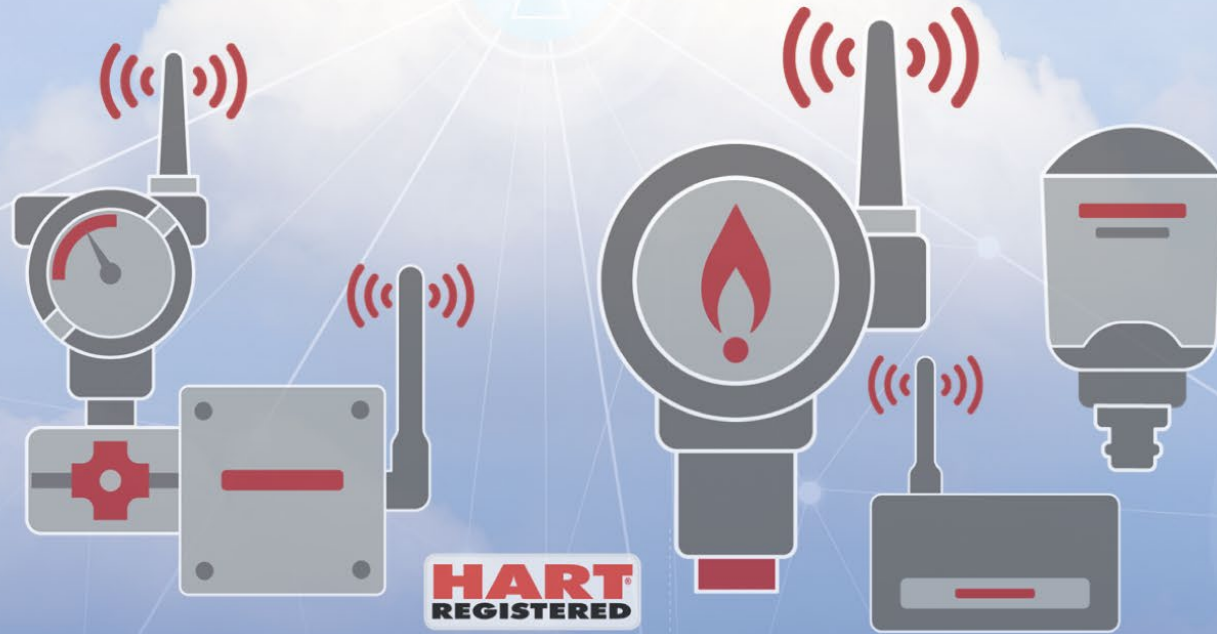




FIELDCOMM GROUP™

*Connecting the World of
Process Automation*



HOW TO DEVELOP AND REGISTER A WRELESSHART DEVICE

Agenda

- About the Speaker
- Why Choose WirelessHART?
- WirelessHART Device Development Process
- WirelessHART FieldComm Group Registration Process
- Introducing the WiHaRT Rapid Development Kit
- Q&A

Webinar Speaker



Robert Assimiti is the Co-Founder and CEO of Centero, LLC. He has over 18 years of technical leadership in the wireless IoT/IIoT arena. He has architected and developed several highly scalable, widely deployed mesh based wireless product lines for both commercial and industrial wireless markets and applications. Robert manages a team of technologists focused on the creation of new technologies, standardization and generation of novel intellectual property. He has also authored and co-authored several patents. Centero is a provider of wireless products, technologies and services for IIoT connectivity.



Robert Assimiti

Co-Founder and CEO
Centero

WirelessHART Facts



Architected to meet rigorous requirements for industrial process automation



International standard IEC62591 – approved January 2009



Built on the ***solid foundation of the HART open protocol*** - deployed since 1986



Deployed ecosystem of 50K+ networks with an installed base of 50M+ devices



Same application layer is used in HART and WirelessHART



FieldComm Group is chartered and tasked with

- Defining and maintaining clear specifications
- Ensuring Interoperability through registration program
- Providing training workshops and in-depth support

Why Choose WirelessHART?

