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### **The transformation of product development process into lean environment using set-based concurrent engineering: An aerospace case study**

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The increased international competition in the current open global market is putting pressure on companies to improve the performance of their product development. This is to sustain and improve market share through the production of a high quality product in a cost effective manner in shorter time. Manufacturing companies are in need of a new model that goes beyond lean manufacturing to ensure the transformation of the enterprise into lean environment. The significant change in enterprise performance can come from the adoption of lean thinking throughout the entire product life cycle and taken the lean manufacturing concepts from waste elimination into value creation. Lean Product and Process Development (LeanPPD) paradigm focuses on value creation, provision of knowledge environment, continuous improvement and process that encourage innovation and collaboration. LeanPPD Project developed several enables namely: Set-Based Concurrent Engineering (SBCE), lean assessment tool, product development value mapping tool, lean knowledge life cycle, a new A 3 thinking for design problem-solving and lean design guidelines. This talk presents a transformation process towards lean product development in an aerospace industry in UK. This transformation was achieved in two main stages: the first was to integrate the principles of SBCE into an existing product development model of the aerospace company. The second stage was to implement the developed model in a research-based industrial case study, a helicopter engine in this case. The work presented focused on early stage system level design, and future work will extend the implementation of SBCE to subsystem and component levels.

#### **Biography**

Ahmed Al-Ashaab is leader of LeanPPD research group at the Department of Manufacturing and Materials of Cranfield University. He is an active researcher in the areas of NPD, CE, knowledge-based engineering, lean product development and sustainability. His research projects have a strong focus on industrial applications working with blue chip companies such as Rolls-Royce, Airbus, Visteon, CEMEX, Indesit and VW. He has more than 60 publications and supervised more than 70 PhD and master students. Currently he is leading the work of defining the set-based design process model and the knowledge shelf application in the CONGA project "Configuration Optimisation of next Generation Aircraft".

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