

PRESS RELEASE

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Fraunhofer and UBC set up research collaboration in industrial digital transformation

Fraunhofer Institutes for Experimental Software Engineering (IESE) and Machine Tools and Forming Technology (IWU) and UBC Faculty of Applied Science (APSC) set up a framework for research collaboration in the field of industrial digital transformation in April. The focus of the collaboration lies on the digitalization of machines, processes, infrastructure, and ultimately on the digital transformation of organizations and businesses in the manufacturing industry.

The collaboration combines the expertise and resources of the three renowned research entities to build a new project center focused on a vision of reducing cost, boosting productivity and efficiency and improving process and product quality in the manufacturing industry across multiple sectors through developing Holistic Digital Twins (HDT) and applying and integrating artificial intelligence and other technologies in process optimization and control from machine tool to plant level.

“The development of the Industrie 4.0 middleware Eclipse BaSyx, which is coordinated by Fraunhofer IESE, will benefit from the cooperation with UBC and Fraunhofer IWU. I expect that the combination of the BaSyx system with the process simulation models developed at UBC in the area of machine tools and with the wear models and thermal models of Fraunhofer IWU will enable a significant increase in the quality of production processes” said Prof. Liggesmeyer, Director of Fraunhofer Institute for Experimental Software Engineering.

“The collaboration will give us the opportunity to enhance our digital machine twins with plug&produce software solutions developed by UBC. With the additional inclusion of the Eclipse BaSyx middleware from IESE, we’re able to open currently only locally accessible optimization tools for their integration into production planning tools and in agile matrix production scenarios. Thus, the collaboration with UBC and IESE will cover the whole value chain in production from the machine level all the way up to logistic resource and task allocation” said Prof. Ihlenfeldt, Director of Fraunhofer Institute for Machine Tools and Forming Technology IWU.

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The focus of Fraunhofer IWU lies on finding out which machines or properties will be required to manufacture a component with specific characteristics. Here, a preselection is performed using digital twins for machines and processes, followed by validation on real machines in the testing facilities of Fraunhofer IWU.

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The collaboration will focus on service offers in the domain of Industrial Digital Transformation. Initially, these will be services enabled by providing HDTs of assets of different manufacturing domains, e.g. of machining, wood processing and mining. In order to stay flexible in reacting to the market and to specific client demands, the overall service portfolio offered by the collaboration will address various segments of the value chain, including licensing, but also design and development services, prototyping, proof of concept, testing, validation, standardization, and other customized solutions.

“This research framework provides an effective platform to build on more than ten years of UBC – Fraunhofer cooperation” said Dr. Walter Mérida, Associate Dean of Research and Industry Partnerships for the Faculty of Applied Science.

The initial 5 year collaboration has a total budget of approx. €4.3 M, including contributions from Fraunhofer, UBC and industry partners.



Fig. 1 Fraunhofer Institutes for Experimental Software Engineering (IESE) and Machine Tools and Forming Technology (IWU) and UBC Faculty of Applied Science (APSC) set up a framework for research collaboration in the field of industrial digital transformation in April.
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Fig. 2 The collaboration will focus on service offers in the domain of Industrial Digital Transformation.

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