PROSTEP
integrate the future

WHITEPAPER

CAPABILITY-BASED CONSULTING FOR SUSTAINABLE PLM ARCHITECTURE

PLM strategy consulting meets enterprise architecture management

Content

Future-oriented PLM strategy for the digital future 2

Interaction between business objectives and IT architecture 3

Capabilities as the link between processes and applications 4

From analysis of the current status to rollout planning 6

Modeling the future PLM architecture with LeanIX 7

Summary 7

Future-oriented PLM strategy for the digital future

There is a great deal of uncertainty in industry when it comes to the future viability of their current PLM infrastructures. Companies that recognize the importance of PLM for the digitalization of their business processes in particular are wondering whether they and their existing PLM solutions are in a position to cope with the digital transformation. In order to be able to respond flexibly to new business requirements, they need adaptable modular PLM architectures that can easily be integrated in their existing IT landscapes and which can quickly be expanded to include additional modules as required. At the same time, these architectures must support new concepts for data linking to ensure the traceability of product data across all the architecture components.

Converting existing PLM architectures is not a one-off project, and it is certainly not an IT project but rather an ongoing management task due to the fact that business requirements are constantly changing. The basis for this management task is provided by guidelines for a long-term PLM strategy. It must be oriented to the business objectives and process requirements of the organization and make it possible for flexible strategic decisions to be made. PROSTEP's capability-based PLM strategy consulting services are designed to provide companies with support when it comes to designing sustainable PLM architectures. In this white paper we describe the fundamentals of our consulting approach, which is based on enterprise architecture management methods, and our process model, which focuses on PLM capabilities.

Interaction between business objectives and IT architecture

The digital transformation poses a strategic challenge to companies in manufacturing industry in many respects. They have to change their portfolios of products and services, rethink their relationships with partners and customers, address new markets or market segments and, if necessary, develop new business models for them. This requires not only the continual adaptation of their organizations, business processes and sales channels but also the IT architectures (IT infrastructures and application landscapes) that enable the processes in development, manufacturing, marketing, sales and service. The interaction between the information technology components and the business objectives of a company is referred to as enterprise architecture, and the systematic planning and coordination of this interaction is referred to as enterprise architecture management (EAM).

Today every company with a sufficiently complex IT architecture is dealing with the question of how they can further develop this architecture and adapt it to the constantly changing requirements. The highly dynamic nature of economic and technological change means that a methodical approach that places the IT architecture in the context of the entire enterprise architecture is required. This enterprise architecture comprises five levels that build on each other and correspond with each other. Of key importance is the integration level, on which the information objects are described that are created and managed with the applications on the software level and which enable the processes on the organization level.

EAM makes the interactions between not only organization, processes and information technology but also the various components of an IT architecture transparent. The aim is to make IT architectures more efficient or to redesign them and save costs, for example by eliminating redundant systems. The methodical approach supports IT managers in their effort to consolidate heterogeneous system landscapes, which often comprise hundreds of individual tools, identify additional business needs and assess the impact that phasing out or replacing a business-related system, for example, could have on the process landscape. Many companies today find it difficult to assess all the relevant influences.

EAM is a lifelong management task because the business models and processes are constantly changing and these changes must be incorporated in the IT architecture. That is why many companies now use model-based descriptions to describe their enterprise architectures. The advantage of model-based mapping is that you can build on the results of the past and track changes in the system landscape faster. Interactions can also be visualized better. PROSTEP uses a targeted selection of EAM tools and methods for its capability-based PLM strategy consulting.

Capabilities as the link between processes and applications

Business capabilities, i.e. the capabilities or specialist functions required to enable certain business processes and which make use of specific IT systems for this purpose, are a key element of EAM. The capabilities form the link between processes and applications. If process requirements change, e.g. because a company wants to expand its products by adding new services, additional capabilities are required that may need the support of new IT systems. This also applies, albeit not exclusively, to the PLM capabilities in the product development process. This process is characterized by ever tighter interdisciplinary and cross-domain collaboration along the V-model, especially with regard to the development of smart products with a growing proportion of electronics and software.

