

ENTERPRISE PRODUCT COSTING

THE KEY TO COST-BASED ENTERPRISE MANAGEMENT

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SUMMARY

Enterprise Product Costing (EPC) is a management concept that consolidates department-specific approaches into a single cost management system. When used holistically, EPC effectively enhances the transparency of the cost situation in the enterprise, facilitates cross-departmental and cross-site collaboration, prevents errors in information sharing (e.g., of cost data) and increases efficiency in the generation of results – for proposals or preparing orders. EPC software forms the operational core of this concept and simplifies its introduction. This white paper examines the basics for the introduction of EPC and shows practical steps for implementation.

1. THE CHALLENGE OF COMPETITION

The rapid development of digital technology leads to ever-shorter development cycles and increases competitive pressure. Enterprises are faced with new challenges that have a direct impact on their competitiveness. Details about a new product are available to competitors via the media, through data leaks or as a result of better networking and enhanced analysis methods even before the product is finished – at the latest when it is released. Information on customer requirements and current or new markets is openly available via digital or market platforms. This puts enterprises in competition with each other not only with regard to their products but also in terms of the information that they receive, share or withhold.

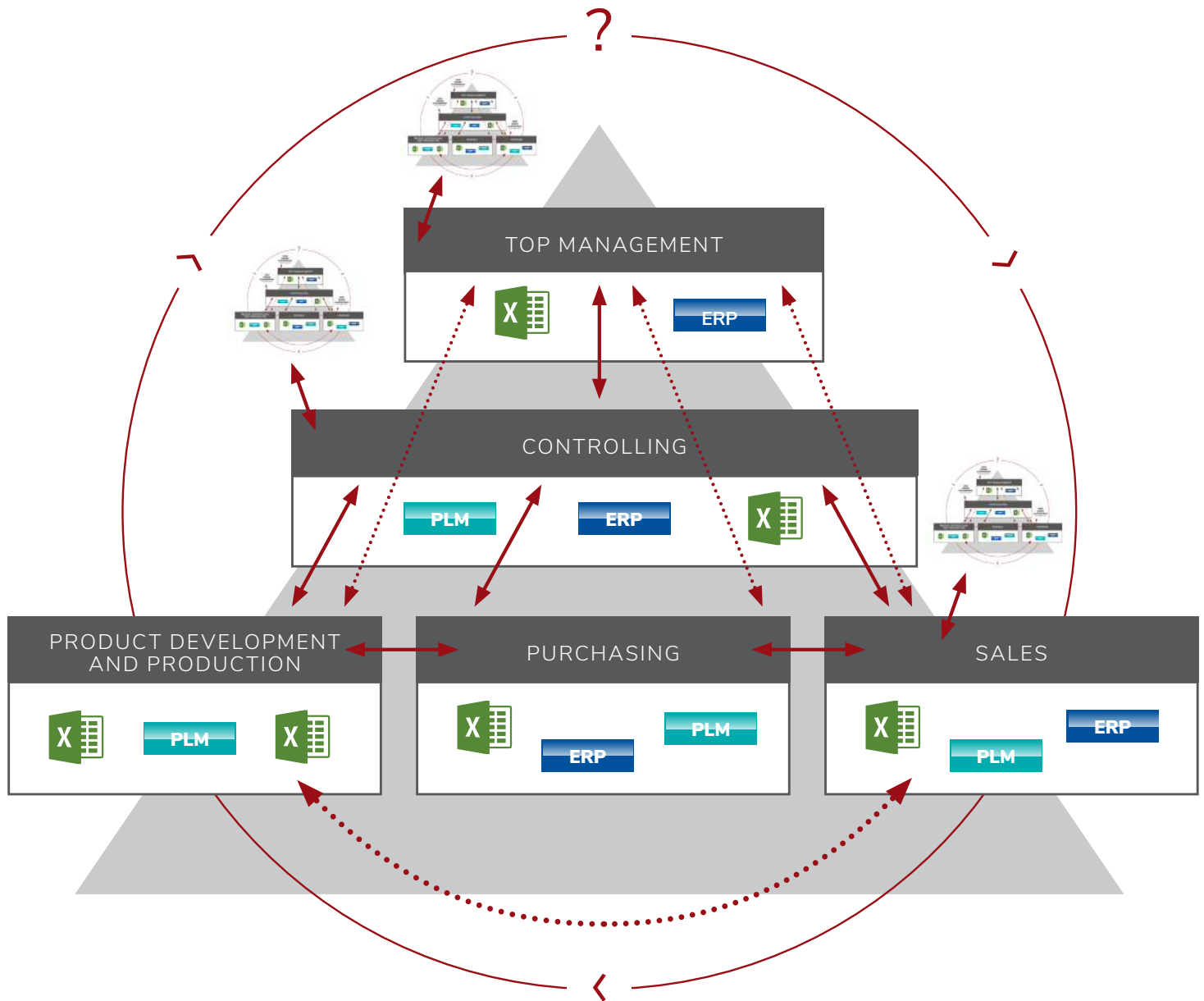
Businesses that successfully withstand this competitive pressure evaluate the sales prices of their new products early on and know the precise costs of production as early as the initial concept, when influencing future costs is the easiest. They use the development process to maintain a complete overview of the costs and the market, reducing costs and protecting the target margin.

