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# Information Structures and Processes to Support Data Exchange between Product Development and Resource Planning Systems\*

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## *Abstract*

Manufacturing Process Management (MPM) is a strategy that supports formal communication between engineering and production in a virtual 3D environment. This paper outlines how MPM enables a real-time assessment of component manufacturability and a parallelisation of product design and manufacturing processes. The proposed scheme is dedicated to offer Concurrent Engineering teams answers to integrate change management issues through a digital collaborative environment. From a technological perspective, a MPM solution provides an interactive and effective bridge between the CAD/PDM and ERP/MES systems that support process planning activities of complex products.

*Key words:* PLM, PDM, ERP, process planning

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## **1 Introduction**

For large manufacturers, the product development process is becoming more and more collaborative, as the drive for reduced costs and time-to-market as well as increased quality have lead to the introduction of Concurrent Engineering (CE) practices of which Integrated Product Team (IPT) are key enablers [1][2][3][4]. As a result, it is vital to develop tools aimed not only at managing information within a specific department, but also to support information sharing between the various stakeholders participating in the product lifecycle [5]. It is also critical for this shared information to remain consistent and synchronized. Therefore, efforts are being made to develop frameworks such as Product Lifecycle Management (PLM) systems for the management of all information created throughout a product's life. The main underlying difficulty in the development of such a system is that while there is common information necessary for each product lifecycle stage, the means of representing this information must be tailored to the specific viewpoint of the stakeholders accessing the information [6]. For example, while designers, manufacturing engineers and maintenance personnel all use the geometric representation of the product for different purposes (i.e. design, process planning, and inspection respectively), they must be able to organize the information in a way that is useful to their work. These differences in information use and organization necessitate the application of specialized tools at each stage. A major challenge is therefore to develop interfaces between these tools so that various stakeholders have the flexibility needed to structure data according to their point of view, and yet maintain robust links between the data across the various departments and lifecycle stages.

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