

IeMRC Research Portfolio Themes

Project and DTA to research theme mapping and priority

Project title	Age enterprises	Sustainable prod. products & processes	Challenging environments	Manufacturing business processes	Design for X (DfX)	Materials, processes and technology
Power Electronics Flagship						
Optical Printed Circuit Board Manufacturing			3		1	2
Microemulsion Fabrication of Nanoparticles for Enhanced Solder Materials			3		2	1
Lithographically Printed Voltaic Cells						1
Micro-Materials Integration & Evolution in Digital Electronics Manufacturing	1					2
Challenges for electronic manufacturing posed by new surface contamination failure modes in the context of the wireless revolution.	2					1
		1	3			2

The IeMRC research framework comprises 5 research themes that have been formulated into the IeMRC Calls for Proposals. Many of the IeMRC projects address more than one theme since there is a wide range of issues populating these themes, some naturally occurring within more than one theme.

Manufacturing business processes



Research Issues:

- Through life management
- Supply chains
- Cost Management Through Life
- Uptake of disruptive technology
- Innovation
- Legislation
- Business Modelling

implementation of disruptive technology.

Projects at Bath and Loughborough have developed rules which optimise agility and responsiveness in managing novel product development, multidisciplinary team working and remote working throughout the value chain. This included maturity / competency models such as those for total Supply Chain cost efficiencies and the use of responsive design methodologies. The models provide tools by which industry can respond and be proactive to the use of electronics in new and challenging environments, legislative changes and multi-disciplinary activities. The transfer and management of complex data, the DfX

models and handling conflicts within the design and manufacturing environment are closely integrated with the proposed tools.

The manufacturing business processes are integrated from initial concept design, where 70% of the costs are already built in, to product end of life.

The tools encompass cost modelling throughout the value chain, enabling designers to make decisions based on manufacturing sustainability, end of life, and regulatory constraints. In the context of lifecycle management, this work has provided a cost modelling framework for the financial prediction, evaluation and monitoring of new "sustainable" technologies.

Vision: to address the aspects of managing products for life, in particular the through life implications from the concept design stage to in-service. This vision applies across all IeMRC themes and considers the competencies that make for successful response to changes, threats and opportunities. The objectives are to:

- Build practical industrially applicable models and tools for responsive design and manufacture in the electronics sector.
- Provide rules for optimising agility and responsiveness in managing novel product development, team working and remote working through the value chain.
- Encompass cost modelling throughout the value chain.
- Optimise the 'refresh' of products, services and business direction and strategy in response to changing markets, performance specifications, new technologies, legislation, regulation and certification.
- Capture, assessment and, if appropriate,