Over time, every department has developed its own methods of performing this type of “cost controlling”, i.e., managing, monitoring and influencing costs. These methods are precisely tailored to the needs of the specific department to meet the desired key performance indicators (KPIs) and targets.

However, achieving department targets is not necessarily the same as achieving enterprise objectives. This occurs because not all business processes – especially not costing processes – are aligned and optimized throughout the enterprise, even though individual processes (e.g., supply chain management) are. Even if the flow of information is clearly defined from order receipt to production, the costing process and the forwarding and utilization of costing-relevant data are often neglected. IT systems that do not support the automatic flow of information only exacerbate the situation (see Figure 1). As a result, the company works with inconsistent data, which has a negative impact on its competitiveness, thereby:

- Preventing target cost-based design and manufacturing concepts
- Making purchased part optimization more difficult
- Slowing down the quotation calculation process
- Producing inconsistent analyses and reports
- Leading to a lack of lifecycle assessments

Figure 1: Company with department-specific IT systems and information flows (source: FACTON)



Complex, cross-departmental and non-standardized processes.

Distributed cost information.

No lifecycle analysis.

Businesses can counteract this situation by making department-specific approaches more open and transparent and aligning them with each other. This is useful at the project level, for instance, as part of “value analysis” projects. An interdisciplinary team with representatives from all key departments is created for this purpose. This team works together on a project, incorporating each department’s expertise and methods. Every member aligns processes and approaches with the team and this specific project. The results achieved are important for the overall product or enterprise since the savings potential identified is more than just short term. Instead, the product and its relationships with other products and the enterprise are seen as a whole thanks to the interdisciplinary nature of this approach. This occurs, for example, when counterchecks are made to determine whether there are multiple applications for component parts, whether certain functions can be met using modular elements from other product lines, whether synergies can be created in procurement or sales or if it is possible to incorporate experience gained from other projects. In addition, no one works “against each other.” The common focus means that the task will be processed faster.

So why not take everything to the next level in a value analysis project? We treat the entire company like one project, the product line like one product and the departments like one team. At the same time, we need to always keep the focus on the cost situation in the company, broken down into the individual product costs. The underlying concept is called Enterprise Product Costing (EPC).

2. ENTERPRISE PRODUCT COSTING (EPC)

2.1. COST-BASED ENTERPRISE MANAGEMENT CONCEPT

Enterprise Product Costing – or EPC for short – is a management concept that aligns individual and department-specific approaches and views them as a unified cost management system. As an overarching control function, it processes consolidated information, makes it available enterprise-wide and across departments and ensures that it is transparent.

Depending on the company, EPC can add other functions, workflows or process steps as well as rules or assumptions. It is a concept that follows an overarching goal and that provides an outline for principles and actions that may, however, vary in their detail.

EPC effectively enhances the transparency of the cost situation in the enterprise, facilitates cross-departmental and cross-site collaboration, prevents errors in information sharing (e.g., of cost data) and increases efficiency in the generation of results – for proposals or preparing orders.

As with any concept, an in-depth process analysis is required for its introduction and adaptation. **The EPC concept considers all areas in an enterprise in terms of their contribution to costing processes or cost management.** As a general rule, each area has its own methods and, in part, its own IT systems or databases. This takes up a considerable amount of time and effort in daily work and creates many sources of error (see Figure 1).

