The Global Deployment of ERP–Integrated Enterprise Project Management Systems
by Stavros Georgantzis

For a project management system (PMS) to be successfully deployed, it should be properly integrated within the central ERP. Moreover, companies with international operations need to take into account country-specific aspects of accounting and controlling.

This article describes the requirements posed by integrating PMS and ERP systems. It sets out the principal scenarios encountered in practice and analyses special factors that are of relevance to global companies. Both the article itself and the examples and illustrations presented herein refer primarily to the integration of products made by Microsoft (Microsoft Project Professional and Server) and SAP (SAP Enterprise Core Components / ECC), but they can be applied accordingly to other similar systems.

Objectives, requirements and scenarios

The main objective of integrating a PMS with an ERP system is to facilitate the exchange of cost-related information. Such information can include planned costs, planned work, revenues, budgets, hours worked, and actual costs.

Sometimes the focus is not only on expenses and costs but also on schedules. This is the case with maintenance projects scheduled in SAP Plant Maintenance (PM). Operational information can be exported to Microsoft Project and then subjected to detailed planning, the goal being to return the results of the scheduling and resource planning to the PM operations. A similar situation can frequently be encountered in plant construction, whereby the planning and scheduling of material components can be controlled in Microsoft Project.

A further objective of integration is to enable the transfer of progress reports from the PMS to the ERP system. This situation is commonly observed in plant construction and in general throughout the construction industry. The progress information can then be used to compile earned value reports.

To enable the exchange of this data, it is necessary to map objects on both sides to each other, for example WBS elements from SAP Project Systems (PS) to Microsoft Project operations. Creating a mapping between two objects is not an end in itself but is a necessary requirement for transferring cost and performance data.

In general, it is necessary to ensure that the following integration requirements are fulfilled:

- **Master data** from the ERP system is synchronised with the PMS. This includes both resource master data (such as personnel number, cost centre, and activity type) and project-related master data (such as a list of valid profit centres, types of project etc.).
- The second requirement is that a meaningful mapping is determined between project objects. The aim is not to link every detail in the PMS with objects in the ERP system! Such approaches, employing detailed direct mappings, are generally inefficient. Neither is it necessary...
to create 1:1 mappings, as shown in illustration 1. The important thing is to locate the lowest common denominator that enables optimum cost integration.

Illustration 1: Example of two mapping options between SAP and Microsoft Project

**Planned costs and budget**

One of the most fundamental scenarios involving integration is the planning and budgeting process in project management. Naturally, this involves various agents at several levels of the company, with the whole procedure being performed against the background of a combined top-down and bottom-up budget plan.

This process begins during the project selection phase or (depending on the form) within the portfolio management. As for the project and budget decision making process, a distinction is drawn according to the type of project business: for example, with internal IT projects, resource availability and utilisation rates are of central importance, while with customer projects, decision making processes are determined by strategic goals, such as new markets, key customers, etc.

However, the information base is generally quite similar whatever the case: the expected costs and (if relevant) revenues associated with the project must be properly consolidated and made to serve as an input to the budget allocation process. In terms of IT, the following can be determined: PMS systems are fundamental in allocating project resources (work, materials, external services, etc.) to planned projects. The resulting cost (and revenue) results are “recoded” (by fiscal year, profit centre, etc.) and made available to the ERP system.

The cost and revenue planning process does not end with the budget approval. The total estimated cost arising from the project business still needs to be calculated on a regular basis. In particular, companies who are at a greater obligation to publish cannot afford to employ obsolete budget data to compile an assessment of estimated costs.

In practice, the majority of cost planning processes encountered are conducted quarterly. In such cases, the expected cost situation from the PMS (resulting from project monitoring and updating) is updated into corresponding controlling versions of the ERP system.
Actual work
Working hours performed by (project) can be recorded both in the ERP System and in the PMS. The advantage of **time confirmation in the PMS** is that hours can be entered precisely for the operation and the ETC (Estimation to Completion) can be obtained. Such information can be of extreme importance to project managers for the purposes of project monitoring and controlling.

These hours from the PMS may however, be fed into the ERP system for the purpose of cost allocation. This is of importance to the aforementioned cost planning and budgeting process. Care should be taken to enter the correct ‘performing’ cost centre, the appropriate tariff and the ‘paying’ recipient – these are all points that a project manager typically does not know in detail and generally does not wish to know. The recoding and consolidation of actual work in accordance with controlling factors can be performed automatically with the interface solution employed, provided that the master datasets are synchronous.

In contrast, the advantage of **performance feedback in the ERP System** is that entries can be made comprehensively, with respect to both projects and non-project orders. However, calculating the progress of the project from the work performed and (if available) the remaining work is problematic in the case of project business. This is in no way due to a lack of functionality in ERP systems. SAP, for example, possesses an extremely high diversity of functions. However, their systematic implementation requires a high level of detail in the SAP system and necessitates mappings at low individual operation level. This has an impact on working with the PMS, due to the need to ‘import’ ERP rules and restrictions.