Communication Reliability

99.99% uptime in well-formed networks



- ✓ Path diversity – mesh routing
- ✓ Time diversity – TDMA slotted access
- ✓ Frequency diversity – channel hopping

Interoperability

27 registered devices from 15 device manufacturers



- ✓ Fully defined application layer
- ✓ Utilizes well understood HART structures
- ✓ Interoperable with existing control systems

Cybersecurity

Secured to a two-layer strategy



- ✓ Mandatory security protocols
- ✓ Data link layer hop-by-hop authentication
- ✓ Transport layer authentication + encryption

Why Choose WirelessHART? (continued)

Scalability

Hundreds or devices per network



- ✓ Self-organizing mesh networks
- ✓ No need for Gateway line-of-sight
- ✓ Deterministic technology

Full Data Context

Application layer data structures



- ✓ Application layer data points have full context
- ✓ Maximized value of data for analytics

Publish-by-Exception

Periodically published data flows



- ✓ Data published based on process/device conditions
- ✓ Ensures availability of data for monitoring/control
- ✓ Reduces energy needed compared to polling



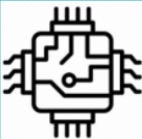
Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs



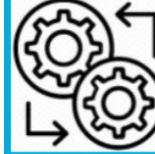
Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway



Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor



Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities



FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration



Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

Development and Registration – Quick Reference Guide

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

1a-Product Definition – Create Functional Requirements

Define product requirements – assumes basic understanding of WirelessHART features/mechanisms

Choose device type – WirelessHART Field Device or Adapter

Define application layer functionality

Choose sensors/actuators

Choose power source – battery, line or harvester

Operation in hazardous areas

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

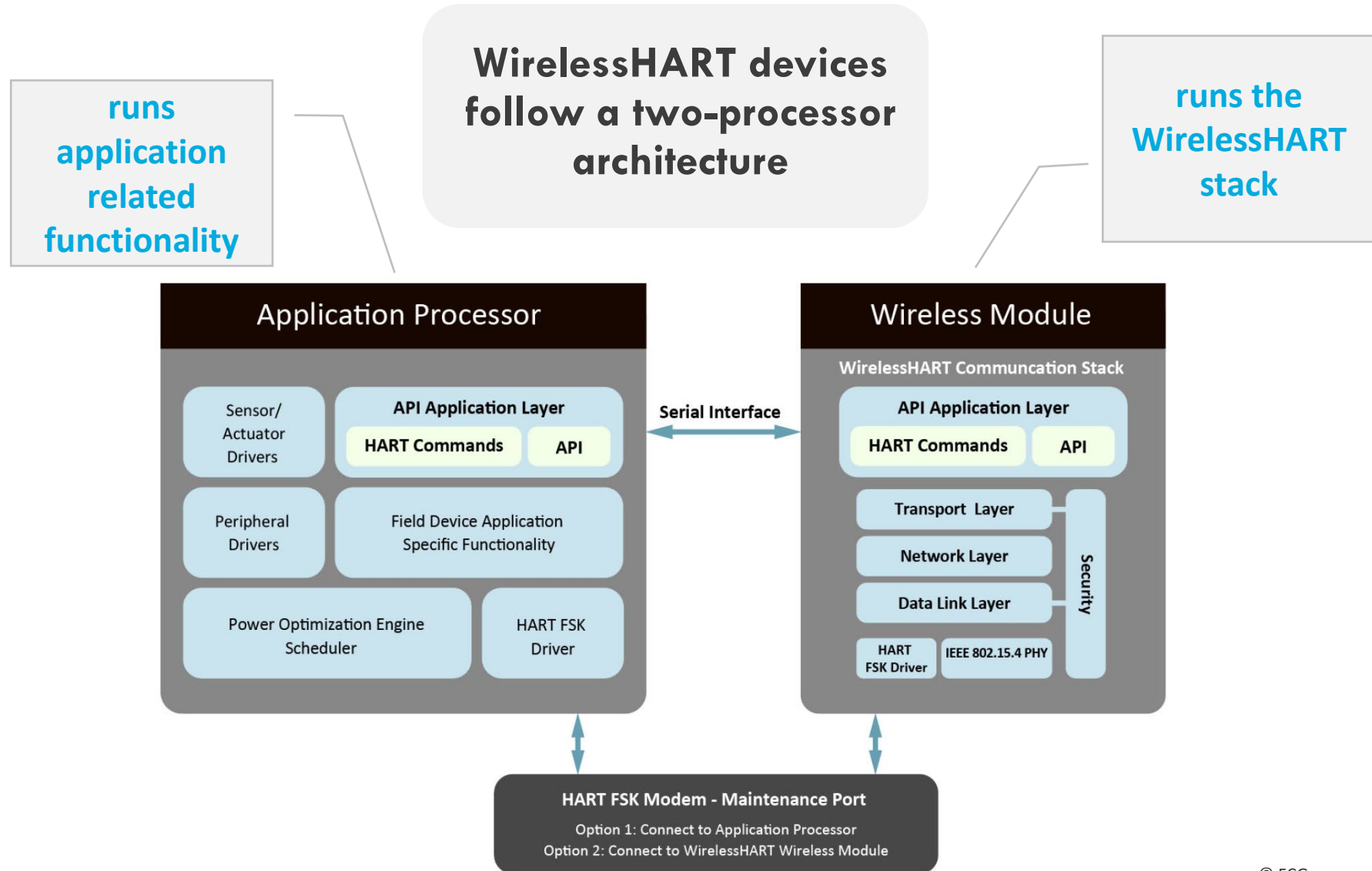
- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