The following overview focuses on **the five core areas of a business: development, purchasing, sales, controlling and management** (see Figure 2).

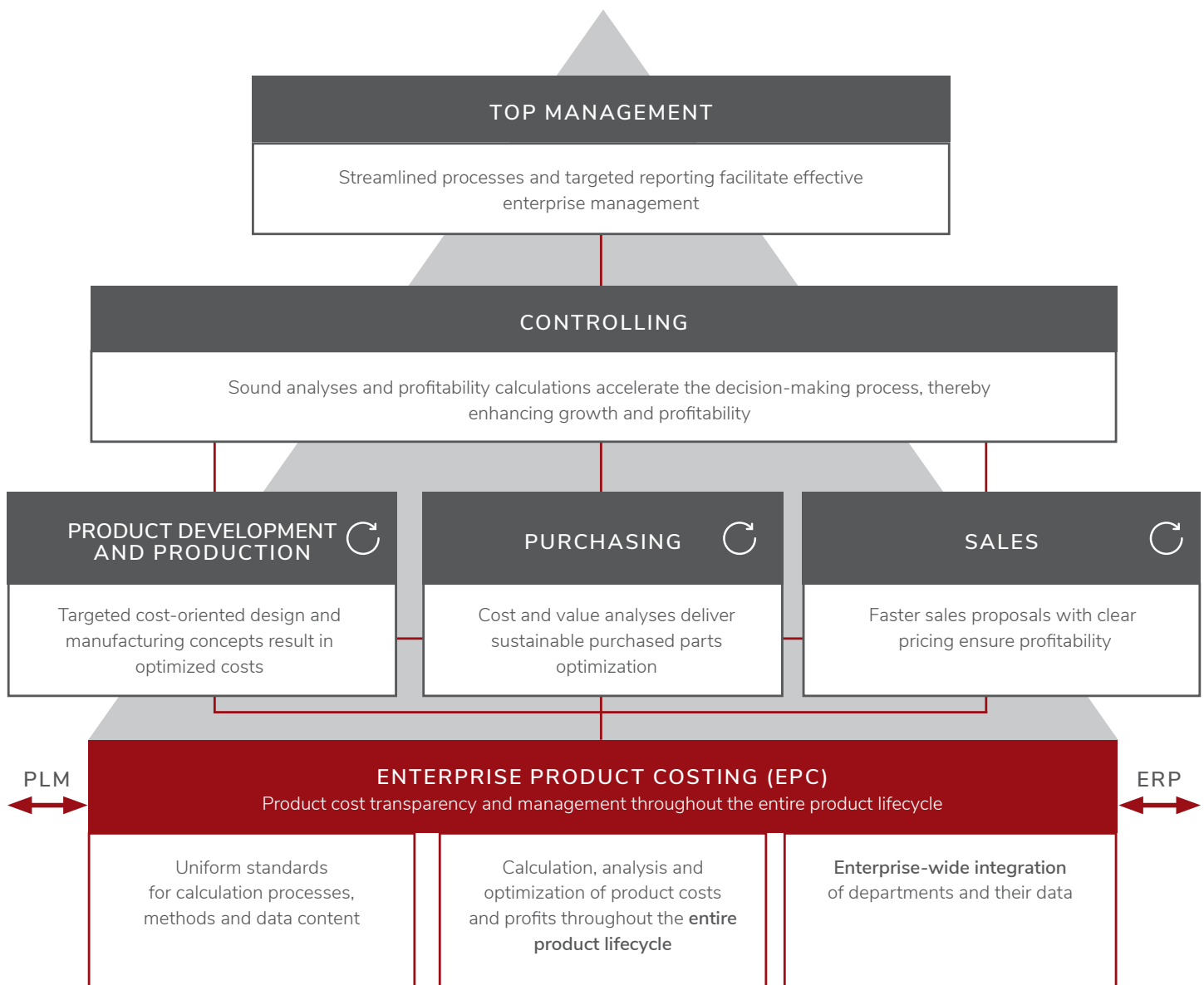


Figure 2: Enterprise Product Costing (Source: FACTON)

2.2. THE CORE PROCESSES OF PRODUCT COSTING

The three standardized business processes in the field of product costing are:

1. Design costing
2. Quotation calculation

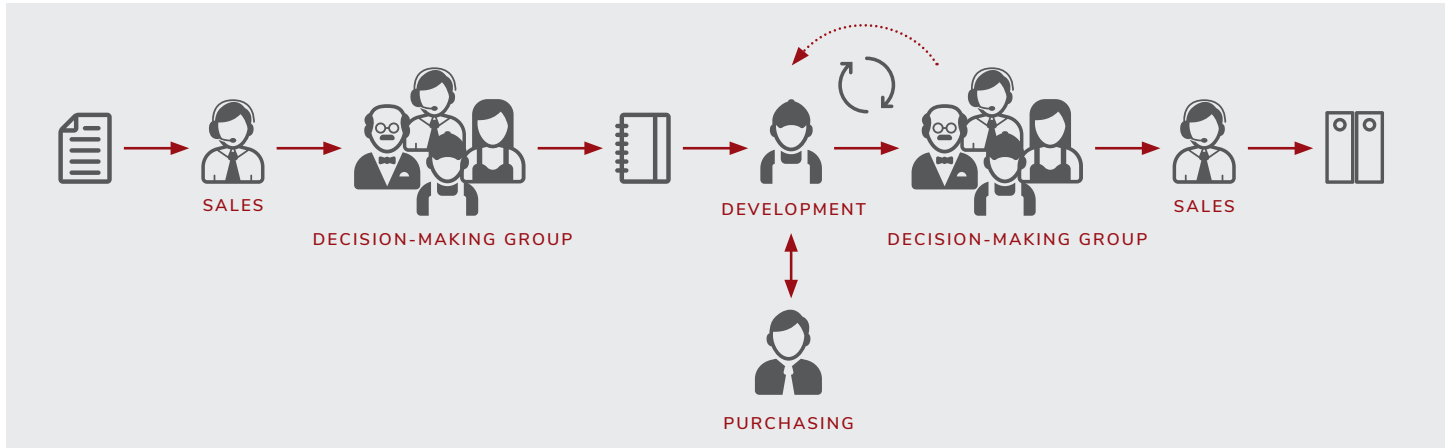


Figure 3: Process representation of development stage-based costing and cost estimation offer. It illustrates the processing of proposals by different departments and release decisions by the decision-making groups (source: FACTON).

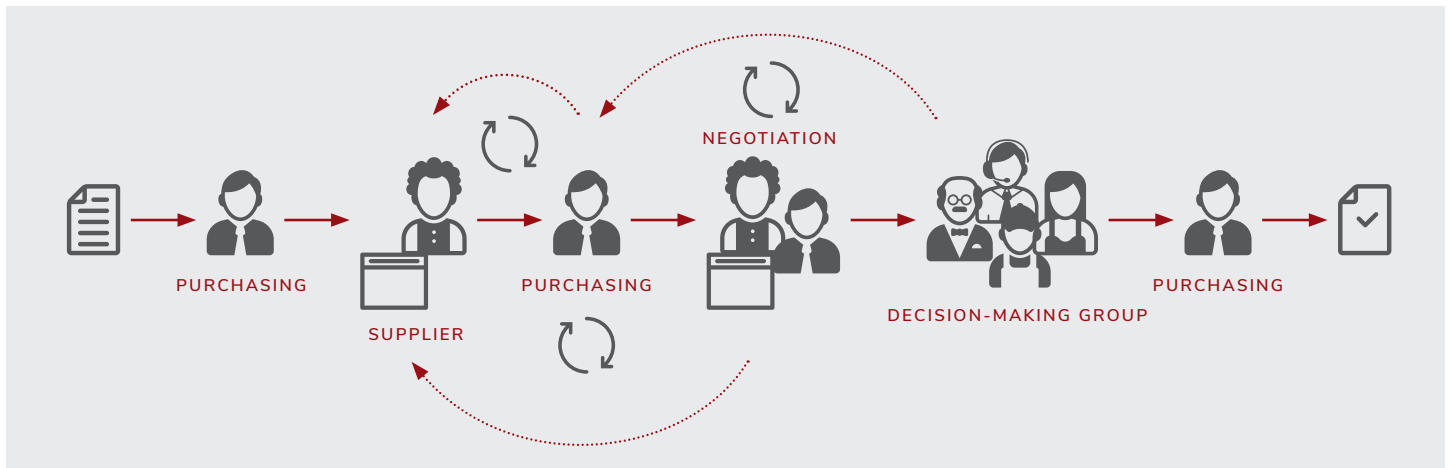


Figure 4: Process representation of purchased part price analysis – communication between purchasing and the supplier is on “equal footing” and involves the release of the proposals if necessary by the decision-making groups (source: FACTON).

