Chapter 4

Product Lifecycle Management: State-of-the-Art and Future Perspectives

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ABSTRACT

While most SMEs in general are willing to invest into PLM systems, many are still apprehensive to the sometimes large initial investment to be made in terms of both software cost and the time needed to implement and integrate such system into their digital enterprise technology infrastructure. In light of this, it is crucial for their decision makers not only to understand the current PLM market, but also to become familiar with emerging trends and future developments in order to select a PLM solution that best fit the needs of their enterprise. In this chapter, the authors summarize a detailed analysis of the PLM market with the aim to provide educators, students, and decision makers in industry with an overview of the current PLM market as a whole. In addition, emerging trends and future developments are addressed.

INTRODUCTION

Due to continuously increasing complexity in product development, more and more Small and Medium-sized Enterprises (SMEs) need to utilize a wide range of technological tools to document and manage their product development activities throughout the entire product-life cycle chain. One type of software systems to aid this process is Product Lifecycle Management (PLM). PLM is a term used to describe the process of managing the entire life cycle of a product from its conception, through design and manufacturing, to service and disposal. PLM is also considered a set of capabilities that enable an enterprise to effectively and efficiently innovate and manage its products and related services throughout the entire business life cycle (Stark, 2004). Due to the rate at which the PLM industry is evolving, there is a widespread confusion with regards to what PLM systems actually are capable of. Unfortunately, there is no unique definition of PLM. Any potential definition of PLM in broader...
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terms needs to account for both the main purpose of these systems and the PLM market’s rapid evolution and development.

Two widely used definitions introduced by two well established PLM research companies, namely AMR Research and CIMdata, read as follows: According to AMR (Burkett, 2002), PLM systems cover five core functionalities, which are useful in identifying the quality of the management support they provide:

(i) Product Data Management (PDM), the predecessor of PLM, provides functionalities that manage and publish product data;
(ii) Collaborative Product Design, which provides functionalities that apply to product design and manufacturing process design;
(iii) Direct Material Sourcing, which handles the product data that is relevant to the suppliers and vendors of the product;
(iv) Customer Needs Management, which deals with the data of the product with regards to the customers; and
(v) Product Portfolio Management, which consists of the management, reporting and presentation of product data as needed for a general overview of all products a user may be interested in.

According to CIMdata (2007), PLM systems can be classified into two sub-groups:

(1) Tools that help facilitate fundamental intellectual property creation including all the applications that are used to create, analyze and simulate products and plants e.g.; and
(2) Collaborative Product Data Management (cPDM), which consists of the intellectual property management including collaboration, visualization, vaulting, and sharing of product information e.g. content and document management, product data management and digital manufacturing.

While most SMEs in general are willing to invest into PLM systems, many are still apprehensive to the sometimes large initial investment to be made in terms of both software cost and the time needed to implement and integrate such system into their digital enterprise technology infrastructure. In light of this, it is crucial for their decision makers not only to understand the current PLM market, but also to become familiar with emerging trends and future developments in order to select a PLM solution that best fit the needs of their enterprise.

In this chapter, the authors summarize a detailed analysis of the PLM market with the aim to provide educators, students, and decision makers in industry with an overview of the current PLM market as a whole. In addition, emerging trends and future developments are addressed. The uniqueness of the overview presented lies in the way the PLM market analysis was conducted. The authors carried out three different types of analysis:

(1) An analysis of the commercial PLM market detailing its movements as well as requirements of specific industries within the PLM market;
(2) A state-of-the-art analysis depicting the variety and types of products available in the market today as well as the direction in which they are likely to move in the near future; and
(3) A detailed analysis of five major PLM products describing a method of analysis that can be used by decision makers to gain a better understanding of the functionalities of specific PLM systems with the prospect of investing in one of them.

BACKGROUND

In the late 1990’s, there was a shift of focus in Product Data Management (PDM) technology. Rather than focusing on individual companies