1b-Identify Field Device Architecture



1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

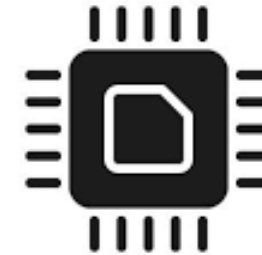
Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

1b-Identify Field Device Architecture

Application Processor

- Implements HART application layer
- Connects and manages sensors/actuators
- Bursts process and status data to Gateway
- Manages maintenance port
- Monitors and manages battery life



Wireless Module

- Implements WirelessHART communication stack
- Complies with IEEE 802.15.4- 2.5 GHz
- Precise time management required by TDMA mechanism
- Responsible for device security
- Routes packets per settings received from Network Manager
- Reports device and network communications health parameter
- Joins network and manages mesh connectivity



1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

1c-Identify Field Device Architecture – Centero’s WiHaRT Module

Runs a WiHART communication stack compliant to HART 7.6

Reference implementation includes all components needed to develop a WirelessHART certified instrument

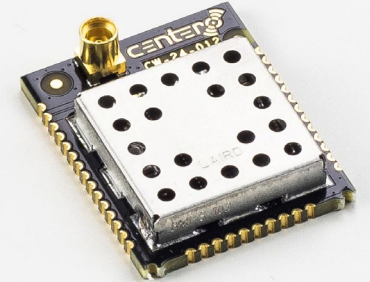
Market leading sensitivity of -108 dBm and link budget of 118 dB

Designed for integration in intrinsically safe instruments

Onboard RF Front-end Module - adjustable output power of up to +10 dBm and selectable RX gain modes

Suitable for real estate constrained products

Extensively tested for interoperability with the Emerson 1420, Pepper+Fuchs WHAx and Centero’s NIO200IAG Gateways



1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

1c-The Project Team and Development Tools

Developing a WirelessHART field device requires multi-disciplinary engineering teams

FieldComm Group Development and Validation Tools	
HART Physical Layer Test Kit	HART Frequency Shift Keying (FSK) Physical Layer conformance
HART Test System	Test HART 4-20mA (FSK) field devices
WirelessHART Test System	Simplified Gateway used for testing
Wi-Analys	WirelessHART packet sniffer and network analyzer
FDI Device Package IDE	Develop/ test FDI Device Packages and EDDs
HART-IP Clients	Communicate with Gateways via HART-IP

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

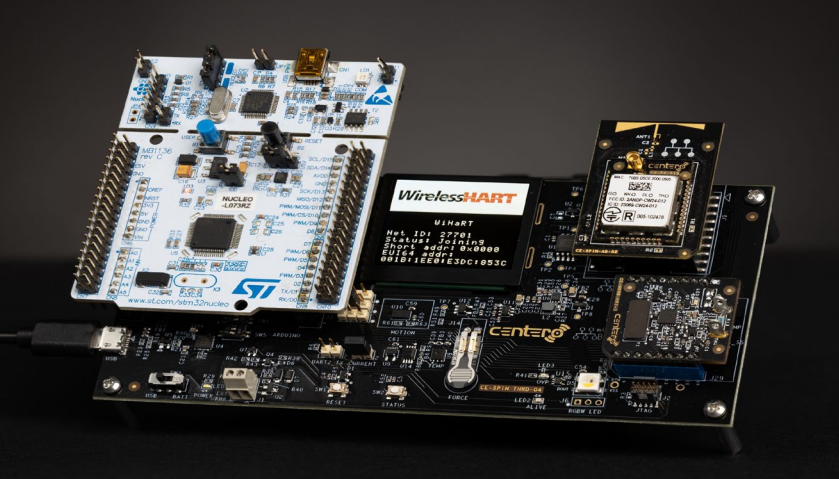
Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