2.3. METHODS AND APPROACHES TO COST MANAGEMENT

As outlined in the introduction, enterprises use a range of department-specific methods and approaches to help them achieve their individual goals and facilitate the different processes.

Selected examples are explained in more detail below (in alphabetical order).

2.3.1. BRIEF DESCRIPTION OF SELECTED METHODS AND APPROACHES

ABC analysis: An ABC analysis is a method of dividing objects into three categories (A, B, C) in descending order. These categories can then be used to determine the significance (e.g., share or cost) of the objects. Controlling, sales or purchasing generally perform such analyses.

Activity-based costing: Activity-based costing is a costing method that, unlike surcharge calculation, analyzes the costs of individual processes (activities). It can also be used to consider interdisciplinary functions since these, in contrast to product creation, also have shares in the process.

Controlling commonly uses this approach to evaluate interdisciplinary functions such as administration, sales or management and to correspondingly derive the company's overhead costs. Or procurement uses the approach to evaluate the complete costs of supplier negotiations in advance.

Alternative scenario simulation: Alternative scenarios are often considered as early as the development process. This may include alternative production methods, quantity variations or even different production sites. These alternatives are compared with each other and analyzed with respect to their costs and technical feasibility. Development or project controlling generally perform such simulations and analyses.

Benchmarking: Benchmarking describes a comparison of a company's own products, processes or structures with a selected comparison value (benchmark). This can be the market standard, best practice or market average, for example. In the field of cost accounting, it is thus possible to compare a company's own cost structures with the market in order to identify target prices or optimization potential. If the company does not have access to proprietary information on the subject, it can also use benchmark data for calculation (e.g., overhead cost structures or labor costs).

Design-to-cost: Design-to-cost is calculated with target costs in the development stage. Planning and development specify corresponding target costs for each development or production step and must ensure that these are not exceeded during development. Design costing, performed by the development department itself, provides information on the current target achievement status.

Functional cost analysis: Functional cost analysis is a method that determines the relevance of individual components at the product level based on their functions. These results can be incorporated in target costing, for example. First the functions that a product must meet are determined. There are always secondary functions that are desired in addition to the main functions that must be present. For example, a pen should be able to write – this is its main function. But it should also be easy to transport (secondary function). It should also be reusable (secondary function).

Innovation management and option assessment: The evaluation of actions, or “option assessment”, takes place in the value analysis process. In this case, corresponding methods are used to identify actions for saving costs, optimizing quality and reducing weight and, with respect to their potential level, analyzing technical feasibility, implementation period and cost of implementation. Responsibilities and deadlines are added to the resulting list, which serves as a roadmap for the implementation within the scope of a value analysis project.

Lifetime analysis: The lifetime analysis is a key factor in all of the methods described here. The objective is to calculate costs and cost trends not just at a specific time but to expand these analyses by including known or change factors. Depending on which stage is being analyzed in the product evolution process, it is possible to gain a complete overview of costs incurred, effects of investments, interest rates or inflation-based changes.

Make-or-buy analysis: Make-or-buy analyses consider the costs of a product in in-house production and compare these with the costs of external production. Controlling typically performs these analyses in cooperation with management; it is not uncommon for the analyses to have a significant impact on the corporate strategy.

Product lifecycle costing: Product lifecycle costing is an analysis of all costs incurred by a product from the initial product idea to its disposal. It includes development, production, operation and disposal.

Product profitability calculation: The product profitability calculation is often also called contribution margin accounting. It describes how the revenue earned is calculated by offsetting the variable and fixed costs of a product or project.

Purchased part price analysis: Purchased part price analysis is a method of procurement in which a bottom-up calculation is performed of the components to be procured. In terms of methodology, this calculation is similar to internal calculations with the difference being that sometimes only insufficient cost information is available. Assumptions or benchmarking methods must be used in such cases (see Benchmarking).

Target costing: Target costing is closely related to design-to-cost. In this case, however, there is an even greater focus on target price determination and control than on the development itself.

