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**Getting in shape
for the journey ahead**

PROSTEP

Getting in shape for the journey ahead

Many companies are facing up to the challenge of adjusting their evolved IT infrastructures to put them on the right course for Industry 4.0. Karsten Theis, member of the Executive Board of PROSTEP AG, investigates a number of scenarios in this context.

Dr. Theis, what is your recommendation for achieving perfect interaction between PLM and ERP?

The interaction of ERP and PLM and the correct distribution of processes, functions and data between the two worlds, something we refer to as “orchestration”, forms the basis of many company processes that bring added value. Industry 4.0 is causing a great deal of change in this area, which means that it is also necessary to rethink orchestration. To start with, a fundamental distinction needs to be made between configure-to-order (CTO) and engineer-to-order (ETO) processes. In the case of CTO, which we typically encounter with mass producers in the automotive supply industry, development is completed before order processing begins. This means that the order process, which is generally mapped in an SAP system, is fully decoupled from engineering. In contrast, ETO requires many more interfaces, since engineering has to supply data to the process in parallel with order processing.

We are giving a lot of thought to where connections between the two worlds make sense and where process fragments are able to run unaffected. Professor Martin Eigner has done some foundational work in this regard, work that has allowed us to derive important elements of our strategy. But today, we go much further and talk to users about the tasks they will have to master in the future and what technical skills they will need to do so. This involves thinking back three steps and analyzing the entire business process – from the initial idea to development and production through to operation and service.

As far as the overall architecture is concerned, we have everything from all-in-one systems, where everything is mapped in the ERP system, right up to distributed multi-vendor concepts at the other extreme, where each department has its own team data ma-

agement system. Of course, this also depends on the products that are being developed and manufactured. You have to assess each customer's situation individually to find out what is actually useful.

Are the processes set in stone when implementation is complete? To put it in a nutshell, the future is agile.

Clearly, our customers think in terms of agile processes and want to be prepared for whatever the future may hold. For example, there is the question of how E/E processes can be combined with traditional mechanical processes. You have to remember that mechanical processes have been established for at least a decade now and are extremely reliable, with a data quality that can be verified at any time. Things are a bit different with regard to electronics and software development because the change cycles are so much faster, with the result that the same level of maturity cannot always be achieved.

Which system vendor is currently best placed in this context?

That's not an easy thing to assess as the market is very dynamic. For example, there is a bewildering range of software development tools, with more appearing all the time, and some take very interesting approaches. Add to that the fact that traditional PLM system vendors are doing their best to offer corresponding integration facilities. Any recommendation will also depend on the extent to which the software component contributes to the value of a product: Is development of the software an integral part of the company's own operations or has it been outsourced? All these considerations must be assessed in detail.

This means that you not only need to have a very accurate understanding of how the company works but also know what system support is currently available on the market.

We regard this market knowledge as a key USP. PROSTEP is a technology partner to a large number of system vendors and can therefore offer a very broad range of expertise. We have the majority of the systems installed in-house for testing purposes. Not only that: we also know a great many customers and know exactly how these systems are used.

And is there anything PROSTEP can't do?

We don't, for example, offer consulting relating to product management, in other words what products with what features and variants are in demand on the market. And the customer's process expertise is often so good and so specifically tailored to the product in question that we simply optimize the process and advise on how to map it to systems, because the customer knows the actual product development process better than we do. We can tell the customer what PLM capabilities they need in order to implement the process in the best possible way. In the course of our discussions, it quickly becomes clear what a customer needs to focus on in the PLM architecture in the light of the value they create. Assistance is needed with agile processes in particular, because companies find it difficult to evaluate how agile approaches fit in with their business and the extent to which they can cope with them.

Let's talk a little about the bitter day-to-day experience of engineers; about data quality, for example. What efficient steps can be taken to improve data quality so that system migration can proceed quickly?