2-Develop Functional Prototype

- A WirelessHART development kit greatly accelerates development
- Development kits include all components needed for development:
 - WirelessHART wireless modules and development boards
 - WirelessHART Gateway
 - Training materials and documentation
 - **Application processor source code**

Centero's WiHaRT Development Kit



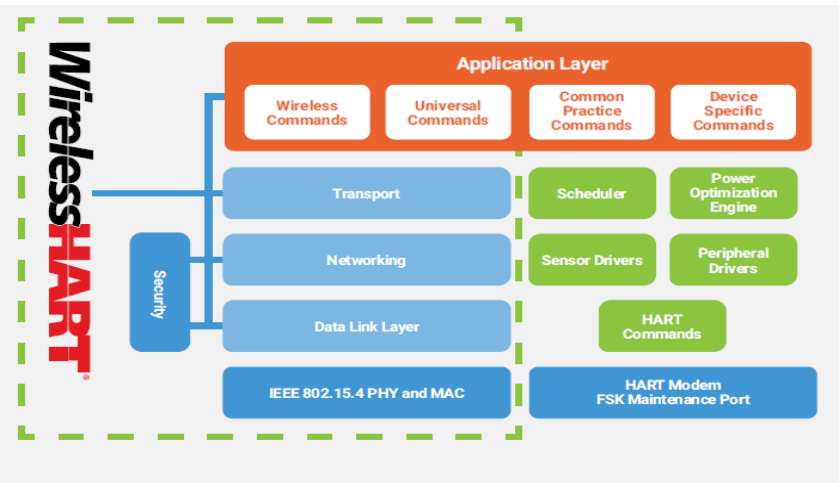
Comprehensive end-to-end development kit and platform

Swiftly develop WirelessHART compliant field instruments and devices

Includes integrated and pre-configured WirelessHART hardware, firmware and software

- Two SPiN development boards
- Two WiHART wireless modules
- **Application processor source code package**
- Gateway – field ready, C1D2/ATEX rated

Feature-rich Monitoring and Control software



1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

3a-Hardware Development

1. **Battery selection** – meets power budget for intended battery life

2. **HART Maintenance port** – mandatory for all WirelessHART devices

- Used for provisioning/commissioning of the WirelessHART device
- Run compliance tests using the HART test system

3. **RF considerations**

- RF output power in the -10 to +10 dBm range
- Antenna propagation pattern + IEEE 802.15.4 compliance

4. **Enclosure selection** – explosion proof versus intrinsically safe

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

3b-Firmware Development

Request an FCG assigned Manufacturer and Device ID

Firmware development is focused on two facets:

- Integration of wireless module with application processor
- Map sensing/control functionality to HART/WirelessHART commands and mechanisms

Validate with a WirelessHART Gateway

Battery life fine tuning

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

4-Software System Integration



Develop HART Device Description file (DD file)



Integration with the WirelessHART Gateway and plant network software



Models all the capabilities of the field device



Enhanced Device Descriptor (EDD) provides graphical elements



FieldComm Group offers the FDI Device Package IDE

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

5-FieldComm Group WirelessHART Field Device Registration

Step 1: Join FieldComm Group (FCG) as Member

- Shape future Industrial IoT technologies
- Discounted pricing to training, development + compliance testing + registrations tools,
- Prioritized access to the FCG support team

Step 2: Purchase Test Tools from FCG

- Complete suite of protocol-specific tools
- Test tools also include test automation run on top of the tools

Step 3: Perform Internal Registration Tests

- Perform internal Quality Control of the field device
- Collect all test logs and results – needed for the registration package

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

5-FieldComm Group WirelessHART Field Device Registration

Test	Description
Physical Layer Testing	Confirms FSL maintenance port compliance
Data Link Layer Tests	Test token passing DLL used by maintenance port
TDMA and Mesh Network Layer (TML)	WirelessHART mesh network compliance
Universal Command Testing	Over both wireless channel and maintenance port
Command Practice Command Testing	Over both wireless channel and maintenance port
System Level Tests	Ensures interoperability and long-term operation
FDI Device Package Testing	Confirms DD/EDD compliance

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

5-FieldComm Group WirelessHART Field Device Registration

Step 4: Submit Product Registration Kit

- All test logs and results + supporting documentation
- The DD file and FDI Device Package
- Wireless compliance documentation

Step 5: Pass FCG Registration Tests

- Submit registration package and a purchase order
- Submit two (2) DUTs for registration testing

Step 6: Field Device Registered and Listed

- FieldComm Group confirms that all registration tests successfully passed
- DD file sent out for testing with various host systems
- Field device registered and listed in the FieldComm Group

