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# WirelessHART™ Rapid Prototyping Service

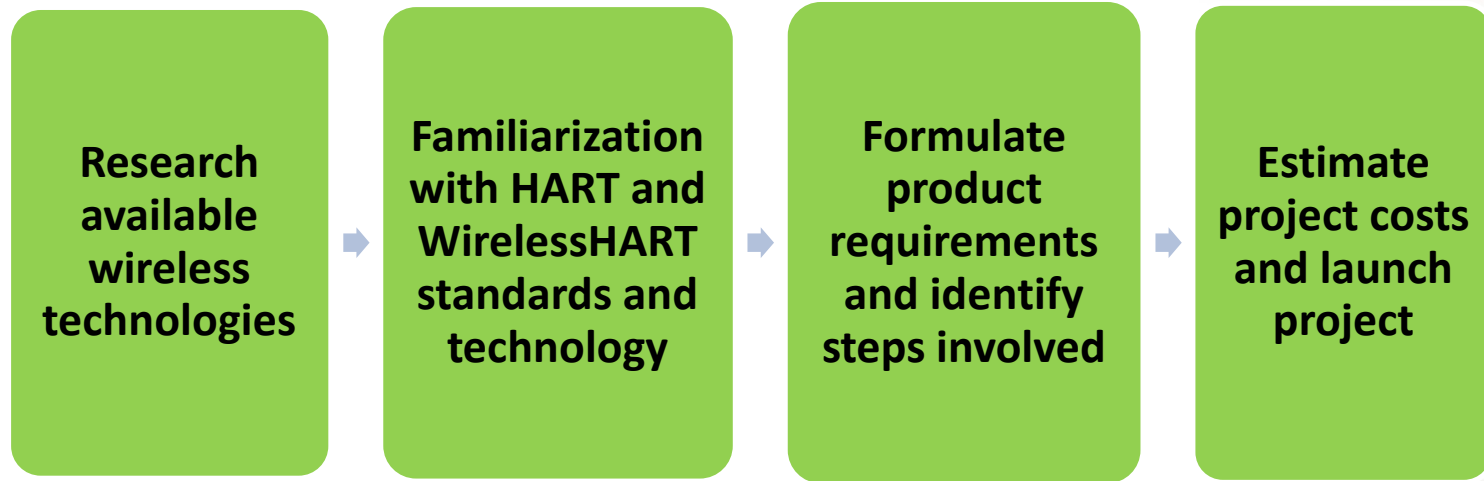
**WirelessHART™**

# Rapid Prototyping Service Overview

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- Industrial Internet of Things technologies (IIoT) for process automation are new and complex technologies
- Product development requires cross-disciplinary expertise that a lot of companies do not have in-house
  - HART and WirelessHART standards specification and technology knowledge
  - Wireless (RF) expertise
  - Wireless compliance expertise
  - Hardware + embedded firmware + mechanical engineering capabilities
  - Hazardous area compliance expertise
- Significant effort for developing the instrument specific code that resides on the application processor
- Typical development cycle is 8 – 16 months depending on the level of in-house expertise and available resources

# Step 1: Research and Planning



## Step 2: Development, Validation and Certification

### Firmware and Software Track

#### Firmware Integration

- Integration of third-party stack via API
- WirelessHART compliant APP layer implementation

#### Software Integration

- Integration with third party vendor's Gateway (DD/CFF)
- Integration with software entities residing on the plant backbone (DCS, client apps)

#### WirelessHART Certification

- Compliance testing for field instrument

### Hardware Track

#### Hardware Design and Integration

- Integration of third-party wireless module
- Schematics, layout, fab files
- Mechanical design
- Manufacturing, engineering validation

#### Certification

- Wireless compliance: FCC, IC, ARIB, ETSI etc.
- Safety: UL, ATEX, etc.

Duration: 6 – 12 months

# RPS Goals and Deliverables

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- By using Centero's Rapid Prototyping Service field instrument vendors can have a functional prototype (proof-of-concept) within 4 – 6 weeks
- This reduces the product development cycle by 3 - 5 months

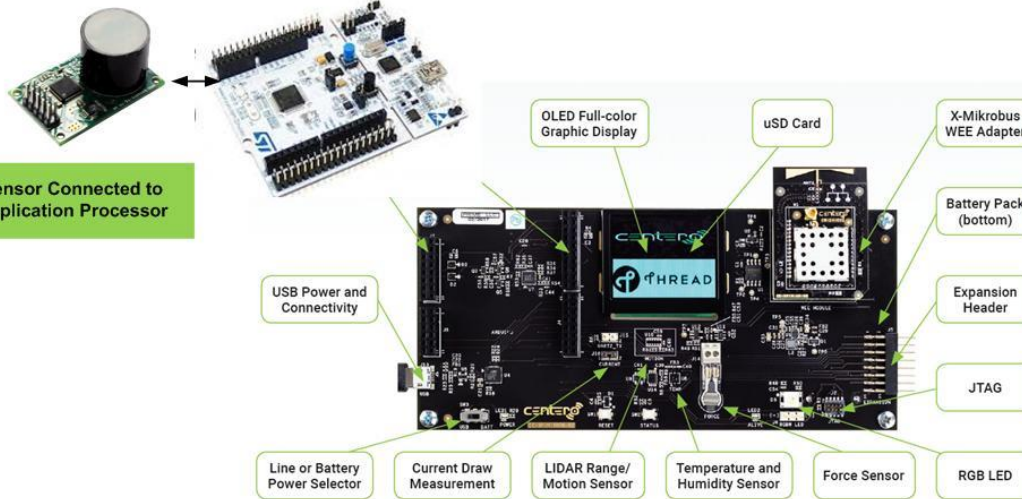
# Functional Prototype

## Customer Specific Functional Prototype

Arduino Development Board connected to SPiN Board – customer specific application processor



