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Enterprise application PDM implementing specification

企业应用产品数据管理(PDM)实施规范

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Foreword

In the present age of informatization, technical innovation in the enterprise and the application of information technology are important means. Among the applications of information technology in the enterprise, product data management (PDM) is the basic platform on which the enterprise carries out informatization. The application of PDM technology has therefore received wide attention from enterprises at home and abroad. PDM technology covers the information and data of the whole life cycle of the products of the enterprise; it is a technology for managing all product-related information and all product-related processes.

In recent years the development and application of PDM technology has moved very fast

and has become a focus of attention and application for enterprises. Internationally a considerable number of companies have put forward their own PDM solutions, and large enterprises such as Boeing, Ford and Xerox have adopted PDM technology. Although the development and application of PDM technology started comparatively late in China, it has developed very fast recently. Enterprises implementing PDM urgently need a specification; unfortunately there is as yet no unified standard or specification. For this reason the Enterprise application PDM implementing specification has been drawn up. This specification is one of the basic specifications suited to the informatization of Chinese enterprises. It can guide the units that develop, promote and apply PDM, the units that provide PDM consultancy services and the enterprises that apply PDM in their implementation, so as to raise the efficiency and the success rate of PDM implementation in the enterprise.

This guiding technical document is for reference only. Suggestions and comments on it are to be reported to the standardization administrative department of the State Council.

This guiding technical document has been implemented from 1 December 2002.

This guiding technical document was proposed by the China Machinery Industry Federation and is under the jurisdiction of the National Technical Committee on Industrial Automation Systems and Integration of Standardization Administration of China.

This guiding technical document was drafted under the responsibility of the Beijing Institute of Machinery Industry Automation. The main drafter is Chen Hongliang.

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1 Scope

This guiding technical document provides an implementing specification for enterprises applying PDM technology.

This guiding technical document applies to enterprises, to units developing PDM systems, to units providing PDM technical consultancy services and to units providing PDM technical support.

2 Definitions

The following definitions apply in this guiding technical document.

2.1 product data management, PDM - a technology for managing all product-related information, including part information, configurations, documents, CAD files, structures and permission information, and all product-related processes, including process definition and management.

2.2 data vault - the core of PDM, made up of data (metadata) together with pointers to the physical data and files describing the different aspects of the product, providing a secure means of passing data between the PDM control environment and the external environment of users and application systems.

2.3 bill of material, BOM - the list of the materials needed to make up the product.

2.4 product configuration management - taking the data vault as the underlying support and the bill of material as the organizing core, linking together all the engineering data and documents that define the final product, and maintaining and managing the product objects and the relations among them.

2.5 tree of product structure - the tree representation of the make-up of the product, formed from the product assembly system diagram and the parts list of the product, including common parts, standard parts, self-made parts and raw materials.

2.6 workflow of process management - mainly the tracking and control of the process of product design and modification, including the submission and modification of engineering data, its management and supervision, the distribution control of documents and automatic notification.

3 PDM functions

3.1 Document management and the data vault. 3.1.1 The objects of document management are: a) original documents, including the contract, the product design task statement, the feasibility study report and the product design specification; b) design documents, including engineering design and analysis data - part of the engineering design data consists of the specifications and standards of the various design processes and the technical parameters of the product, and another part is the data generated during the design process; there are also product model data, product graphic information and data of various kinds.

3.3 Change process management is in essence a special case of the approval process; the management mode is the same as that of approval process management.

3.4 Classification and coding. 3.4.1 Classification and retrieval. The PDM system provides quick and convenient classification techniques: intelligent part serial numbers, group technology, search and retrieval techniques and part library building techniques. 3.4.2 Part coding. A part code is made up of a string of characters, each representing one code position; the PDM system provides a coding function.

3.5 Project management achieves the management and configuration of the plan, the organization, the personnel and the related data during the implementation of the project, monitors the running state of the project and provides feedback on the fulfilment of the plan. It provides workflow activity information to the management and can also provide the user

with resource planning and critical path reporting.

3.6 Viewing and redlining is used mainly to support the electronic approval process. Through this function the user can view the product data content in the electronic vault, such as graphic and image files, and can redline the data files viewed.

3.7 Design retrieval and the parts library. The design retrieval and parts library of PDM are provided so that existing design resources can be reused to the greatest extent in creating new products, allowing the experience and intellectual assets of the design staff to be fully used and speeding up product design. Design retrieval can be by several routes, for example by the product configuration structure or by the relations among the product data files. The parts library classifies and stores parts having the same or similar characteristics, so that they can be retrieved at any time during design.

3.8 Scanning and imaging services convert engineering drawings or microfilm into digital images by scanning, so that they can be managed by the PDM system. 3.9 Electronic collaboration is used mainly to support collaborative working in a distributed working environment, such as electronic meetings, multi-person review and joint signature.

3.10 Tools and integration. In a PDM environment, so that different application systems can share information and the data they generate can be managed uniformly, those application systems have to be encapsulated in the PDM system; the PDM system provides encapsulation tools. 3.11 Communication and notification services. The communication service of the PDM system provides the capability to send and receive data among the different internal application systems - the PDM system and the external systems that use it - such as notifying users to complete or modify a task, e-mail, generating and managing distribution lists, and monitoring dates.

3.12 Data transfer and data translation. The data transfer function means that the end user accessing product information need not know the physical location where the information is stored nor how the data was created. The data translation function allows the various kinds of information generated by different applications to be converted according to the different application. The data translation function plays a very important part in transferring data between one application tool and another.

4 Requirements analysis for enterprise application of PDM

When an enterprise sets out to apply PDM it must first analyse comprehensively the relevant processes and business handling problems of the enterprise, and define clearly the enterprise's requirements on PDM. When carrying out that analysis, a detailed enterprise requirements specification is to be drawn up, to help the enterprise evaluate PDM suppliers and select the PDM system, and to serve as the basis on which the enterprise implements PDM.

The specification for drawing up the enterprise PDM requirements statement is as follows.