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**GEOMETRIC
SOLUTIONS**

Profitability calculation with Teamcenter Product Cost Management

Establishing project profitability in the product development phase, from early concepts to product launch

Benefits

- Secure investment decisions through early transparency on product price and cost
- Increase consistency and accuracy of profitability calculations by enforcing company-wide calculation standards
- Establish project profitability from the start
- Use consistent and up-to-date calculation methods throughout the company
- Create quotations faster by re-using templates and existing knowledge
- Comply with standards and compliance policy

Features

- Dynamic profitability calculations including cash flows (net present value, internal rate of return, discounted cash flow, etc.)
- Profit and loss statements, cash flow analysis and various key performance indicators respecting working capital calculations

Impact of trends and resulting action

The challenges in the field of product development have changed dramatically in recent years. In many industrial sectors, there are increasingly complex requirements from the market and the customer side, while at the same time shortening lifecycles. Product portfolios are also diversifying to meet different customer requirements in global markets. Various company-wide requirements must be met to ensure regulatory compliance.

It is difficult to determine the cost of a new product in an early stage due to incomplete information and volatile cost components. Evident weaknesses are visible within the process, if the calculation process is serial using a variety of interfaces, and various international subsidiaries may be involved in the process. Many companies are still using isolated databases and spreadsheets, even for cost calculations in early stages of development. Information technology (IT) solutions such as product data management (PDM), enterprise resource planning (ERP), customer relationship management (CRM) and financial reporting

often include relevant pricing sources, but in many cases are not integrated on aspects of cost calculation.

To ensure a comprehensive cost forecast, control and optimization, calculation methods must be standardized across the company and the master data should be consistent and up-to-date to ensure continuity and transparency over the entire calculation.

Benefits of an integrated calculation platform

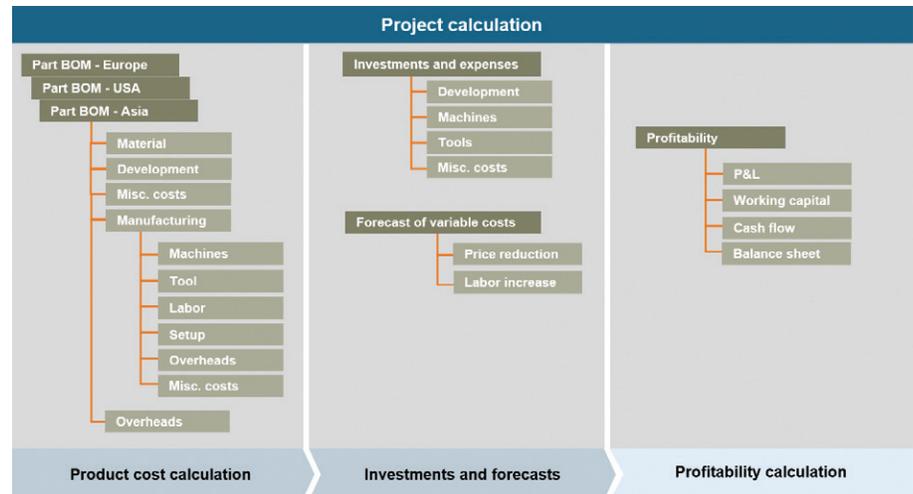
Teamcenter Product Cost Management provides an enterprise-wide platform for creating and managing calculations and captures the company's internal costing expertise centrally. This approach makes it possible to keep cost methods and models up-to-date and standardized across the enterprise. Teamcenter Product Cost Management uses the methodology of the classic overhead calculation based on a bottom-up approach enhanced with ERP data. This approach is based on a detailed product structure and defines the use of materials and the process costs.

