

# OMIC R&D TECHNOLOGY BOARD

## CONCEPTUAL ABSTRACT



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### **TITLE: OMIC-R17 Rapid Integration for Cobots**

**RELATED ROAD-MAPPING DESIGNATION ID#:** R17

**SUPPORTIVE INDUSTRY:** OMEP, Cobot Team, Mitsubishi, Boeing, & Silver Eagle

**PROJECT TYPE:** General Project - Robotics

**PROBLEM STATEMENT (What Are We Trying to Solve?):** Robot uptime commonly suffers from changing needs and environments. High mix, low volume applications are troublesome, especially when that mix may include different locations on a factory floor. A robot can be moved around a factory, but it needs a means to communicate seamlessly at each point, with minimal demand on the operator.

**PROJECT DESCRIPTION:** High mix, low volume applications are a common automation hurdle for manufacturing groups. This problem can lead to low utilization, negatively impacting ROI on an investment in a robot or automation solution. To boost equipment utilization, one may seek to migrate the robot through a variety of stations during a shift. While mobile robotics exist, their tasks are usually repetitive and low variety. It is uncommon they would establish connection to a machine center, and less common that those machine centers should differentiate in jobs performed. Fundamentally, the robot needs to communicate with the machine center in to know when to perform a task. This is commonly done with a hardline connection. There exists a need to establish a wireless communication process that would allow a robot to freely move around a plant, connecting with different machine centers as needed to complete a wide range of duties.

This project seeks to address the need for a collaborative robot to travel from location to location and establish wireless communication with the station's machine control center to both send and receive commands as needed to complete the desired task.

**Identify Related OMIC R&D Resources:** Proposing researchers should use their best judgment in deciding on the optimal resources for the research. To further aid in this decision, the OMIC staff has taken the initiative to best identify on-site resources (machines, equipment, and staff) that may relate to the scope of this research. Please recognize that researchers are not limited to these resources.

- Identify OMIC machines: The spectrum of capabilities at OMIC R&D can be reviewed at the following link: <https://www.omic.us/explore/facility>
- Collaborative Robots: Sawyer, Doosan H2017.
- OMIC Staff: Jordan Meader.

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### PROJECT DELIVERABLES:

- Final report
- Final presentation

**SPECIAL NOTE:** It should be recognized that this Conceptual Abstract is written based on comments collected during OMIC R&D Road-mapping workshop and based on industries need for applied research. However, researchers as SMEs, are encouraged to lend specific technical feedback to further refine the Project Description and or Project Outcomes. The proposing researcher may do so either directly to OMIC R&D, or in the submitting proposal.

**UTILIZATION OF OMIC RESOURCES:** Researchers are encouraged to utilize the capital and personnel resources available on the OMIC R&D campus in their proposals. Use of OMIC time and machines should be included in the Proposal funding request. If use of OMIC resources are not identified in a proposal and are requested during, the project sponsor will be responsible for requesting a costed project amendment from the Tech Board.

**PROJECT UPDATE EXPECTATIONS:** Researchers are required to have monthly update discussion with OMIC R&D to provide a summary update on project status. This is done by way of a user-friendly format known as the OMIC 6-Block update. Typically, these meetings are scheduled on the first Wednesday and Thursday of each month. Secondly, depending on the scope of the project, OMIC R&D's industry Tech Board representatives are often interested in periodic project updates, and even in project participation. Researchers are required to communicate with supportive industry and facilitate communications as required.

**PROJECT DURATION:** It is OMIC R&D's strong preference that duration of a General Project aligns with the academic calendar cycle (July 2022 to June 2023). It is preferred that the project be completed by June 2023. Researchers are encouraged to factor in variables such as contracting, student hiring (if needed), procurement, holidays, and travel. It has been OMIC R&D's experience that a projects useful working duration is typically 9 to 10 months. Researchers are also encouraged to lend feedback, and to adjust the scope of work to best fit this preferred timeframe. Additionally, it is reasonable to even recommend phasing breakdowns to the project. In some unique circumstances, if the project is to take significantly longer than the duration of the academic year, this reasoning should be explicitly explained in the proposal.

### CONTACTS AT OMIC R&D:

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