1

Product Definition, Architecture and Project Planning

- Formulate product requirements
- Create high level field device architecture
- Map requirements in WirelessHART standard based mechanisms
- Estimate product battery life
- Identify project requirements and costs

2

Develop Functional Prototype

- Join FieldComm Group as member
- Purchase WirelessHART development kit from the selected wireless module vendor
- Set up development environment
- Modify and tailor application processor source code to burst dynamic variables of interest
- See field instrument specific data being reported in the Gateway

3

Hardware and Firmware Development

- Select hardware components and design hardware
- Obtain FieldComm Group development tools
- Firmware integration of the WirelessHART module with the application processor
- Develop instrument specific WirelessHART application layer implementation running on the application processor

4

Software System Integration

- Develop and generate Device Descriptor file
- Run interoperability tests with WirelessHART Gateways and infrastructure devices of choice
- End-to-end system integration validation with DCS/PCS and other plant network software entities

5

FieldComm Group WirelessHART® Field Device Registration

- Obtain FCC test report and proof of IEEE transceiver compliance
- Purchase HART registration test tools
- Run internal registration tests for the WirelessHART field device and DD file
- Go through FieldComm Group HART registration process
- Obtain FieldComm Group HART registration

6

Regulatory Compliance and Certification

- Compliance and certifications for operation in hazardous areas
- Wireless compliance and certification tests
- Other EMC, Emissions, RFI, ESD and safety compliance testing

6-Regulatory Compliance and Certification

Operation in Hazardous areas

- Typical instruments areas classified as Class 1 Division 1 and/or ATEX Zone 0 (for various gases, liquids, dusts etc)

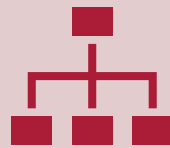
Wireless/EMC Compliance

- Wireless/EMC compliance to for various countries/regions
- Wireless modular certifications (FCC, ETSI, Japan etc)
- Additional EMC device (product level) compliance tests

Additional Regulatory Compliance and Certifications

- Additional EMC, RF immunity, ESD and safety compliance tests

Conclusion

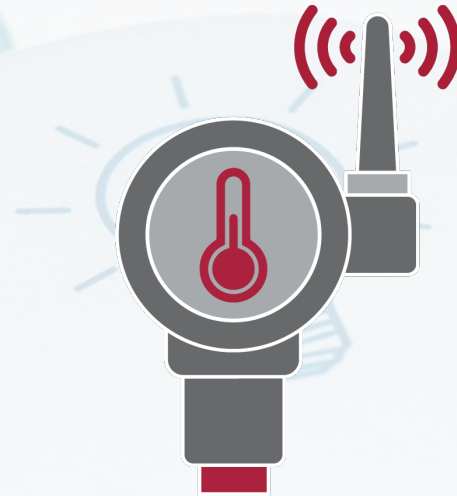


Planning the development project reduces time-to-market and minimizes the costs involved



WirelessHART device vendors have access to more existing industrial wireless field device networks and host systems than any other IIoT protocol

THANK YOU FOR YOUR ATTENTION!



Q&A Session

Copyright

Copyright © 2022 FieldComm Group®

This document contains copyrighted material and may not be reproduced in any fashion without the written permission of the FieldComm Group®.

Trademark Information

FDI™ and FOUNDATION™ Fieldbus are trademarks and FieldComm Group®, HART®, HART-IP®, HART Registered®, PA-DIM® and WirelessHART® are registered trademarks of FieldComm Group, Austin, Texas, USA.

Any use of these terms hereafter in this document or in any document referenced by this document implies the trademark/registered trademark. All other trademarks used in this or referenced documents are trademarks of their respective companies. For more information, contact FieldComm Group at the address below.

Attention: FieldComm Group President
FieldComm Group
9430 Research Blvd., Ste. 1-120
Austin, TX 78759, USA
Voice: (512) 792-2300
Fax: (512) 792-2310
<http://www.fieldcommgroup.org>

Intellectual Property Rights

The FieldComm Group (the Group) does not knowingly use or incorporate any information or data into the HART, FOUNDATION Fieldbus and FDI protocol standards, which the Group does not own or have lawful rights to use. Should the Group receive any notification regarding the existence of any conflicting private IPR, the Group will review the disclosure and either (A) determine there is no conflict; (B) resolve the conflict with the IPR owner; or (C) modify the standard to remove the conflicting requirement. In no case does the Group encourage implementers to infringe on any individual's or organization's IPR.