Deutsche Börse AG – case study ASCOS (Asset Controlling System)

Integration of ARCHIBUS/FM and SAP R/3 Modules PM and HR

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The original German text version of this case study appears on www.korasoft.net

In many big companies it's difficult to quickly answer questions such as "What's our square footage?" "How much furniture and equipment do we have, where are they, and how are they being used?" And perhaps most importantly, "What does it all cost?"

In the bank and insurance sector, the total infrastructure costs for office add up fast and cost per seat can be quite high. The use of isolated solutions and overlapping processes within the area of infrastructure management can result in information that often reflects a higher use of resources than is actually the case.

Deutsche Börse Group AG (the German Stock Exchange, Inc.) uses ASCOS to eliminate the problem of redundant data retention and enable efficient control of company resources: personnel, space, furniture and equipment. Because of this, many companies have the potential to yield large savings.

The integration of CAFM and ERP systems leads to a solution that uses the basic data with the best-chosen software application. The ASCOS solution uses space data with a graphic application; personnel-data is handled by the HR module from SAP R/3.

The goal of integrating separate CAFM and ERP systems is to achieve a solution in which the critical data is maintained in the appropriate application, and shared data can be accessed from either application. In the ASCOS project, spatially referenced data are drawn on standard CAD drawing files and managed in the ARCHIBUS/FM application. Personnel information is pulled from the HR module by SAP R/3. Thanks to the synchronous coupling, the data are available directly in both programs. Data exchange takes place with an online interface in real time. In order for this all to happen, a clearly defined relational hierarchy diagram of the data structures is essential.

Personnel

The company's enterprise personnel data is managed and maintained with the personnel administration component from the HR SAP R/3 module. The real-time update of data is transparently passed to the CAFM system. With a customized functional module, the data records will transfer from SAP R/3 to ARCHIBUS/FM, where final changes can be reviewed. It is the personnel managers' role to manage the specific employee information required. The specific information accessible from within the SAP R/3 is defined in the HR BAPI (Business Application Program Interface) function for personnel.

Functional Location

The business object "Functional Location" is an organizational unit of logistics, whereby the objects of an enterprise can be maintained and arranged according to function, process-oriented, or spatial criteria. In this case a spatial arrangement was made.

The assigned hierarchy is specified in Table 1.

	Functional Location	Structural Numbering	Description
1	Country	DE	Germany
2	City	DE.ET	Ettlingen
3	Building	DE.ET.E1	Entory Home
4	Floor	DE.ET.E1.01	Level 01
5	Room	DE.ET.E1.01.201	Open Space
6	Seat	DE.ET.E1.01.201.209	WS 209

Table 1: Functional Location Structured According to Space

All Functional Location areas have been organized with the assigned spatial hierarchy. This is where additional space information is managed. The classification system is designed to help users find locations quickly and easily.

Functional Location areas are tracked based on their structural numbering. These structural

numberings are in turn based on the spatial hierarchy. For this, the system automatically assigns Functional Locations hierarchies as the function locations are created.

Equipment
The Functional Location in SAP R/3 describes the room where equipment is located. The Equipment in SAP R/3 represents the object that fulfills the technical task. By definition, the business object equipment is an individual, physical article that is to be maintained independently.

The internal numbering system of SAP R/3 was used to identify the Equipment. Serial numbers are maintained among other fields of information. With these data points, equipment can be managed not only as individual articles, but also as physical inventory. Now materials data, as well as inventory and customer information, can be managed. In the integrated system, two different kinds of equipment are being tracked: technical hardware, such as PCs, and furniture. All equipment records are classified with the SAP classification system.

ARCHIBUS/FM
ARCHIBUS/FM is a complete, integrated suite of applications that addresses all aspects of facilities and infrastructure management. The system is fully integrated with industry-standard AutoCAD®, ensuring that changes made to drawings are simultaneously reflected in the ARCHIBUS/FM database. With the integration of AutoCAD, changes in the drawings are immediately effective in the alphanumeric database. The structuring of the alphanumeric data occurs in tables in a relational database. Through the real-time integration the data are immediately transferred to SAP R/3.

To synchronize the data changes with the PM module of the SAP R/3 system for every different asset (like space, equipment, furniture), only one single source can be used. To make this work, SQL database views were developed. By doing so, the different field descriptions between the ARCHIBUS/FM database and the SAP-BAPIs can be mapped from one system to the other. Configuration options are available to control data ranges for transferred fields and potential data conversions if necessary. Naturally, the relational logic of the SAP BAPIs must be maintained. Validating fields constraints and/or structural changes are still enforced.

Relational Objects
Apart from the collection of the object characteristics, the relationships between the objects are very important. For this integration project, overviews of the asset objects being managed in the ARCHIBUS/FM application are shown below (Fig. 1).

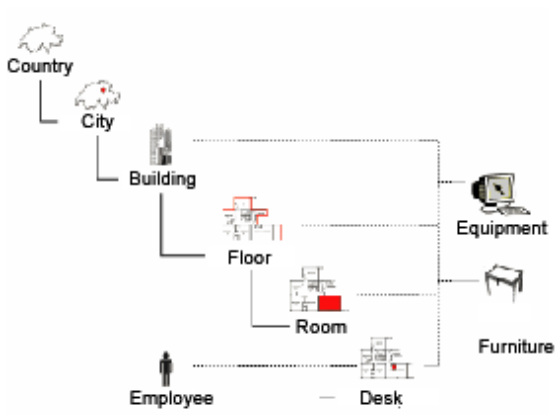

Figure 1: ARCHIBUS/FM Object model

Because of the hierarchical structure of the space objects, a top-to-bottom structure evolves for the Functional Location. In this structure, it is possible to assign equipment to the building, building-floor, and/or building-floor-room level. The relation between employees and workstation—which is the lowest region of the Functional Location-Order—will be saved in the HR database. This input occurs through ARCHIBUS/FM.

Data Checking as Synchronization Run
Before the integration, SAP R/3 and ARCHIBUS/FM were operating as two independent systems. With the integration, synchronization is accomplished, so that after a successful run the object quantities of both systems are identical. This synchronization run can be used later in order to re-establish the integrity of the data after protective measures. With the synchronization process, all objects of both systems are compared with one another. The comparison results in four kinds of subsequent operations. If two objects are identical, then no operation is necessary. Objects only in the source system will be created in the target system. Objects that exist only in the target system will be deleted. Objects whose characteristics are different will be updated in the target system. The source system for functional locations (buildings – floors – rooms – workstations) and technical objects (equipment and furniture) is ARCHIBUS/FM. The source system for personnel data is SAP R/3.

Use
With ASCOS, data can be tracked inside the CAFM system and sent in real-time as core

data to SAP R/3. There is already commercial information (such as acquisition costs, book values and operating costs) present besides the personnel data. The detailed core data are the basis for the reports in SAP R/3. The combined technical and bookkeeping information makes it possible to make informed decisions for the more efficient management of the company's real estate and facilities.

Project Team

The team for the conversion of ASCOS was arranged from the following specialists: The process and system modeling was done by the Ullrich Klose/Team AG. Dr. Alois Hornig/Team AG did the customizing of the PM module. Advisers Dr. Dirk Ranglack and Peter Kolbe transformed the design and implementation of the SAP Interface. Project leader is Patrick Laux/Deutsche Börse Group.