Teamcenter provides the opportunity to calculate the profitability of the project over the entire lifecycle early in the development process. Since a large part of the production costs are already established in the early phase, this capability is a decisive factor for the identification of successful projects. The price for a component or assembly can be calculated at a specific time by using the static calculation in Teamcenter. Based on the information from the static calculation, the capital expenditure (for example, for development,

Profitability calculation with Teamcenter Product Cost Management

Features *continued*

- Evaluation of product and project value based on relevant indicators (contribution margin, revenue, pay-back period, etc.)
- Risk analysis using real-time simulation of scenarios (labor cost fluctuations, volatility in sales and procurement markets, technological developments)
- Analysis of profitability with powerful reporting
- Portfolio analysis with aggregated cash flows and KPIs over several projects
- Preparation of business cases including KPIs for comprehensive management reports
- Reproduction of different scenarios (including worst, normal and best case) by managing parameters and taking opportunities and risks into account



Teamcenter Product Cost Management provides a clear and continuous process workflow.

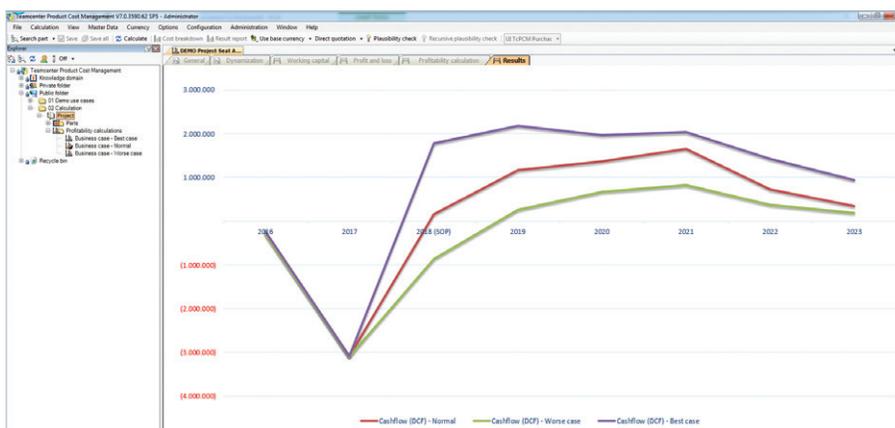
purchase of machines and tools) can be calculated for the upcoming project. Also, the forecast of variable costs such as future price changes and labor costs can be determined.

Particularly in the early phases, components and assemblies are subject to frequent changes within product development. In order to take these changes into account as quickly and with as little effort as possible, Teamcenter Product Cost Management can directly import product structures from Teamcenter or other product lifecycle management (PLM) systems. The bill of materials (BOM) calculation that has already been

performed is updated and the changes are automatically transferred to the dynamic profitability analysis. Changes to the product structure within the development phase can be included in the BOM calculation and automatically transferred into the dynamic profitability analysis. Calculation and profitability analysis are therefore always up-to-date and are continually pursued. Through the version management of calculations in Teamcenter, changes can be comprehended at any time by all stakeholders. This transparency also provides the basis for the comparison of cost calculations down to the cent, which is often decisive for long-term massive cost effects in the case of high production volumes. Using these functions, simulation scenarios of the calculation can be carried out and stored in a controlled manner for a later comparison. As a result, this current calculation provides a company-wide, uniform information source for all departments involved in the development process.

How the profitability calculation works

After the creation of a project and a static calculation, the profitability calculation in Teamcenter is carried out based on the previously created information. With Teamcenter it is easy to link more profitability calculations to a



Cash flow calculation with different scenarios (best, normal and worst case).

