Enterprise Resource Planning Systems as a Platform for Managing Corporate Environment, Health and Safety Processes Shown by the Example of SAP EH&S

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Abstract
In order to avoid data redundancy and guarantee legally correct processing, all environment, health and safety data have to be permanently available and be completely integrated with business processes. Used as a platform for all operations in a company, Enterprise Resource Planning (ERP) Systems such as SAP R/3 allow integrated handling of all business processes, data and functions. This makes them the ideal platform for managing all tasks in the sectors of corporate environmental protection, industrial hygiene and safety as well as in the field of occupational health. The view on today’s environment, health and safety processes can’t be an isolated view. Streamlining of business processes and overall process modulation are most important for companies. EH&S scenarios have to run inside an ERP solution. Otherwise companies waste streamline-potential and build information islands with redundant databases. Avoiding risks in the environmental area and staying legal compliant is another important key functionality. Integrated systems gives companies the ability to anchor environment, health and safety knowledge and use it transparent at any edge of business processes where it is required. Instead of old organisation structures, where ERP-solutions and EH&S-solution can’t communicate or could have communicated through generic interfaces is not longer up to date and costs to much money in the every-day-business. Also redundant data management is not longer acceptable for employee, who should overlook more and more processes in less time.

1. Corporate Environment, Health and Safety Tasks
Due to the growing number of legal provisions and regulations, the issue of environmental protection management has become a strategic target in many companies. They have recognized that a responsible protection of the environment

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also contributes to a continual company success. In this connection, however, it is not only necessary to minimize risks and costs, but also to improve productivity, product and performance quality as well as the safety of employees.

SAP EH&S as an example for an integrated solution supports the user in achieving the mentioned targets. The SAP EH&S module is integrated in the R/3 System and provides operational solutions for Hazardous Substance Management/Product Safety, Dangerous Goods Management, Industrial Hygiene and Safety, Occupational Health, and Waste Management. With solutions, integrated in the business processes users are, for example, thus given an easy way of managing their safety and environmental data centrally. SAP EH&S not only provides companies a guarantee of working legally compliant, but gives also the advantage of increased productivity.

2. Enterprise Resource Planning (ERP) Systems

The implementation and use of Enterprise Resource Planning (ERP) Systems has been a major issue of the computer industry in the ninetees and will keep its importance. An ERP System is a homogeneously structured software package which ideally will support the overall business operations of a company. This requires covering of possibly all processes in Accounting, Logistics, and Human Resources. To meet this high aim, an ERP System has to provide integrated handling of all business processes, data, functions, and user interactions. Only if this criterion is fulfilled, the user will benefit from the advantages expected by the implementation of an ERP System.

The five largest providers SAP, People Soft, J.D. Edwards, Baan and Oracle hold a market share of together more than 55 % with upward tendency.

3. What Do We Mean by Environment, Health and Safety Software - „EHS“?

Environment, health and safety software within the meaning of our considerations is any kind of software that supports a company in managing safety, occupational health, and environmental protection processes.

The environmental management performance of a company and of environmental management systems are a very interesting topic of discussion on social and environmental policy. However, practical experience in companies shows that still today there is a prevailing demand for direct support of individual operational processes entailing concrete issues and tasks with regard to safety and environmental protection.

For identifying such processes in overall business operations that comprise EH&S task, you have to analyze the logistics chain of a company. At every stage of
operational procedures, starting with request for quotation, quotation and order, that is the sales cycle, to production planning, purchasing of raw materials and services, followed by production and finally warehousing, distribution and transport of any kind of goods, tasks have to be done that are to be assigned to the categories of safety, employee health care and environmental protection.

Figure 1 shows some examples (not complete) of EH&S requirements and functions and their positioning in the logistics chain.

Fig. 1: Examples of EH&S Tasks in the Logistics Chain

Corresponding to market demand and in close coordination with customers, the latest SAP EH&S Releases contains:

- Product Safety
- Hazardous Substance Management
- Dangerous Goods Management
- Industrial Hygiene and Safety including Incident/Accident Management
- Waste Management
• Occupational Health

With data and functions maintained on the ERP System, they are available at all workplaces in a company where they are needed.

All data from business processes relevant for performing EHS tasks are immediately available to the safety and environmental specialists in the ERP system. So far, insular solutions for performing EHS tasks have been implemented in most cases. This will sooner or later cause problems with regard to data consistency, functional availability and adjustability to amendments in laws or in the business operations of a company. But of greater importance is the fact that the immense increase in costs for necessary multiple data maintenance and securing of data consistency as well as for providing and maintaining interfaces to that parts of the business processes that are not integrated in the system have lead insular solutions into a clear dead end. When using an ERP system as a platform for EHS tasks, you will be no longer confronted with these problems.

Especially, environmental management systems require a close integration in master and transaction data. Availability of this data in the environmental management system is a prerequisite for performing superior tasks, as e.g. statistical analyses, reporting, model calculations or visualization of complex contexts and processes. For using environmental management systems as a means for fulfilling strategic company targets and for optimizing business processes under costs aspects (substance flow management, ecobalancing, activity-based costing), the availability of data from Materials Management, Production, and Controlling is a must.

4. Strategic Targets and Functional Portfolio of SAP EH&S

In order to provide an efficient integrated support of EHS tasks within the scope of the ERP platform systems should aim to achieve four strategic targets at the same time:
• Creating an EHS-oriented and task-tailored infrastructure.
• Providing EHS-specific functionalities in the application areas with the highest priority.
• Integrating the application areas into the ERP business process management.
• Providing the infrastructure and interfaces for extending the functionalities by products and services of third-party providers.

For the realization of these targets synergy effects can often be used.
Fig. 2: Strategic Portfolio of SAP EH&S

Fig. 3: Realizing Automatic Material Safety Data Sheet Shipping by SAP EH&S
Also for the SAP EH&S Dangerous Goods Management component, integration allows efficient compliance with legal provisions regarding Dangerous Goods Management for companies of any size. (Figure 4).

Also the Industrial Hygiene and Safety component was developed under the aspect of high integration. The work area is the centre of integration both within the subfunctionalities of Industrial Hygiene and Safety (work area management, risk analysis, site inspection, standard operating procedure, exposure log, incident/accident management) and of the integration into the standard contents- and task-related SAP R/3 modules (material management, plant maintenance, human resources, production planning).

Fig. 4: SAP EH&S Dangerous Goods Management as part of the Supply Chain
Fig. 5: The Work Area as Integrative Center of EH&S Industrial Hygiene and Safety

Fig. 6: Occupational Health: medical Service with use of HR master data, time management data and industrial hygiene exposure groups
For ecobalancing, waste and emission streams are of major importance when considering inputs and outputs of business operations.

**Waste Management: a customer example**

![Waste Management Diagram](image)

Fig. 7: Waste Management – quantity and cost tracking

**Bibliography**


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