OMIC R&D TECHNOLOGY BOARD
Effective Training of Manufacturing and Assembly via Enhanced Cyber Training Systems
Request for Proposals

1.0 Project Information

- **Project Title:** Effective Training of Manufacturing and Assembly via Enhanced Cyber Training Systems
- **Project Type:** Joint General Project
- **Project Description:** A pressing concern in the modern workforce is the ability to dynamically train and re-train existing workers to best meet the ever-changing (and advanced) technological demands of modern assembly and construction. This is especially prevalent in industries that will experience significant influxes of automated systems, and now need less physical labor, and instead more training on how to use the associated workflows and advanced tools. Thus, it is imperative to explore how best to train individuals effectively and efficiently to meet these novel job requirements.

  Further, in high-risk or high-cost environments it is difficult to provide enough training to ensure both high degrees of worker safety, and also reliability and consistency of the finished product. In other words, the cost of employee training-time could be compounded with materials/machine cost as the employee apprentices; leading to a significant and potentially undesirable outlay of capital to merely bring employees up to criterion levels of performance. What is sorely needed is a dynamic and realistic capability to provide trainees the opportunity to experience both nominal and non-nominal states of job function, repeatedly and frequently; such that when they are operating on real materials or in real contexts, there is not only more effective, but also safer, job performance.

  One efficient and lower-cost means of providing this much needed training on new production techniques is to bring trainees into a digital environment where external parameters can be controlled and manipulated easily and consistently. Virtual instruction has shown to be effective for the instruction of other procedural tasks such as medical surgery or even flying a plane, and this work can be leveraged for the development of an effective training system to be used to train and re-train manufacturing employees quickly and efficiently. Additionally, the flexible nature of the system can also permit easy cross- training spanning multiple job functions, creating an employee that cannot only slot into any related job duty as needed, but likewise better understands the context of their position and how it affects downstream production. Finally, an additional benefit not to be overlooked is that worker satisfaction and upward mobility within a company will likewise be enhanced via the opportunity to gain relevant job skills easily and on-demand, creating a highly-trained and dedicated workforce.
- **Project Outcomes:** The principle outcome of this project will be the development of a flexible digital simulation tool and framework that will enable dynamic and varied training in the completion of a given assembly/manufacturing task (broadly defined in scope and application). This will include consideration of

- costs and flexibility, and will explore issues of fidelity, mixed-reality, and haptic integration for training.
- **Project Duration:** 1-year (proof-of-concept development and preliminary training evaluation)

2.0 General Information for All Proposals

- **Eligibility:** All faculty at OMIC R&D Research institutions and OMIC R&D technical staff.
- **Performance Period:** The Performance Period of the proposed work must be appropriate for the content given above in the Project Information sections. Requests for excessive or unjustified performance periods can be reason for proposal rejection by the OMIC Technology Board.
- **Award Amounts:** The funding requested must be appropriate for the content given above in the Project Information sections and consistent with any limitations given there. In all cases requested funds must be fully justified. Requests for excessive or unjustified funding can be reason for proposal rejection by the OMIC Technology Board.
- **Proposal Format, Content and Details:** All proposals must strictly follow the template given below and include all required sections
- **Submission Deadlines: Monday June 3, 2019**
- **How to Submit:** Send proposals by email to the OMIC R&D Project Manager, Ally Imbody *<alicia.imbody@oit.edu>*
- ***Proposal Review Process:*** Proposals will be reviewed and award decisions made by the OMIC Technical Advisory Board. The Board encourages collaboration between OMIC's university research partners in response to this RFP when collaboration will provide the best value for achieving the desired Project Outcomes. Evaluations will be based on the following criteria:
    - o   Soundness of the proposed methodology
    - o   Demonstrated subject-matter expertise of proposed staff
    - o   Cost/reasonableness of proposed budget
    - o   Timeline/adherence to proposed schedule
    - o   Past performance (if applicable)

  Technology Board members will evaluate each eligible proposal submitted using a five-point scale where: 1- poor, 2-deficient, 3-acceptable, 4-superior, 5-outstanding. Evaluators will assign a default score of 3 for Past Performance if no information is available. All scores will be averaged by the Tech Board chair and a decision made based on the highest overall score.
- **Informational Contact:** Questions are to be directed to the OMIC Project Manager, Ally Imbody *<alicia.imbody@oit.edu>* by **Monday, April 29, 2019**. Consolidated questions will be sent to the Technology Board Chair and responses will be provided to all research partners by **Monday, May 6, 2019**.
- **Performance Requirements:** The PI and institution awarded the project will be expected to progress the work expeditiously to meet all of the progress milestones shown in their proposed schedule (see section two below).

- **Project Termination:** The Tech Board reserves the right to cancel the project at any time.