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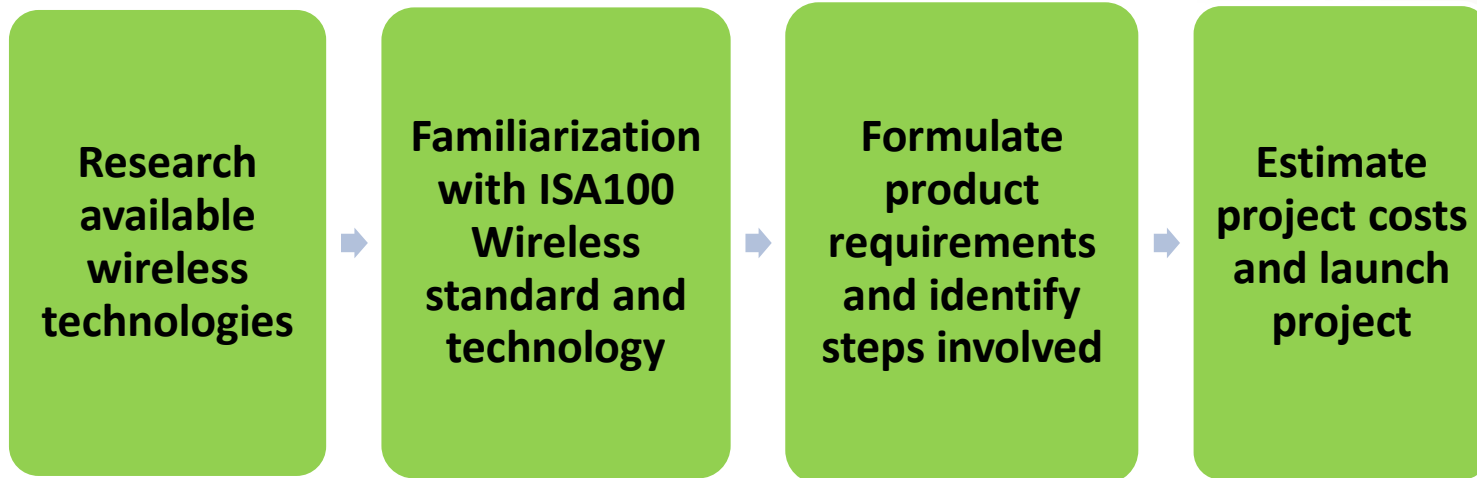
# ISA100 Wireless Rapid Prototyping Service



# Rapid Prototyping Service Overview

- 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
  - ISA100 Wireless standards 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



**Duration: 2 – 4 months**

## Step 2: Development, Validation and Certification

### Firmware and Software Track

#### Firmware Integration

- Integration of Centero ISA100 stack via API
- ISA100 Wireless 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)