Project	2014	2017	2018 (OP)	2019	2020	2021	2022	2023	2024	2025	2026	2027	Total	Unit
Net operating profit after tax (NOPAT)	0	0	4,778	48,422	136,586	211,101	215,413	102,995	154,252	125,888	83,214	0	1,170,368	EUR/Year
Part specific development costs (Depreciation)	0	0	805	8,008	25,147	37,886	37,283	32,407	25,100	19,882	12,742	0	200,000	EUR/Year
Part specific development costs	-60,000	-30,000	-60,000	0	0	0	0	0	0	0	0	0	-200,000	EUR/Year
Part specific setup or costs (Depreciation)	0	0	234	2,302	6,337	9,417	9,321	8,102	6,337	4,968	3,185	0	80,000	EUR/Year
Part specific setup or costs	0	0	-60,000	0	0	0	0	0	0	0	0	0	-60,000	EUR/Year
Amortization for special direct costs	0	0	0	0	0	0	0	0	0	0	0	0	0	EUR/Year
Income for special direct costs	0	0	608	6,491	18,533	27,760	27,478	23,884	18,536	14,828	9,381	0	147,402	EUR/Year
Declined machines (Depreciation)	0	0	0	0	0	0	0	0	0	0	0	0	0	EUR/Year
Investments for declined machines	-4,480	-14,220	-123,700	0	0	0	0	0	0	0	0	0	-147,402	EUR/Year
Amortization for machines	0	0	0	0	0	0	0	0	0	0	0	0	0	EUR/Year
Income for machines	0	0	1,834	18,396	43,957	68,841	68,171	58,648	43,962	34,719	22,273	0	349,603	EUR/Year
Tools (Depreciation)	0	0	1,606	-16,526	-29,196	-43,731	-43,296	-37,632	-29,198	-23,682	-14,783	0	-332,202	EUR/Year
Investments for tools	-63,820	-54,880	-174,800	0	0	0	0	0	0	0	0	0	-349,603	EUR/Year
Amortization for tools	0	0	232,200	0	0	0	0	0	0	0	0	0	332,202	EUR/Year
Income for tools	0	0	-1,371	-31,207	-48,707	-31,660	-31,711	-18,644	-20,674	-21,160	-29,205	0	-232,202	EUR/Year
Total operating profit (General calculation)	0	0	3,237	31,207	88,742	139,281	133,922	62,349	106,448	80,906	46,209	0	830,068	EUR/Year
Cash flow	-129,408	-189,100	-182,793	37,836	139,713	266,094	311,061	296,090	247,961	192,896	146,138	0	1,130,268	EUR/Year
Cash flow (Discounted)	-129,408	-189,200	-181,200	-47,863	-227,760	41,166	228,269	328,490	378,811	397,288	1,136,443	0	1,130,268	EUR/Year
Discounted cash flow	-142,348	-189,100	-170,246	35,284	161,863	176,267	193,443	166,961	127,243	82,219	61,663	0	463,463	EUR/Year
Discounted cash flow (Discounted)	-142,348	-331,448	-506,796	-478,442	-373,478	198,221	-4,773	161,778	289,011	381,346	442,893	0	463,463	EUR/Year

Profitability calculation – calculation of cash flows and discounted cash flows.

project to reflect different scenarios (best, normal and worst case). Quantities and part number histories can be recorded quickly and easily within the profitability calculation. Thereafter, the BOM calculation is updated and recalculated and included in the profitability calculation.

The dynamic profitability calculation in Teamcenter indicates the expected price changes in percentages for net sales price, material costs and direct labor (for example, wage increases based on forthcoming collective bargaining) and presents them in a clear overview. Considering these factors, the profitability calculation in Teamcenter provides a cash flow calculation and an overview of all indicators at part level, plant level or project level.

Facts rather than opinions - clear, current and target focused metrics
Based on the discounted cash flow, Teamcenter provides various key figures; for example, net present value (NPV), internal rate of return (IRR) and payback (amortization period), which can be used to assess the profitability of projects. By means of the key figures, projects can be compared clearly and directly with each other. In addition to the indicators that can be derived from the discounted cash flow, additional indicators can be determined using Teamcenter in the context of the profitability calculation, for example return on sales (ROS), return on investment (ROI), return on capital employed/total capital (ROCE) and economic value

