

REVIEW OF PAST RESEARCH AND REFLECTIONS ON DIGITAL THREAD/TWIN AFFORDABILITY IN (SEMICONDUCTOR) SUPPLY CHAIN AND MANUFACTURING

Cathal Heavey¹

¹School of Engineering, University of Limerick, Limerick, IRELAND

ABSTRACT

This presentation will review past research projects on improving operations of manufacturing and supply chain systems with the goal of highlighting future research challenges. Several of these projects were in semiconductor manufacturing and supply chains. These past research projects were funded nationally, by the EU and industry. It will document several research challenges on topics of Model Based Systems Engineering (MBSE), optimization using online machine learning metamodels, simulation analysis of Advanced Planning System Analysis (APS), and supplier selection. Finally, the presentation will reflect on the role of Digital Thread/Twin and the feasibility of this approach with the current availability of methodologies, computing, and human resources.

SPEAKER BIOGRAPHY

CATHAL HEAVEY is a Professor in Supply Chain Management at the University of Limerick. He has been involved in research projects funded from national (e.g., Enterprise Ireland) & European (e.g., European Union – Framework Programs 6 and 7 and Horizon 2020) sources as well as a several projects directly funded by industry. He is an Associate Editor of the Journal of Simulation, a publication of the OR Society, Flexible Services and Manufacturing Journal, Simulation: Transaction of The Society for Modeling and Simulation International and a past Department Editor of the IISE Transactions Journal a publication of The Institute of Industrial Engineers of America. He is a Program Member of the International Conference on Modeling and Analysis of Semiconductor Manufacturing (MASM) and a past and present program member of several other conferences. His email address is cathal.heavey@ul.ie.