Industry
Manufacturing

Technologies
Data Contextualization
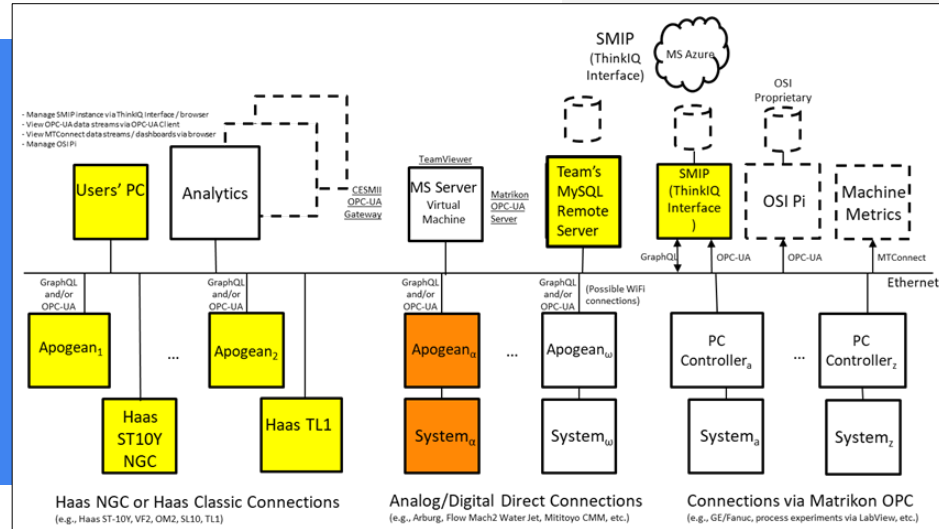
Solutions
Manufacturing Productivity

PROJECT CASE STUDY

Building Machine Profiles for the Smart Manufacturing Innovation Platform

PROJECT LEAD

RPI

PROJECT TEAM

N/A

PROJECT OBJECTIVE

This project assembles undergraduate student teams, leveraging the Northern Regional Smart Manufacturing Innovation Center (SMIC) at RPI along with industry and academic advisors, to design, develop, and deliver Smart Manufacturing (SM) Profiles for common manufacturing systems.

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RPI Engineering Student Teams Implement Smart Manufacturing Equipment Profiles

BENEFITS TO OUR NATION

By integrating technologies like information modeling, artificial intelligence, and data analytics, smart manufacturing enhances efficiency, agility, and sustainability in industrial processes. This improves manufacturing productivity through real-time monitoring, predictive maintenance, and data-driven decision-making. As the nation adopts smart manufacturing techniques, it not only secures a technologically advanced industrial landscape but also positions itself for sustained economic growth and resilience.

BENEFITS TO INDUSTRY

Smart manufacturing is poised to revolutionize American industry by integrating advanced technologies such artificial intelligence and data analytics. This transformative shift towards automation and connectivity enhances efficiency, precision, and flexibility in production processes. The optimization of resource utilization and streamlined workflows results in cost savings and improved competitiveness for American industries. The implementation of smart manufacturing is a strategic move that not only enhances the efficiency and competitiveness of American industry but also positions it at the forefront of global technological leadership.

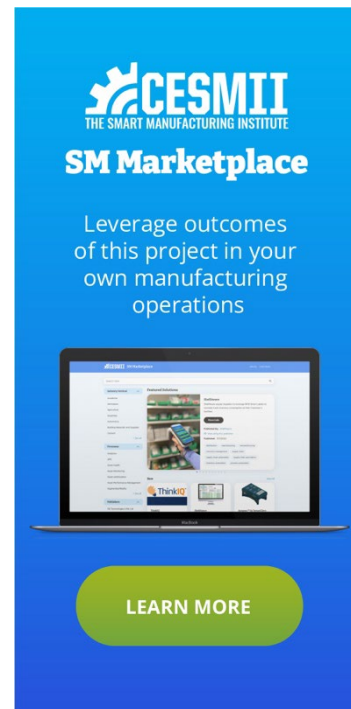# PROJECT DESCRIPTION

TECHNICAL APPROACH

The project will be led and coordinated by the RPI Design Lab. Multidisciplinary student Capstone project team(s) will design and develop a profile for the Smart Manufacturing Platform in a two-semester effort. A project plan and list of deliverables will be created by the teams at the outset of each semester.

ACCOMPLISHMENTS

- Connected HASS ST-10Y Lathe to the Smart Manufacturing Innovation Platform (SMIP)
- Transmitted the following equipment/process data to the SMIP:
  - Tool Wear
  - Energy Consumption
  - Overall Equipment Effectiveness (OEE)
- Developed Operator Graphical User Interface (GUI)
- Developed database structure that will allow for multiple machines to be integrated to the SMIP
- Developed Tool Maintenance Module

REUSABLE OUTCOMES / SM MARKETPLACE

- CNC Machine SM profile
- Tool Maintenance Module

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SM Marketplace

Leverage outcomes of this project in your own manufacturing operations

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