However, this connection between performance feedback and project status monitoring, as described above, does not always exist. There are scenarios in which these two aspects are deliberately held separate: expenditure planning and actual work are calculated in separate work package operations, while deadlines and project progress are planned and monitored in a non-integrated module. It is then sufficient to extract actual work in consolidated form into the specific work package operations, or even for project reporting only, irrespective of the project progress.

Actual costs
The costs incurred in a project represent an essential piece of information for a project team. Often actual costs alone are not sufficient. It can be just as important to know what proportion of the budget is already at risk (i.e. ‘has been ordered’). From this it is possible to derive the available, as yet unconsumed budget. Moreover, it is generally necessary to obtain information on orders and invoices (e.g. from SAP MM).

The following procedures are often found in practice:
- Extraction from actual costs and commitments per fiscal year and recipient object (e.g. SAP WBS element). This makes it possible to compile cost reports, in which the actual costs can be compared against the planned costs from the PMS.
- Retrieval of detailed cost information. For example, a project manager may highlight a transaction in Microsoft Project and activate a command to view all associated order items or invoices (for instance in a dialogue or an exported spreadsheet).

In some cases, a detailed cost import is required at operation level along with its (cost) resource mapping, with the aim of conducting monitoring with the same level of detail as with work.
This procedure requires a clearly regulated project plan structure and strict rules governing the non-ambiguity of the resource mapping. To stick with our example: how do you find the correct Microsoft Project resource mapping to an operation from an SAP cost posting? For example, how do you identify – non-ambiguously – the operation and the cost resource from the information: ‘WBS element and cost type’ in the posting?

It is, however, rare that such a level of detail is required. In most cases, it is enough to import the actual cost on the level of cost objects and cost types as an input for project reporting.

**Special aspects of integration in systems to be used internationally**

There are a number of special points that need to be taken into account when exchanging cost and work data in internationally deployed project management solutions.

From the point-of-view of project management, the most important factor to take into account in global use is the existence of a central pool of resources. In multinational projects, human and material resources from different countries are involved. In most cases, teams are then of mixed composition. On the other hand, ERP systems have local accounting requirements. The work performed by an employee is allocated to the relevant national company while outside services and materials are generally purchased in the respective location.

A global integration solution is dependent on customizing and on the evolutional history of the ERP environment. Taking SAP as an example, an optimum situation exists when a controlling area is set up in which the various, generally country-specific, company codes are consolidated. This makes it possible to generate overall projects in the project system: WBS elements can then be set up to bill to a company code, as shown in Illustration 2.

![Illustration 2: Integration with the optimum structure of national company codes](image)

The PMS can follow this structure quite simply by setting up ‘Virtual Mappings’. The interface solution recognises the mapping to the correct SAP cost object (WBS element or internal order) from the project and resource data. In Illustration 2, the SAP PS project can be derived from the project data in Microsoft Project, while the company code and in turn the recipient WBS element can be derived from the resource master data.
The case of ‘organic’ ERP structures

Such a clearly structured SAP system is however quite rare. In the case of many global operations, the addition of purchased companies using ERP makes an overall solution all the more difficult. The scenario in Illustration 3 can be encountered relatively frequently in similar forms. There are several SAP systems or clients that exist together, in each of which there are also several costing areas. The main disadvantage from the SAP perspective is the fact that it is not possible to perform a summary of relevant (project) cost objects for the various company codes from the planner’s point-of-view. What is more, in some cases, using SAP as an example, some sites work within the project system, while others allocate their projects via CO internal orders.

Illustration 3: Integration of complex ERP structures

In such cases, a PMS such as Microsoft Project Server offers an appropriate platform upon which to perform comprehensive planning and project monitoring. Planned costs and hours worked can be distributed to SAP across various systems and cost objects and the actual costs imported back out of the SAP systems. The benefit can be significant because such an integrated solution is considerably faster and cheaper to implement than restructuring an ERP environment.

An integration case such as this is generally implemented with the aid of virtual mappings. The resource master data must bear the information about the SAP System and the type of cost objects used. The logic for identifying the respective cost object is stored in the interface solution.

About the author:

Stavros Georgantzis, Dipl. Kfm., is the founder and managing shareholder of the company TPG The Project Group GmbH. It was under his management that the first connection between Microsoft Project and SAP was developed in 1998. TPG PSLink is meanwhile a world-leading and SAP-certified product for integrating Microsoft Project and SAP. Before setting up TPG The Project Group, Stavros Georgantzis was an independent consultant and seminar trainer as well as a book author and the chief author of the journal, Inside Project. From 1992 to 1994 he worked as a consultant and product manager at Microsoft Deutschland GmbH in Unterschleißheim. Today, Stavros Georgantzis is responsible for worldwide sales, international partner management and strategic relations from TPG to Microsoft and SAP.
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