

Expression of Interest for a Special Track on: Design for Supply Chain

Aristides Matopoulos¹, Brian Price¹, Wendy Tate², Alison McKay³

¹Aston Logistics and Systems Institute, School of Engineering and Applied Science, Aston University, Aston Triangle, Birmingham, B4 7ET, UK.

Email: a.matopoulos@aston.ac.uk; b.j.price@aston.ac.uk

²Department of Marketing and Supply Chain Management, Haslam College of Business, University of Tennessee, US.

Email: wendy.tate@utk.edu

³School of Mechanical Engineering, Leeds University, LS2 9JT, UK.

Email: A.McKay@leeds.ac.uk

Research in manufacturing and operations management has emphasised the importance of product design for manufacture, particularly as a large determinant of the total cost of producing and delivering products. However, improvements to product design efforts have largely ignored supply chain design, which is a key component for success, particularly from a cost/margin perspective. There has been mixed success at integrating design for manufacturing or design for assembly.

More than two decades after the introduction of the concept of three-dimensional concurrent engineering (3DCE) there is very limited research and empirical evidence on whether businesses who “Design for Supply Chain” and proactively consider the fit between supply chain capabilities and product designs have the potential to launch their products faster, more reliably and at lower total supply chain cost than their competitors. Similarly, there is little understanding of how such practices can be incorporated into companies’ manufacturing planning and operations and what the implications are for improving manufacturing supply chain resilience and resource efficiency (i.e. developing better ways to do more with less and creating more value with less impact on the environment). This is particularly important in the context of the current manufacturing landscape which is undergoing one of its most significant periods of change. Paradigm shifts in manufacturing are driving a fundamental need to reconsider the need for changed product features in response to competitive pressures, volatility in manufacturing volume demands or issues with supply chain integrity.

Design for Supply Chain aims at influencing decisions about product and manufacturing configurations that address infrastructure or other limitations and use supply chain capabilities as they evolve throughout the life of the product. The proposed track aims at exploring the links and the alignment between operations and manufacturing with supply chains and will augment the existing “Supply Chain Management”, “Supply Network Design” and “Operations Planning, Scheduling and Control” tracks by adding a stronger product/ manufacturing angle, but also by

looking at the potential associations of effective Design for Supply Chain principles to address the circular economy challenges.

- Product, process, supply chain trade-offs
- Interactions between product architecture, firm and supply chain boundaries.
- Aligning Product, Process and Supply Chain Lifecycles.
- Tools for effective “Design for Supply Chain” (e.g. supply chain mapping, simulation)
- Supply Chain Readiness Levels.
- Adoption of the “Design for Supply Chain”
- Factors and facilitators affecting Early Supplier Involvement in Design
- End-to-end collaboration to optimise production before it begins
- The implications of “Design for Supply Chain” for Circular Economy and Resource Efficiency.
- “Design for Supply Chain” to mitigate risks.