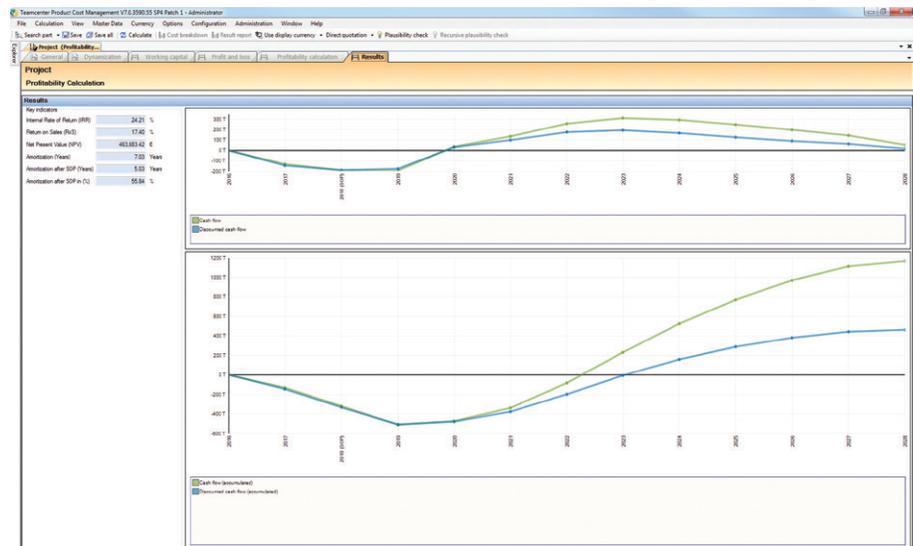
added (EVA). Custom key figures can also be defined and tracked with Teamcenter. Teamcenter provides this data and the results of the calculation as a transparent and clear overview for determining the project profitability.

Multi-project reporting - keeping track
Teamcenter provides the capability to perform the profitability calculation for several aggregated projects and to customize them as needed. You can analyze the profitability of particular customer projects or the profitability of the projects of certain plants. By providing reliable KPIs and the cash flow in a multi-project view you can have an overview of the profitability of different projects and can compare these with

each other. This functionality provides answers to questions such as: How profitable are the projects with respective customers? How many projects are successfully carried out? Is it worth carrying out several projects connected to one another? Are certain product groups still profitable? Do certain product groups need to be subsidized?

Project dependencies and synergy potentials between different projects can be uncovered by visualizing all projects in multi-project reporting that would otherwise have remained hidden. Thus you can not only decide on individual projects but systematically view your overall portfolio.

Meet standards and compliance
Teamcenter supports you in implementing standards and meeting compliance guidelines with centralized master data management and consistent calculation methods. An accurate repetition of the calculations is possible due to the standardization of methods and data in Teamcenter. Calculations can be performed consistently by different individuals or at different points in time. This results in additional advantages in terms of data security and minimization of individual errors. In case of changes



Calculation of indicators based on the discounted cash flows.

within a project, for example, adjustments of the net selling price, quantities or special costs, a direct update of the results is automatically carried out within the profitability calculation. Teamcenter offers revision-safe archiving of calculations through the versioning of project status. Changes in projects can be traceable and comparison of project status is feasible at any time. As a result, Teamcenter ensures efficient risk management across the entire product lifecycle.

Ensure profitability and make secure decisions

In summary, Teamcenter Product Cost Management consolidates the cost-related information and thereby provides a collaboration platform for

cost management in the new product development and introduction (NPDI) phase. You can recognize which investments are profitable earlier with the integrated profitability calculation, based on a central database and merged with costing calculation and planning. You are constantly up-to-date about the risks and potential revenues with the specified options for scenario analysis. The transparency on risk ratios ensures efficient risk management throughout the product lifecycle. Teamcenter provides optimum support for finance in the field of comprehensive profitability calculation with the unique approach of merging calculation, planning and profitability calculation on an integrated platform.

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