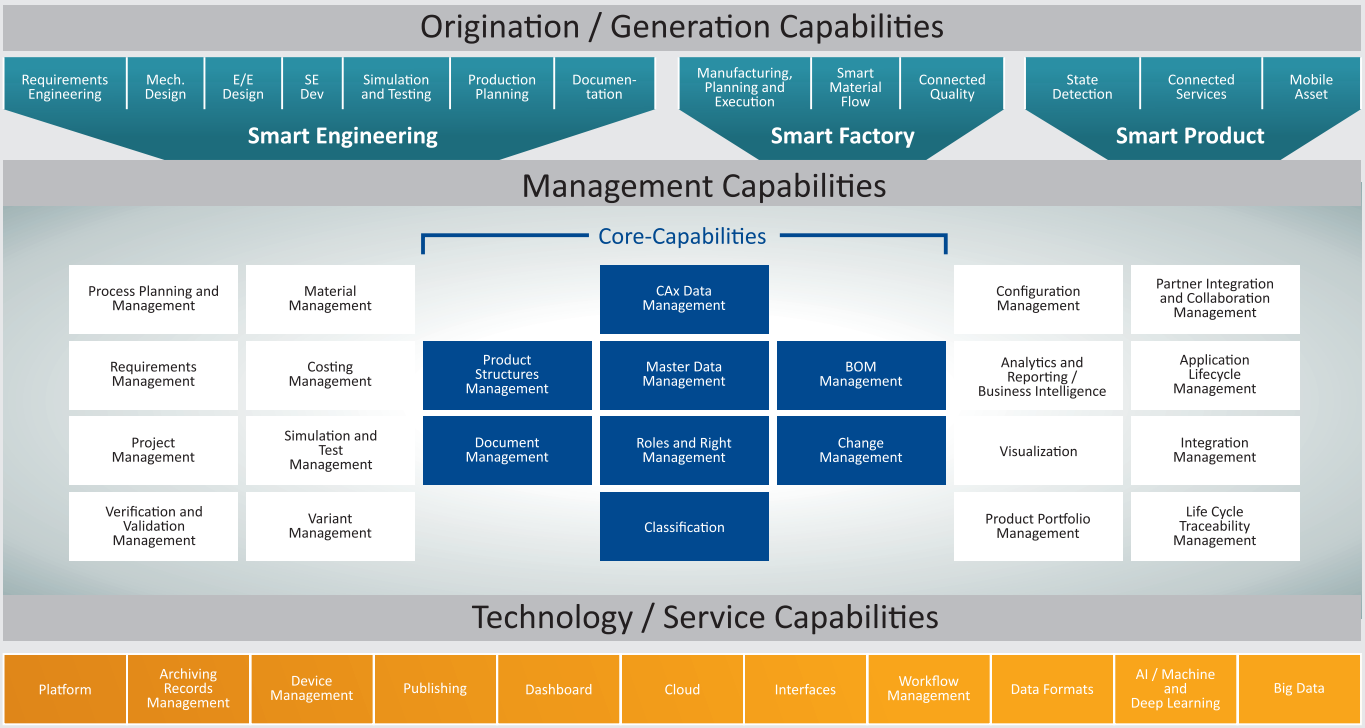

Fig. PROSTEP's PLM capability map

PROSTEP's capability-based PLM strategy consulting is based on EAM methods but focuses on the organizational, integration and software levels, supplementing them with strategy consulting and the PLM-specific know-how gained over the course of numerous consulting projects. The aim is to build a sustainable PLM architecture that is aligned with business objectives and links process and system landscapes via appropriate PLM capabilities. This architecture links business capabilities with PLM-specific requirements and represents a section of the overall enterprise architecture, ranging from the organization of the enterprise to the application levels.

Fig. EAM levels of PROSTEP's PLM strategy consulting

PROSTEP sees PLM capability as the key lever for portraying the interaction between processes and systems. The primary aim of strategy consulting is to make companies take a good hard look at themselves and make it clear to them which PLM capabilities they currently possess and which capabilities they actually need for their processes. The consultants have created a comprehensive PLM capability map, which is used to identify and prioritize the required capabilities when defining the objectives and developing the target concept.

Management capabilities lie at the heart of the capability-based consulting approach. This includes so-called "core capabilities" such as BOM and product structure management, CAx data management and change management, which experience shows are relevant for all companies. There are also complementary capabilities (e.g. product portfolio management, configuration management and project management), which are often what make a PLM architecture special. The map is merely a snapshot that can change as certain capabilities are given greater priority and new capabilities will need to be added , especially when it comes to extending the product lifecycle in the direction of the operating phase.

The individual capabilities influence one another. If, for example, a product is expanded, this will not only have an impact on the product structure but also on change and configuration management because these three capabilities are closely intertwined. However, the interaction between capabilities varies from company to company and from business process to business process. These influences must however be taken into account when mapping the PLM architecture.

From analysis of the current status to rollout planning

PROSTEP has developed a modular process model for capability-based PLM strategy consulting that establishes a structured approach – from the analysis of the current status to the target concept and evaluation of the potential PLM solutions through to rollout planning. Based on the business model of the company in question, the consultants first analyze the organization and processes, especially those relevant in the context of expanding or modifying the business model. They also examine which information is required for which processes and how it flows within the application landscape in order to identify potential weaknesses in the information flows. The aim of analyzing the current status is to identify mission-critical processes and determine the PLM capabilities required for their execution.

