

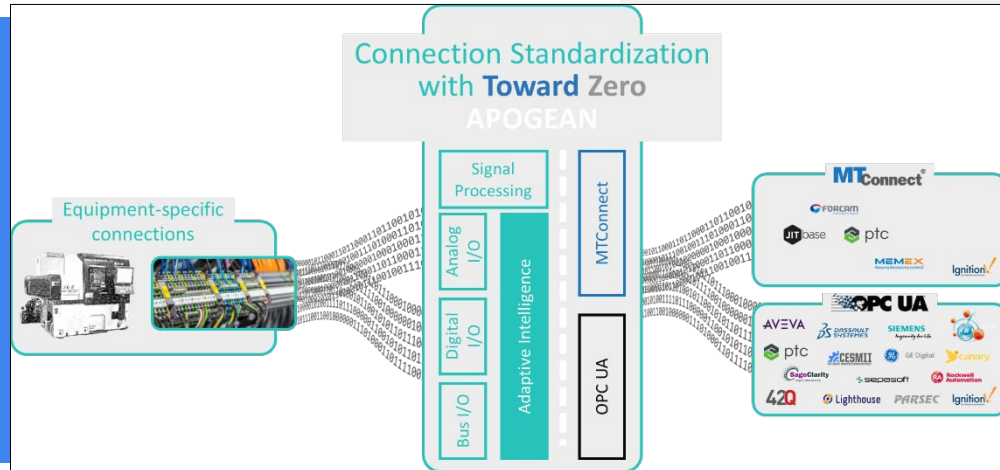


**Industry**  
CNC Machining  
IT/OT Hardware

**Technologies**  
Connectivity  
Data Contextualization  
Edge Computing  
Platform Capability

**Solutions**  
Asset Performance  
Manufacturing Productivity

## PROJECT CASE STUDY Automating Legacy Machine Connectivity



### PROJECT LEAD

Toward Zero

### PROJECT TEAM

Raytheon

### PROJECT OBJECTIVE

Develop a hardware device that enables quick connection to existing sensors, equipment and serial communication ports, and communicates via modern industrial network protocols to Industry 4.0 systems.

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## Smart Manufacturing Hardware Connects Legacy Machines to the Industrial Internet of Things

### BENEFITS TO OUR NATION

Many small and medium sized manufacturers still utilize old equipment that is not connected to a network. By installing the hardware devices developed in this project, American manufacturers will be able to network their legacy equipment, enabling manufacturing data collection and production process control. Implementing smart manufacturing tools has been shown to improve manufacturing productivity and decrease unplanned equipment down-time. This modernization of the manufacturing sector will lead to lower operational costs and improve the competitive position of American manufacturers.

### BENEFITS TO INDUSTRY

When small and medium sized manufacturers connect legacy equipment to networked controllers, they enjoy a number of benefits. A key advantage of networked equipment is the ability to remotely monitor and control production machines. Remote monitoring contributes to greater operational efficiency and improved productivity, driving increased profits and better business performance.

# PROJECT DESCRIPTION

## TECHNICAL APPROACH

Develop a device with specialized software, firmware and hardware that will enable quick connection to legacy sensors and machines. The device will allow for the collection of manufacturing data metrics such as machine fault status, motor speed, part count, etc. The machine data will be transmitted via OPC UA and MT Connect.

## ACCOMPLISHMENTS

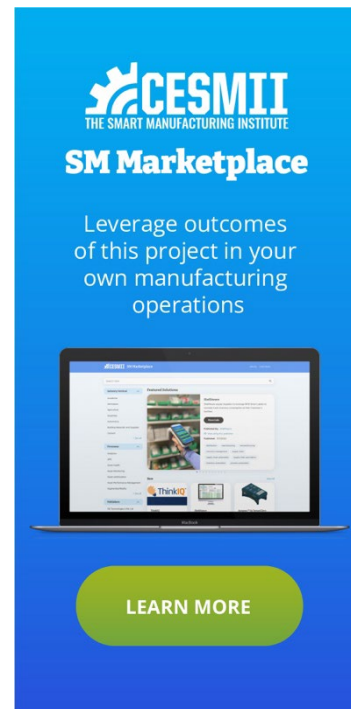
- Developed, built, and tested device to quickly connect to legacy machines.
- Installed device on 10 machines at partner site.
- Validated connectivity and transmission of manufacturing data to the cloud, including the CESMII Smart Manufacturing Innovation Platform.

## DELIVERABLES

- Validated hardware device functionality.
- Installed devices at industrial partner site.
- Demonstrated collection and transmission of real-time manufacturing data at customer site.

## REUSABLE OUTCOMES / SM MARKETPLACE

- CNC Machine Smart Manufacturing Profile
- Apogean Legacy Connectivity Device



**CESMII**  
THE SMART MANUFACTURING INSTITUTE

**SM Marketplace**

Leverage outcomes of this project in your own manufacturing operations

**LEARN MORE**

## PROJECT DETAIL

Budget Period: BP4  
Submission Date: 07/14/2022  
Sub-Award (contract) Number:  
4550 G ZA075  
SOPO: 2337

## FOR MORE INFORMATION CONTACT

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