

Introduction and Operation of SAP PLM with NX Integration at Heidelberger Druckmaschinen AG



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Heidelberger Druckmaschinen AG (Heidelberg) has implemented SAP PLM and NX in its product development department and replaced its existing systems. The emphasis of the project was on the uniform and integrated CAD data management for NX. Today the focus is primarily on the smooth supply of development product data to the downstream processes. In particular the companywide provision of 3D data allows the printing machine manufacturer to set up its processes even more efficiently and leaner.

Boasting a market share of more than 40 % in sheet-fed offset press systems, Heidelberg is the internationally leading supplier of solutions for the print media industry. The enterprise develops and manufactures precision printing machines, plate imaging units, for postpress equipment, software for the integration of all

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processes at a print shop as well as services and consulting. Heidelberg operates development and manufacturing facilities in eight countries. Its approximately 250 sales offices around the globe support about 200,000 customers. This outstanding position demands a high level of product and process innovation.

Currently, about 700 users at Heidelberg work with NX along the entire CAx process chain in various specialized departments, for instance in product development, production planning or technical documentation. All of these users administrate their CAD data homogeneously in SAP.

A sheet-fed offset press system is a highly complex product in many ways. It is comprised of 50,000 to 100,000 individual components. In order to provide custom tailored solutions for the individual customer, the manufacturer has to be able to deliver a product portfolio spanning a huge variety of these solutions in large series manufacturing. Moreover, the development process of a printing machine has to integrate a long list of engineering technical disciplines, such as mechanics, electrics, thermal dynamics, materials technology, printing technology, sensor systems and performance electronics.

Process Integration

Consequently, Heidelberg imposes exacting demands on the performance capacities of the PLM software for the administration of large assemblies, recurring parts management, product configuration and for the consistent utilization of 3D data in downstream processes. In order to warrant the smooth interaction in processes, binding rules for the generation and handling of CAD data have been introduced. The quality of the digital product data is verified with the assistance of HDM quality tools. Another objective was to



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provide the perfect balance between creativity and defined processes despite all of the targeted standardization.

IT Harmonization and CAD Product Data Management

The Heidelberg PLM team developed a comprehensive PLM strategy for the introduction and implementation of the PLM processes. In May 2001, Heidelberg decided to opt for SAP R/3 and NX standardization in all of its worldwide operations. Using the „SAP PLM Integration for NX“, developed by Karlsruhe-based DSC Software AG, the company now manages its engineering data in SAP. In conjunction with the introduction of and the change to NX, the focus was on the CAD data administration. The efficient use of NX technologies in the PLM process, such as WAVE technologies and NX loading options, were of particular importance.

In October 2001, the company's operations in Rochester (USA) and in Heidelberg began to use the NX integration productively. Subsequently, the solution was implemented at all other development sites step-by-step. Division IT Processes and Systems trained the users in the processes as well as in handling of NX and developed engineering guidelines and methods. Currently, all data for new developments and series management are being administrated in SAP – from 3D models to parts lists. At this time, about 4,000 Heidelberg staff members are working with SAP.



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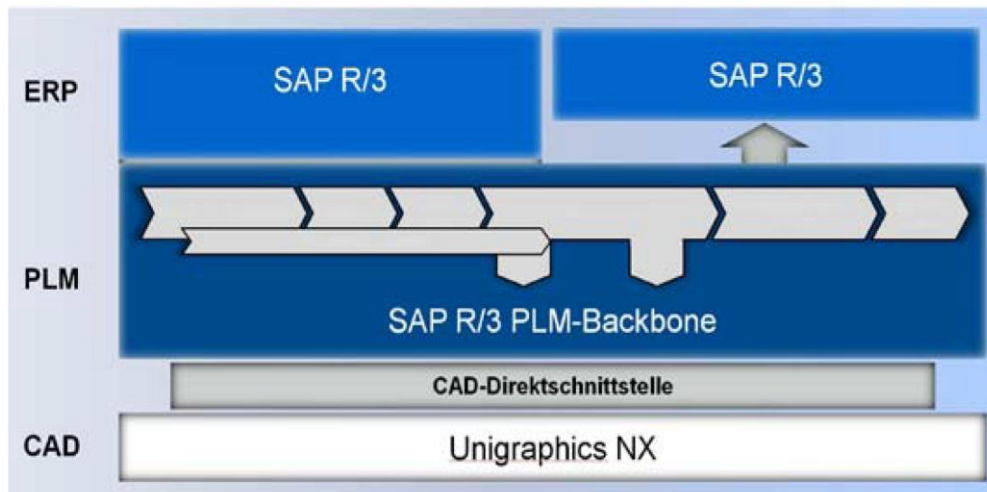


