



Systems Engineering

Aerospace systems are complex hierarchies of products and services with an underlying infrastructure of information systems and logistic support. By definition they are geographically distributed and are intended to provide point-to-point transportation at high speed. Achieving the right mix of products and services to satisfy a diverse set of business drivers is now a major challenge for operational management and design optimisation, set against a backdrop of safety, availability, adaptability and interoperability. Future trends are likely to be dominated by climate change, open skies and autonomous operation. There is a strong motivation to adopt a holistic approach to aerospace systems and to employ predictive modelling and simulation.

- New initiative in multidisciplinary collaborative research
- Focus on creating new approaches to complex systems
- Comprehensive use of computational modelling and simulation

Research areas

Creation and evolution of complex systems

To provide methodologies and processes for the development of complex systems, from initial requirements through to initial deployment and hence operational support and enhancement for the entire system lifetime.

Integrated control, measurement and diagnostics

To provide an integrated approach to embedded systems for control and monitoring, as well as diagnostic assessment and performance optimisation.

Systems integration and operational autonomy

To provide a comprehensive understanding of integrated systems in the context of autonomous operation, with particular focus on UAV applications.

Collaborative design and virtual engineering

To provide an infrastructure for the development of complex systems, based on product models and simulations, that can be shared between geographically dispersed/mobile engineering teams.

Research facilities

- High-performance and grid computing facilities
- Access Grid technologies
- High performance visualisation

Relevant postgraduate study

Taught programmes

MSc Advanced Control and Systems Engineering
MSc Management of Projects
MSc Management of Science, Technology and Innovation
MSc Advanced Computer Science
MSc Information System Engineering

Research degrees

Individual research opportunities leading to a PhD degree are available in all schools that participate in the UMARI Systems Engineering:

- School of Computer Science
- School of Electrical and Electronic Engineering
- School of Mathematics
- School of Mechanical, Aerospace and Civil Engineering
- Manchester Business School

Academic staff



Dr T Briekin



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