PLM IT REPORT

ENGINEERING UND DATENMANAGEMENT

OpenDXM GlobalX ENSURES RELIABLE DATA EXCHANGE AT Mahle

INSIDE

MAHLE

PROSTEP

integrate the future

Data exchange:
Better safe than sorry
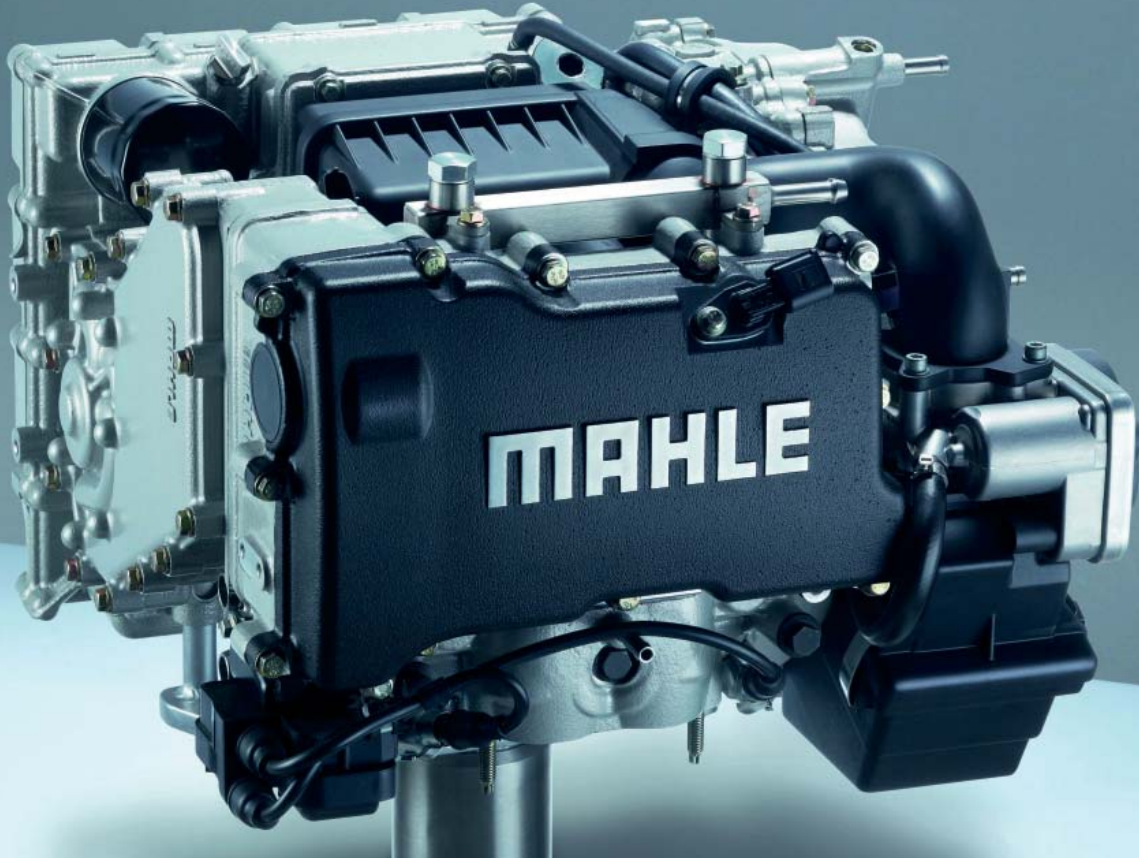
Mahle, a globally active supplier, uses PROSTEP's OpenDXM solution to organize its data exchange activities.

Photo: Mahle

*T*he Mahle Group, one of the world's largest suppliers to the automotive and engine industry, is expanding its development in China as well as a number of other countries. Cooperation both between the individual sites and locally with OEMs and subcontractors demands stable, secure data exchange processes. To perform this task, the Group uses PROSTEP's OpenDXM GlobalX software solution.

The Mahle Group, which is headquartered in Stuttgart, Germany, is a globally active development partner for the automotive and engine industry. Thanks to its expertise in the field of engine technology and peripherals, the company, which was founded in 1920, is one of the world's three largest suppliers of piston systems, cylinder components and systems for valve trains, as well as of auto-

motive air and liquid management solutions. The company's customers include almost all carmakers and engine manufacturers. Worldwide, Mahle maintains eight research and development centers and more than 100 production sites. It currently employs a workforce of approximately 49,000 and achieved revenue of some six billion euros in the 2011 fiscal year. To make it easier to communicate

data as required, the developers and design engineers in the various sites and product sectors normally use the same CAD system as the customer. As a result, the CAD landscape is correspondingly complex and currently comprises approximately 1,000 workstations. Alongside Catia V5, which is used internally as the base system, European users primarily work with Pro/Engineer or Creo Elements/Pro and these systems will be joined by NX in the future. In Asia, by contrast, NX is already in widespread use, although the NX precursor, I-Deas, is also sometimes found. And all of this in various release versions and start configurations. All the CAD systems possess direct interfaces to the SAP software solution that acts as Mahle's ERP and PLM system. The OpenDXM data exchange solution is also integrated in SAP PLM, with the result that users can initiate data transfer directly from their PLM environments.