#### ISA100 Wireless 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

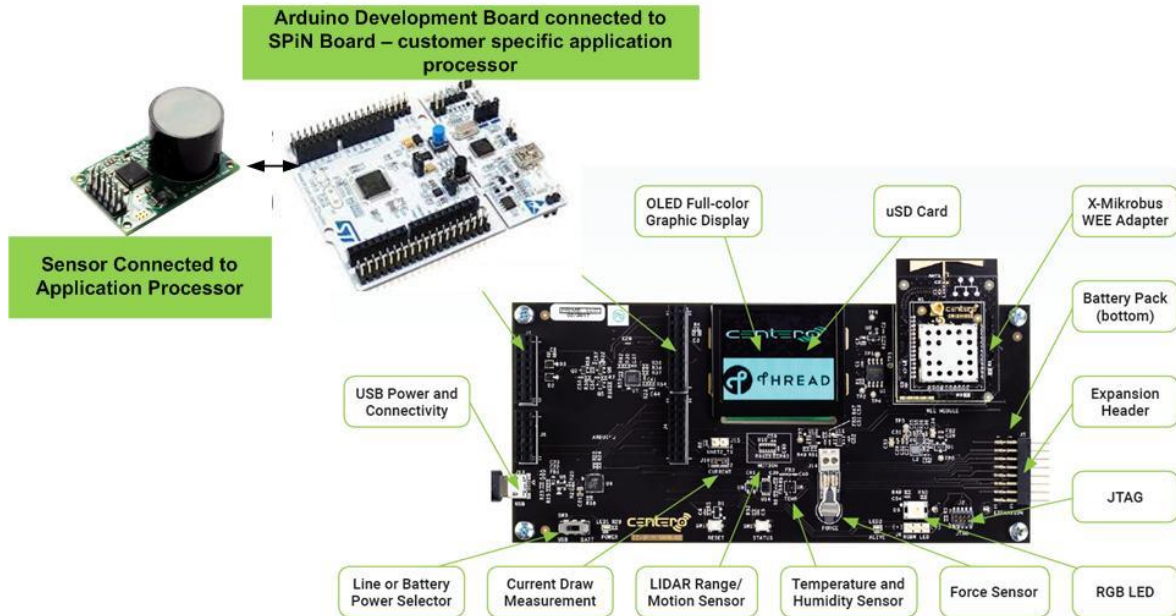
# RPS Goals and Deliverables

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- By using Centero's Rapid Prototyping Service field 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

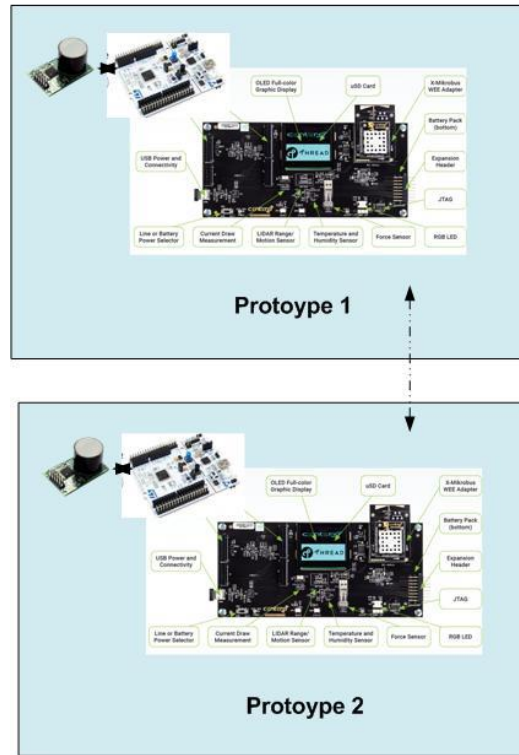


WISA ISA100 Wireless Development Kit SPiN Board

# Prototype ISA100 Wireless Network



## Prototype ISA100 Wireless Network



ISA100 Wireless  
Connection



Process Values Reported to Gateway  
periodically  
Process Values can be read from Gateway  
Read any other ISA100 commands



# 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 to define what they mapped into one ISA100 Analog In/Out or Digital In/Out Object
  - Analog IN/OUT or Digital IN/OUT ISA100 object
- Customer specifies how often instrument should publish/report these ISA100 attributes to ISA100 Gateway



# Prototype Development

## Tasks and Activities

### Centero Tasks

- Connect application processor Arduino board to the WISA ISA100 development board (development board has Arduino connector)
- Port ISA100 application processor firmware to application processor chosen by customer
- Read sensor and map into appropriate ISA100 object
- Add customer defined value to other object (examples: temperature, battery voltage etc)
- Join prototype to ISA100 Gateway of the WISA ISA100 Development Kit
- Prototype will publish ISA100 attributes based on customer's requirements
- Prototype will respond to read requests from the Gateway for ISA100 attributes (as well as all mandatory attributes)

# Deliverables

## Deliverables

### Deliverables

WISA ISA100 Development Kit customized for customer that includes

- Two (2) Functional Prototypes
- Application processor source code project
  - Maps two (2) sensor value into ISA100 objects
- Architecture document
- Prototype wiring diagram
- Customer specific guide
- Full WCI ISA100 Wireless Rapid Development kit which also includes NIO200IAG Gateway (C1D2 or ATEX certified)

# Contact

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For additional information please visit

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