That depends on the products that are being manufactured. For example, spare parts and maintenance form a significant part of KUKA's business. This means that access to development data has to be maintained for a very long time, for example to make changes on the basis of the data when old systems are updated or integrated into new ones. Adapting production lines is a recurrent part of our work. At the same time, the robot manufacturer's development methodology is constantly evolving, for example when new simulation tools are introduced. And with KUKA, it was not just a case of migrating to a new system. Improvements in process technology are also to be incorporated at the same time, so it makes sense to adapt the existing data to the new conditions. Of course, this involves a lot of work, including manual editing. In the case of KUKA, a process was set up that allows the old and new infrastructure to

coexist temporarily, while gradually improving the quality of the data to the new level.

That's interesting. How much of PROSTEP's expertise can already be found in OpenPDM, and how much of it is only available by booking consultants?

That's a good question. Please book a lot of both! OpenPDM has standard connectors to a large number of IT systems, including legacy systems. Connection is not particularly time-consuming as long as it is only a matter of read access. After all, around 90 percent of the work involved in adapting the interfaces is concerned with write access.

When it comes to professional data cleansing, it depends on what the customer wants. KUKA is at one end of the spectrum: They have a heterogeneous IT infrastructure of legacy systems and want to increase data quality while at the same time further developing specialist aspects of the data. That pretty well amounts to the maximum requirements with regard to migration. This leads to a high consulting outlay and a large number of activities to actually carry out the migration. Offshore services can also be used, especially in and around CAD. At the other end of the spectrum, a migration can be completed in just a few weeks if the release status of the data doesn't change and the data is only used as read-only in the new system.

I imagine OpenPDM as an airport. The planes and their passengers correspond to IT systems with database content. Then a plane arrives at the gate. The gates effectively act as connectors. Wherein lies the intelligence of OpenPDM, let's say for managing the onward flight?

As is customary in the world of air traffic, our connectors are based on a standardized framework with comprehensive documentation so they can also be implemented by a third-party provider. OpenPDM allows the transfer process to be controlled with a very fine level of granularity, precisely tailored to what is to happen to the data and relations in the target system – when importing complete product structures, for example. The update process must be controlled in great detail using a complex set of rules. We refer to this functionality as the "Import Worker". It is one of the key USPs of OpenPDM.

To come back to your comparison of OpenPDM to an airport, getting off the plane and transferring to the new flight is not the problem, and getting on the new plane is usually done without too much fuss. The only thing that can present a challenge is that the passengers then find their new seats and that their luggage is also transferred properly.

COVER STORY

OpenPDM merges the data from different source systems: People from different home airports don't want to miss the connecting flight to a common destination – and OpenPDM makes sure they don't. But OpenPDM goes one step further: In the transit area of the airport, passengers pass through a "staging area" where quality assurance and data preparation are carried out.

But let's stay at the airport for a moment and board a VIP helicopter to look at PLM from the perspective of digitalization. After all, digitalization also stands for passing on knowledge that has been created – documented in Excel format, for example – to other project participants in a way they can easily understand. The Excel database silos prior to Industry 4.0 do not allow this. Are we finally getting rid of these data graveyards? On the one hand, it is noteworthy that PLM is "in" again. Customers have realized that their digital transformation can only succeed if they have complete control over the PLM processes. Product data is the starting point for any kind of Industry 4.0 and its ilk. And success is only possible if the digital process chain is designed correctly from the very start and all gaps are closed. But you are right, at the end of the day it is crucial that Excel is no longer needed. Only then have you achieved digitalization!

Has this insight already filtered down to the market?

Absolutely! Even in our baby boomer generation. The champions in particular have understood the vital importance of consistency and traceability in data management.

Thank you very much for answering our questions.

Interview: Bernhard D. Valnion



Dr. Karsten Theis is a member of the Executive Board of PROSTEP AG

Dr. Karsten Theis, born in 1969, has been a member of the Executive Board of PROSTEP AG since the end of 2018 and is responsible for products, marketing, sales and the US business. Prior to his appointment, he was responsible for sales as a member of the Executive Board. Dr. Theis has been with PROSTEP since 2002. As Head of the PLM Strategies & Processes business unit, he made a significant contribution to the expansion of PLM strategy consulting, which is now a core component of PROSTEP's range of services. Dr. Theis studied electrical engineering at the University of Dortmund, where he earned his doctorate in automation technology and robotics.