Sensor Connected to Application Processor

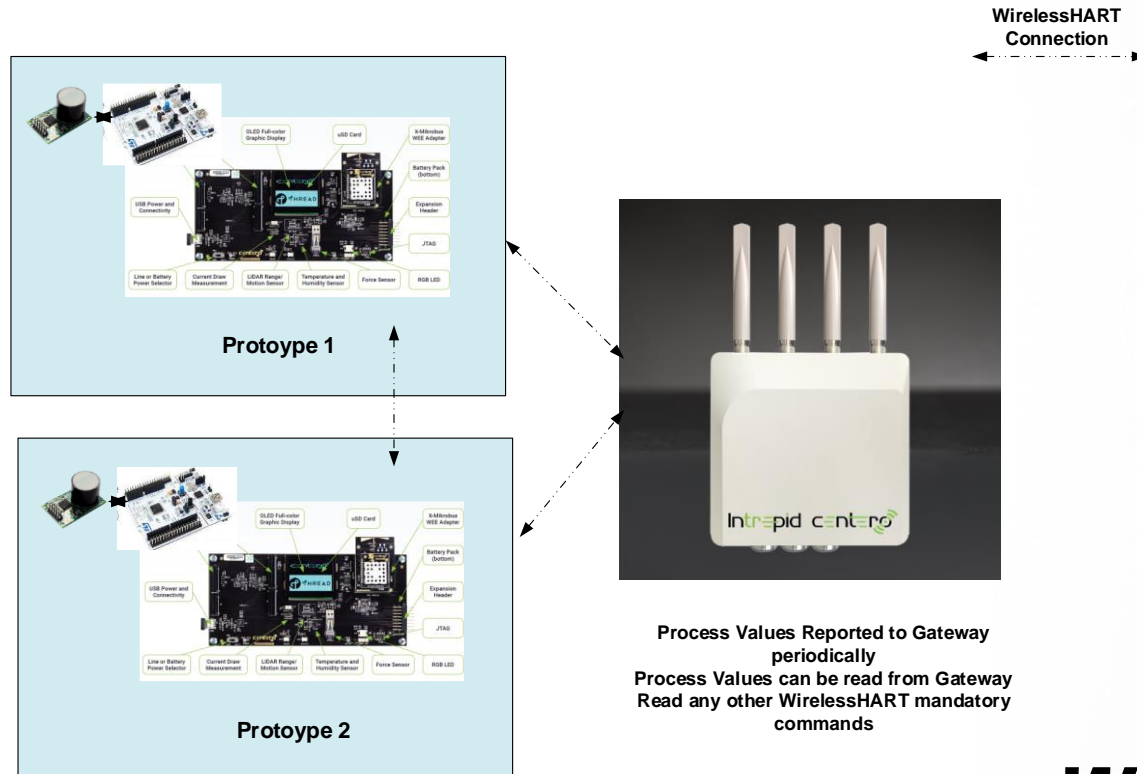


WiHART Development Kit SPiN Board

# WirelessHART Network

**WirelessHART**

## Prototype WirelessHART Network



**centro**

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# Requirements

## Tasks and Activities

### Requirements

- Customer specifies sensor that it wants connected to the application processor of their choice- and if available sends sensor development board
  - Sensor needs to have digital output – I2C, UART, SPI, 1-wire etc
  - No analog sensor – or sensor that needs calibration/conditioning
- Customer defines what they want mapped into two (2) WirelessHART process variables
  - Process Variable PV1: sensor value
  - Process variable PV2: examples - sensor values, temperature, battery voltage etc
- Customer specifies how often instrument should publish/report PVs to WirelessHART Gateway



# Prototype Development

## Tasks and Activities

### Centero Tasks

- Connect application processor Arduino board to the WiHART development board (development board has Arduino connector)
- Port WirelessHART application processor firmware to application processor chosen by customer
- Read sensor and map into Process Variable PV1
- Add customer defined value to Process Variable 2 (examples: temperature, battery voltage etc)
- Join prototype to WirelessHART Gateway of the WiHART Development Kit
- Prototype will publish PV1 and PV2 based on the customer's requirements
- Prototype will respond to read requests from the Gateway for PV1 and PV2 (as well as all mandatory WirelessHART commands)

# Deliverables

## Deliverables

### Deliverables

WiHART Development Kit customized to customer's requirements that includes

- Two (2) Functional Prototypes
- Application processor source code project
  - Maps one (1) sensor value into Process Variable 1
  - One (1) additional process variables reported – specified by customer
- Architecture document
- Prototype wiring diagram
- Customer specific guide
- Full WiHART Development kit which also includes NIO200HAG Gateway (C1D2 or ATEX certified)

# Contact

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For additional information please visit

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