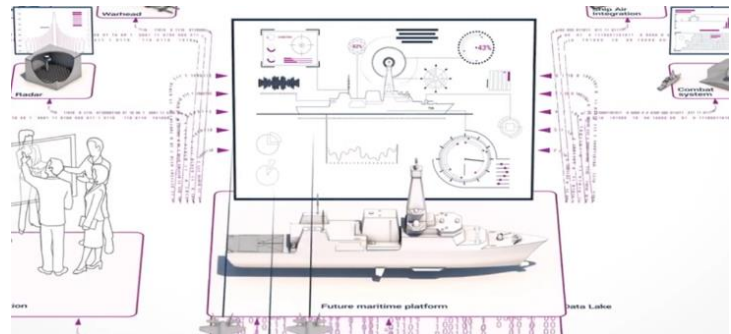


Acquisition Reform is about becoming Digital, Agile and Evergreen; how this is enabled by Model-Based Systems Engineering (MBSE)

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Masterclass Description: MBSE is revolutionising acquisition to enable broader digital engineering, agile acquisition and more evergreen resilience: as shown in this news article and short promotional video.



The reform is more than an industry zeitgeist, the trial of a new Master subject on MBSE by UNSW and Old Dominion University (ODU) in 2024 found over 60 credible research articles and two 2023 major textbooks rigorously chosen to cover the MBSE processes, impacts and tradeoffs. The learning outcomes were:

- Compare and contrast MBSE with traditional systems engineering practices.
- Recognise and compare different modelling languages (such as SysML) and MBSE modelling methodologies.
- Construct MBSE models, demonstrating the practical application of MBSE principles in system design and representation.
- Evaluate the efficacy of MBSE models as digital artefacts and tools for informing decision-making.

This masterclass will provide a short lesson and discussion forum for each of eight major theory weeks of the 13 weeks students studied the ZEIT8200 (ENMA 795) subject, including brief examples of student works.

1. Introduction to MBSE
2. Traceability, Requirements and Mission Engineering
3. Modelling with Capella: Requirements Analysis
4. Resilience and Cybersecurity Systems Modelling with MBSE
5. Supply Chain Modelling and Analysis with MBSE
6. MBSE Modelling and Common Modelling Pitfalls
7. V&V and T&E of, and by, MBSE: Model Management and Assessment
8. MBSE for System of Systems

The masterclass will raise awareness for those with little or no background in MBSE about the transitional issues without the deep reading, model adaptation and planning required in the Master subject for educational competence. The subject and thus this short masterclass uses an Object-Oriented Systems Engineering Methodology (OOSEM), as a top-down methodology, to create the required artifacts for analyzing stakeholder needs, defining system requirements, defining logical architectures, synthesizing candidate allocated architectures, optimizing and evaluating alternatives, and validating and verifying the system.