2.3.2. TRANSPARENT METHODS, CONSISTENT USE OF DATA AND PERIOD-BASED ANALYSIS OF COSTS

These examples show that individual methods can be used in department-specific ways but can also be used in an interdisciplinary, cross-functional approach. If departments use a standardized database as a common foundation, with the same methods and without any breaks in media, this will help ensure a comprehensive, sustainable management approach. This, in turn, makes it possible to manage businesses using valid, consistent enterprise costs. This is where Enterprise Product Costing comes in.

The EPC concept is thus based on three pillars: Transparent methods, enterprise-wide, consistent use of data and period-based analysis of costs (see Figure 2).

If the same methods are used in different departments, it makes sense for users to perform costing using the same database. For example, it is a best practice for procurement to prepare its ABC analyses of purchased parts based on the same prices as the development department, which performs an ABC analysis based on the product component costs. To implement this consistently, business processes may need to be adapted to ensure that data and information is available.

Period-based analysis, i.e., analysis beyond a company's own production horizon, is a useful tool. Here it is important to ensure that the results from point-in-time and period-based analyses do not merge. This could lead to significant errors because there are many time-dependent cost factors that can strongly influence the results.

3. IMPLEMENTATION IN PRACTICE

Practical, successful implementation of Enterprise Product Costing builds on three key pillars:

1. Willingness to change existing processes
2. Enterprise-wide implementation independent of location and department
3. Use of suitable software that integrates seamlessly into the IT infrastructure

3.1. THE ROLE OF SOFTWARE

The EPC concept is a universally applicable concept that enables enterprise management based on business costs through the standardization and consolidation of methods. In principle, it does not require software. Nevertheless, when one considers that companies today do not just produce one product in a single configuration and that they have more than a handful of suppliers and customers, **processes become very complex very quickly**. Spreadsheets and documents may be sufficient to map the methods. But no matter how effective the archiving concept is, over time this approach will very quickly reach its limits. EPC software can help here, as long as the EPC system seamlessly integrates into the

existing infrastructure and that all of the systems relevant to costing, such as CAD (Computer-Aided Design) or ERP (Enterprise Resource Planning) can be linked via digital interfaces without breaks in media, thereby enabling a complete lifecycle assessment.

Comprehensive EPC software solutions make it possible to visualize any number of different methods. They are able to link up to existing systems and integrate into their processes and structures. Ideally, the software will support costing using in-house benchmark data and functions that enable forecasts and assumptions.

The software is therefore not a prerequisite for the concept. But when it comes to the implementation, it is the operational core.

3.2. BEST PRACTICE – IMPLEMENTATION SCENARIOS

Enterprise Product Costing is most effective when implemented throughout the entire enterprise. However, since this step brings about changes at almost all corporate levels, many companies start with a gradual introduction.