Figure 1: IT architecture with PLM backbone

The strategic decision of managing engineering and commercial data in a uniform system and to make the processes consistent, has translated into an everyday reality at Heidelberg: SAP provides the central PLM backbone with all-encompassing change management for the generating systems (MCAD, ECAD, Corel Designer, Office etc.) to the implementation in manufacturing, assembly and service. Engineering Change Management uses a SAP workflow in paperless format. Automation solutions, such as those required for the automatic generating of derived data formats in the release process, PDF files of drawings and JT files for models, accelerate these processes.

Integration of the Engineering Disciplines

Engineering is much more than just mechanics. At this time, Heidelberg is in the process of further optimizing the compilation and updating of mechatronic parts lists comprising more than 100,000 components. The project is implemented, for instance, through adaptive release processes and various view concepts in the PLM system for different professional disciplines.

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Use of 3D for Core Process Integration

Nowadays, the emphasis is on the interdisciplinary and interdepartmental utilization of 3D models, primarily in assembly, manufacturing and service.

One such application is Computer Aided Assembly (CAA), a method used for geometric oriented assembly planning. NX assemblies can be prepared in an assembly ready manner by the process planning department and thus used directly for the SAP work plan. A consistent 3D process chain also has been implemented in manufacturing: NX CAM and Tecnomatix are being used in all applications from tool selection to simulation of manufacturing processes to programming of tooling machines.

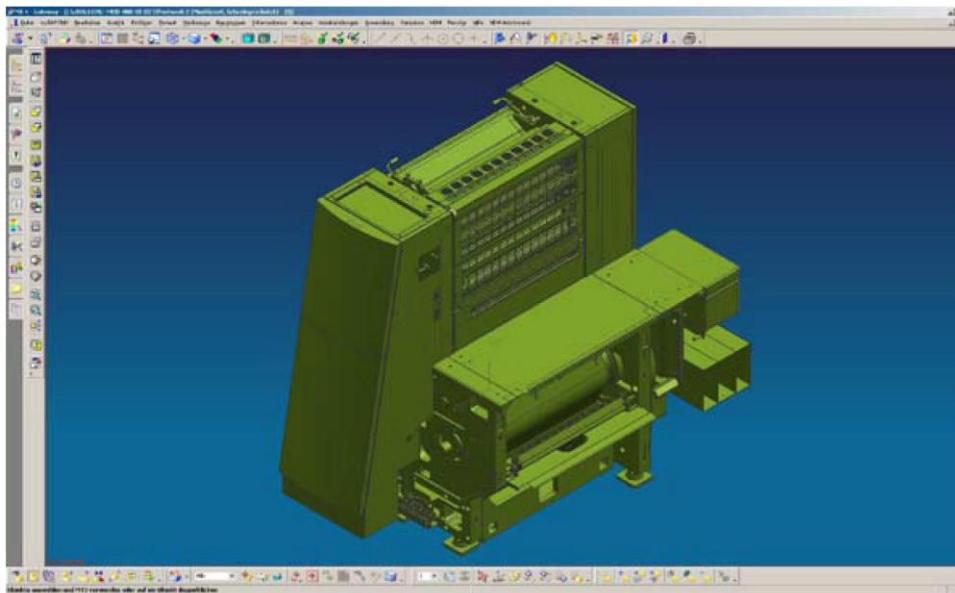


Figure 2: 3D CAD model of a printing unit

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Efficiency has also been significantly increased by the coupling of the SAP variant configuration with NX. The SAP relationship knowledge is interactively updated and configured in NX and vice versa the SAP relationship knowledge manages the variant contingent visualization of 3D models in NX.

A Sneak Peek into the Future

The full utilization of the entire potential along the value chain is one of the top priorities at Heidelberg. The continued integration of 3D data into the process does play a critical role in this context. Moreover, the complete digital description of the printing machine, as well as for example its functional properties, will remain a prominent objective.

The company is working towards the realization of virtual prototypes of the machines with the ultimate goal of accomplishing virtual start-ups. Besides these technical challenges, organizational topics are also offering optimization potential. Optimized process management, comprehensive specification management paired with effective multi-project management are among the endeavors to be addressed in the future.



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