

# OMIC R&D TECHNOLOGY BOARD

## CONCEPTUAL ABSTRACT



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**TITLE: OMIC-M37 Software Tool for Cycle Time Prediction P2 of OMP415**

**RELATED ROAD-MAPPING DESIGNATION ID#:** M37

**SUPPORTIVE INDUSTRY:** HEIDENHEIN, BOEING, CGTECH.

**PROJECT TYPE:** General Project (Phase 2 of OMP415).

**PROBLEM STATEMENT (What Are We Trying to Solve?):** This project focuses on the development of a software tool for cycle time prediction and simulation of 5-Axis part program (which build on the Phase 1 project that focused on 3-Axis part programs).

### **PROJECT DESCRIPTION:**

The first phase of the project focused on development of a software system for cycle time prediction of 3-axis part programs. Phase 2 will focus on cycle time prediction of 5-axis machining part programs. The project will model influences of 5-axis machine tool dynamics on the overall cycle (run) times. It will develop a software tool, which will be used on accurately predicting run(cycle)-times for complex part programs. The software tool will also help optimize part programs for faster 5-axis machining and improve overall machining productivity.

**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>
- OMIC Staff: Cody Apple, Taylor Schaming.

### **PROJECT DELIVERABLES:**

- Final part machined if relevant.
- 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

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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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