Automated data import

The growing volumes of data exchanged with OEMs and the associated quality requirements were the reasons driving the introduction of Mahle's first electronic data exchange software. However, this initial solution was unable to keep pace with requirements and was therefore replaced by OpenDXM. Another excellent reason for choosing PROSTEP's data exchange solution is that it has been successfully adopted by many OEMs. It is now also in widespread use at Mahle for internal data exchange, as Heinrich Wickom, Head of CAD/CAM IT Services Europe at Mahle, explains. „Internal volumes now account for more than 50% of traffic. It is not just the sites that exchange CAD data with one another. Users at the individual sites also use OpenDXM, for example, to quickly convert CAD data from SAP PLM into another format and send it to themselves." In some product sectors, Mahle cooperates closely with external tool suppliers and other providers who are also connected to the data exchange solution.

From the very outset, one important requirement was to be able to automate not only outbound data transfer but also import operations. Here, the most important capabilities were to log data reception, identify the recipient, automatically forward the data to the inbound folder for the relevant busi-

The OpenDXM GlobalX web-based data exchange portal permits the fast, secure and reliable exchange of large data quantities over the Internet. *Photo: PROSTEP AG*

Mahle is one of the world's three largest suppliers of piston systems, cylinder components and systems for valve trains and air and liquid management. *Photo: Mahle GmbH*

ness unit, and inform recipients that data was available for them. Wickom: „Back then, PROSTEP developed this functionality, which now forms part of the standard scope, specifically in line with our requirements." At Mahle, the data is not checked in directly in SAP PLM because users should first validate the quality of the inbound data. In addition, the data volumes received from the OEMs are sometimes extremely large, for example for a complete vehicle front section. In such cases, only the relevant connection geometries are to be made available in the PLM context.

Web-based supplier portal

Even though more data has to be exchanged every year, the explosion in data exchange volumes which, 15 years ago, was one of the key reasons for introducing Open-DXM, is now a thing of the past. Nowadays, the focus is on requirements such as data security, ease of operation, global availability and flexible support for different exchange scenarios: „In Asia in particular, CAD data exchange with many smaller suppliers that do not possess an OFTP connection was a real problem," explains Wickom. Two years ago, in order to rise to the challenges posed by this heterogeneous partner landscape, Mahle

extended its OpenDXM installation by adding the OpenDXM GlobalX web-based data exchange portal. This permits the fast, secure and reliable exchange of large quantities of data over the Internet.

At Mahle, OpenDXM is implemented as a client-server solution with a central server in Stuttgart and decentralized instances at sites in Germany and Austria so that the data can be processed locally and the volumes exchanged over the fixed connection reduced. The CAD data is stored on separate servers at the head office and is replicated to other sites as required. The web-based data exchange portal is installed in the DMZ (demilitarized zone) and communicates with the backend systems via a special gateway in order to protect the internal company network against direct access attempts. Whereas internal users access the application via the normal Open-DXM client, external partners mostly use the web interface. According to Wickom: „This makes handling even easier and we do not need to carry out any training." In order to protect the data that is made available on the portal server against unauthorized access, it undergoes up to 2048-bit encryption on upload. This means that it can only be read by authorized recipients who possess the corresponding key. Uploads and downloads can

be automated using customized „agents", or with „robots" in the case of entire sites. These connect to the portal at specified times and write the users' data to the webspaces of the relevant recipients or download the data intended for local users. This is clearly particularly beneficial for users who need to carry on working with the data in other time zones, since the large data volumes in question have already been transferred and are available directly in the user's working environment when he or she starts work in the destination time zone. In addition, a special transmission protocol ensures that if interruptions occur due to the long latencies that can affect transfers across long distances then the transfer is resumed again at the point at which it was interrupted. Furthermore, the multithread-capable transmission protocol, coupled with OpenDXM GlobalX's automatic calibration function, ensures the fast, stable transfer of large data volumes.

Integration into the e-mail application

Approximately 30,000 data exchange jobs are processed internally and externally via OpenDXM and OpenDXM GlobalX at Mahle every year. These represent a data volume of some 750 gigabytes. However, this does not mean that all the files are exchanged via the PROSTEP solution. „Internally, data is also transferred via the e-mail system because this is a more natural approach and you do not have to set up any profiles before you use it," explains Wickom. „For our purposes therefore, the e-mail integration presented by PROSTEP in the new version is an outstanding capability. Users simply send their data via e-mail and OpenDXM GlobalX works in the back-

ground to ensure that the attachments are transferred over a secure route. This means that we can send not only CAD data but also other high-volume, confidential files much more securely and log all these operations automatically.

The OpenDXM database currently contains more than 1,000 data exchange partners together with their profiles, and the number of partners connected via the web portal is growing considerably faster than the number of OFTP partners. With a few exceptions, the CAD data is not automatically converted on transfer because Mahle wants to make it available in the relevant native formats both to the OEMs and to its own subcontractors. Internally, however, widespread use is made of the data exchange solution's built-in converters, for example in order to convert the generic model of a piston blank directly into the format in which the customer-specific geometry of the finished part is to be created. By contrast, quality checks do not form part of the exchange processes at Mahle. Instead, these are performed prior to release.

„We have found OpenDXM to be extremely stable and it has proved its value," says Wickom who, nevertheless, finds it difficult to quantify the savings because the Group has been using the solution for so long. „The main benefit is undoubtedly the fact that all data exchange operations are processed securely and documented. Consequently, if a dispute arises, we are always able to identify which version levels we sent to the OEM or supplier and when. With GlobalX, we can now react more flexibly to the demands of our dynamic, changing partner environment."

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