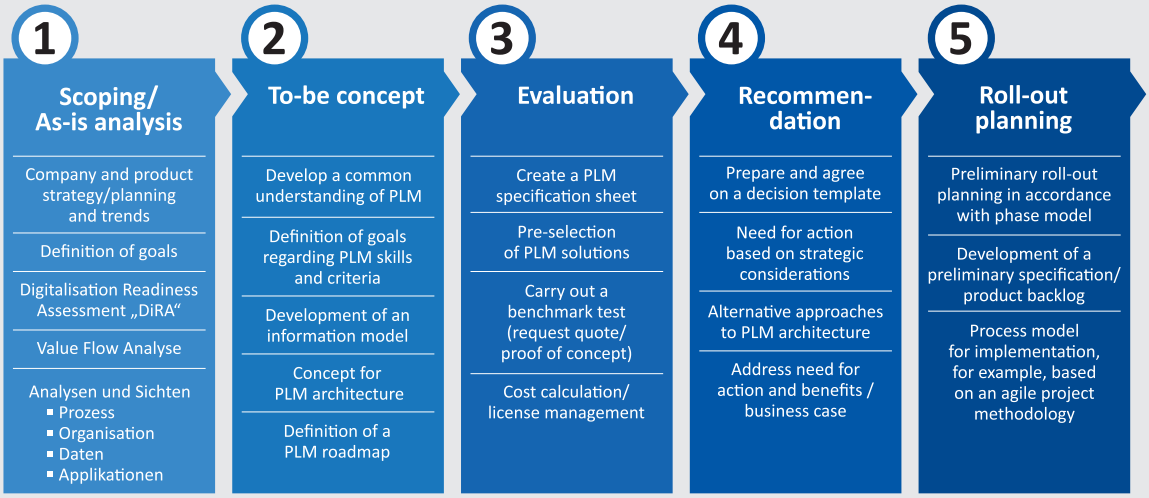

Fig. PROSTEP's process model for PLM strategy consulting

Once the capabilities have been prioritized with the aid of a heat map, the consultants take a closer look at the capabilities available in the company and determine their degree of maturity based on the difference between the current status and the target status. The maturity levels and their criteria are based on Capability Maturity Model Integration (CMMI), which serves as a guideline for continual process improvements. The results are presented in a clear and concise maturity model that illustrates the need for action and forms the basis for developing the target concept for the future PLM architecture.

Creating a common understanding of the priorities is an essential aspect of this target concept and the key to its successful implementation. Based on the prioritized capabilities, the consultants work together with the customer to develop the technical concepts, e.g. for optimizing product structure or configuration management, which may require both process improvements and the implementation of new PLM applications or functions. A system-neutral information model is used to describe which information is needed to enable processes as best possible and how this information is to be made available. It maps the integration layer of the EAM framework with regard to the PLM capabilities and bridges the gap between the processes and existing or future applications.

The consultants use a layer model as the basis for designing a PLM architecture and infrastructure (i.e. the associated application landscape). The model describes different scenarios for a possible IT architecture and initially serves to pinpoint the PLM capabilities in a system-neutral manner and then, if necessary, assign them to individual applications. The graphical location of PLM capabilities in the IT architecture is intended to provide a better overview and uncover possible incongruities between the enterprise architecture and IT architecture. The consultants then develop a roadmap for implementing the capabilities based on the PLM maturity model.

The PLM capability map and maturity model are the golden thread for the further course of action in the consulting projects. If required, PROSTEP also helps customers evaluate the potential PLM solutions and plan the rollout. Customers benefit from the consultants' many years of experience gained during the course of numerous selection projects, their in-depth knowledge of the PLM market and the functionality of the solutions offered, and their good contacts to the relevant vendors.

Modeling the future PLM architecture with LeanIX

One of the challenges of strategy consulting is documenting the results in a way that allows customers to use the documentation to further develop their PLM architectures and makes it easy to update the documentation when changes are made. PROSTEP has entered into a partnership with LeanIX to ensure that it can provide customers with more efficient support when helping them design their PLM architectures. The start-up company, which was founded in Bonn in 2012, developed the Enterprise Architecture Suite and is now one of the key players in the EAM market. LeanIX provides its solutions as software-as-a-service (SaaS). They make it possible for companies to make transparent IT decisions faster based on reliable data.

As a certified LeanIX partner, PROSTEP offers its customers the opportunity to map their enterprise architecture in the EA suite using models and thus document their business requirements, PLM capabilities and current/target architecture over the long term. The model-based approach makes it easier to evaluate the results and gives companies a better overview of their IT architectures and to what extent it is anchored in the business processes. This partnership means that PROSTEP is breaking new ground in terms of comprehensive PLM strategy consulting that also takes into account corporate strategy and the organizational level of the digital transformation.

Summary

A growing number of companies recognize the need for systematic enterprise architecture management if they want to get to grips with their increasingly complex IT architectures and be agile enough to adapt them to new process requirements when business models change. PROSTEP's capability-oriented PLM strategy consulting is based on EAM methods and applies them to the PLM architecture. This PLM architecture comprises all the processes, information and applications relevant to the product lifecycle and their interaction and the integrations required. The consulting approach focuses on identifying and prioritizing the capabilities needed to support the PLM processes with the aim of designing a sustainable PLM infrastructure. At the customer's request, the consultants use the LeanIX EAM software to document the results of the current and target analysis in a sustainable manner, thus ensuring that they are available for reuse. The consultants also support customers when evaluating potential PLM solutions and solution modules and work with them to plan step-by-step implementation of the new applications and replacement of the existing legacy systems. The methodical consulting approach is complemented by the consultants' industry experience and their knowledge of how other companies handle PLM. It is this combination that ensures the success of PLM strategy consulting.

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