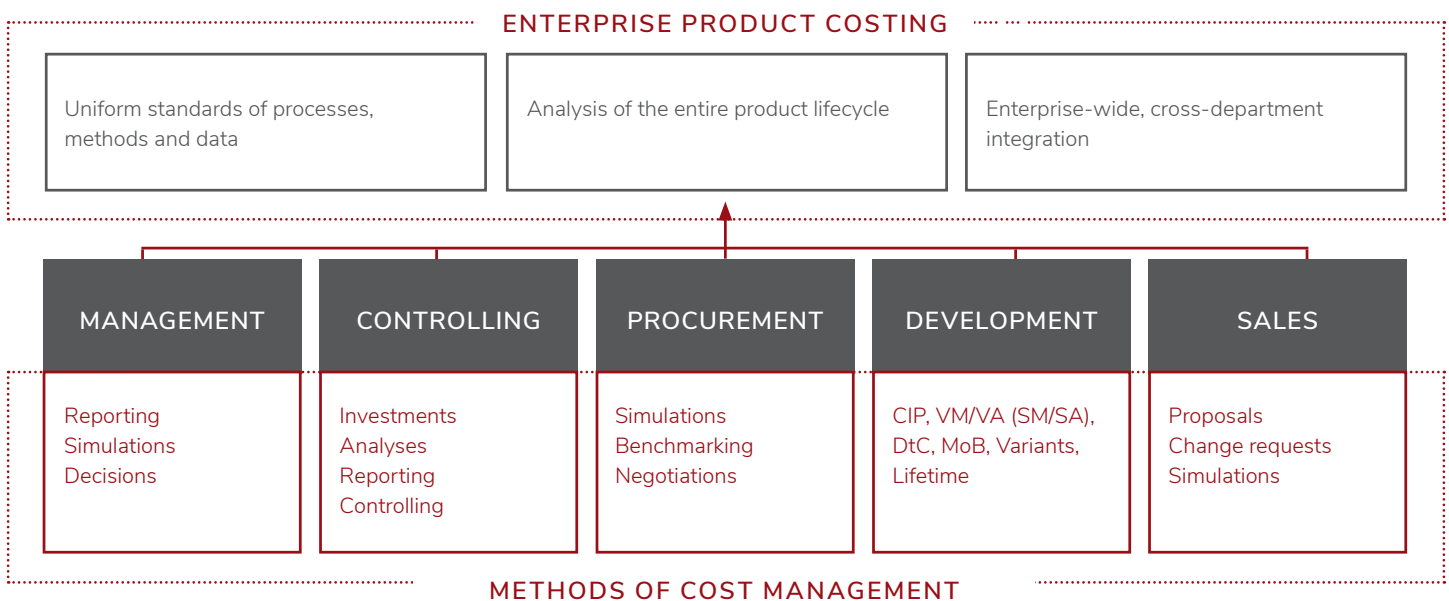


Figure 5: Cost management approaches of the different departments – consolidated and aligned with the EPC concept (source: FACTON)

For example, EPC is first implemented and used in individual departments; in this case only the actual costing process is adapted. Here, the focus is not solely on the concept itself but on the EPC software instead, which greatly simplifies the costing process.

3.2.1. EPC IN DESIGN COSTING

In **design costing**, development engineers use the software to quickly and easily see how their decisions, like the choice of materials, influence product costs. Once a target cost specification is set in the system, enterprises can research the required savings potential early on. These solutions do not use complex cost accounting, thereby enabling developers and designers to create cost estimates and/or rough calculations without having to become cost accounting experts in the process.

3.2.2. EPC IN PURCHASING OR VALUE ANALYSIS

Another use case is when the software is used in **purchasing or value analysis**. The integrated logic and functionality along with the supplied benchmark data **significantly accelerate and simplify the analysis and final costing of purchased parts while generally improving the quality**.

3.2.3. EPC IN QUOTATION CALCULATIONS

EPC systems ensure that the compilation of all cost-relevant data within the cost estimation offer is faster and more reliable, thereby **significantly accelerating the cost calculation process**. This frees up more time and resources to perform the necessary analysis activities based on a precise and transparent cost calculation.

3.2.4. EPC IN STRATEGIC BUSINESS PLANNING

EPC software can also be used at the **management level**. It makes conventional methods such as design-to-cost, target costing and investment calculation easier. Controllers receive support when assessing technical solution alternatives, version comparisons and batch data editing. Moreover, comprehensive reporting capabilities offer a **reliable foundation for strategic business planning**. This can be used to sharpen a company's focus on profitability and growth. **EPC systems feature comprehensive internal and external reporting functions that support management in analyzing and forecasting costs.**

Implementing all of the individual solutions in a single, unified system fully exploits the operational and strategic possibilities of Enterprise Product Costing. EPC aligns all of the individual and department-specific approaches and makes proactive, standardized and reliable cost management a reality.

▪ ABOUT FACTON

The FACTON EPC Suite is the leading Enterprise Product Costing (EPC) solution for the automotive, aerospace, mechanical engineering and electronics industries. Its specific solutions offer robust answers to the requirements of executive management and individual departments within the enterprise. FACTON EPC enables standardized, enterprise-wide costing independent of location and department for maximum product cost transparency throughout every phase of the product lifecycle. Businesses accelerate their costing, achieve pinpoint cost accuracy and secure their profitability.

FACTON was founded in 1998 and has locations in Potsdam, Dresden, Stuttgart and Detroit. Hasso Plattner, founder and chairman of the supervisory board of SAP SE & Co. KG, has supported this innovative company since 2006. The international portfolio of customers includes Ford Motor Company, Henniges Automotive, DURA Automotive Systems, Airbus, Mahle Behr, MANN+HUMMEL, Porsche and other renowned manufacturers.

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