is Important to Us…

For more, please visit
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Exploiting The Potential
## Reduce Resources – Time and People

### NOC in Scandinavia - Greenfield

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<th>Challenges</th>
<th>Solution</th>
<th>Results</th>
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| • Mobile computing and CCTV required during the startup and commissioning phases.  
  • Constraints on the weight and footprint of the solution due to offshore platform.  
  • Tracking personnel movement | • OneWireless Network including 35 marine grade access points and 8 OneWireless XYR 6000 transmitters. | • Remote collaboration enabled by wireless and mobility reduce personnel on the platform.  
  • Personnel tracking solution using Wi-Fi.  
  • Reduced the commissioning, startup and troubleshooting time. |
Personnel Safety – Reduce Response Time

Refrinery in Middle East - Brownfield

Challenges
- How to make the emergency response command aware of the scene in real time.
- Increase effectiveness on emergency response.

Solution
- Site wide OneWireless Network with vehicles mounted with PTZ cameras, mobile computers and DVM solution.

Results
- Live feeds from incident commander vehicles help the remote command address the situation more effectively.
- Improved plant safety performance.
- Recording of the incidents and response helps continuous improvement (training).