

# REQUIREMENTS OF ERP SYSTEMS OF UNIVERSITIES IN EUROPE

Uwe Blotevogel, Steffi Engert

Centre for Information and Media Services, University of Duisburg-Essen, Schuetzenbahn 70, D- 45127 Essen, Germany,

[uwe.blotevogel@uni-due.de](mailto:uwe.blotevogel@uni-due.de)

[steffi.engert@uni-due.de](mailto:steffi.engert@uni-due.de)

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## 1. EXECUTIVE SUMMARY

At present, two processes are driving the fundamental transformation of universities: the transition to Bachelor and Master courses throughout Europe („Bologna process“) and the introduction of enterprise management criteria and methods in university finances. In Germany, the latter was initiated in the framework of the Excellence initiatives.

Formerly, universities „belonged“ to the state. The state assigned to them an annual budget. In the last few years, the political view of the role of the universities has changed drastically - also because of the need to economise - and the universities were „released into freedom“. This means especially their economic freedom. Their budget is assigned to them globally, and they are responsible to manage their finances efficiently and in a transparent manner just like any other economic enterprise.

It has to be asked, however, if the processes in place and the existing staff handling them are sufficiently prepared and if the IT systems, specifically the ERP systems in the universities are aligned to manage these transitions successfully.

This paper will, therefore, discuss the requirements of modern ERP systems in universities and show which challenges are involved for universities and software providers.

The transition from the traditional fiscal (cameralistic) system of accounting to double entry accounting based on balance sheets is quite a challenge for IT systems and their developers. A new generation of software systems adapted to the integrated processes in the universities is under development. New software systems for staff budget planning enable projections for several years into the future and, therefore, improved planning. In order to govern, their boards (university councils) expect from management statements of financial condition equivalent to those available to executive boards in private enterprise. These kinds of system have still to be introduced in universities and configured to their specific requirements.

Distinguished companies such as SAP and HIS GmbH come up with their own new solutions. In addition, new companies such as Datenlotsen from Hamburg enter the market in cooperation with potent partners such as IBM.

The University of Duisburg Essen is one of the pilot partners of HIS-GmbH in developing a new software generation HISinOne, implementing the requirements of commercial accounting, assets accounting, budgeting and annual balance sheets.

In this HIS-GmbH cooperates with the award-winning Spanish company OpenBravo, which provides the OpenSource ERP-software OpenBravo.

The roadmap schedules the main development of this open source "resource management" for 2009/2010. This includes language localisation, national tax rules and certification for German accounting bylaws. 2011 will see the first product deployment.

## 2. Innovation-Drivers (General Conditions)

In this section, the innovation drivers responsible for the new requirements of integrated system „landscapes“ in German universities are identified and their effects on the university are examined.

By changing over to Bachelor-/Master courses study conditions have become standardised and transparent as never before. The normative force of the credit system and the heightened tendency of universities towards integration has created great challenges for the universities and their traditional system landscapes. Existing processes and systems proved completely inadequate to meet the new demands.

In addition, positive competitiveness among German universities was unleashed by the „Excellence initiative“ launched in 2006 by the Federal government and the Länder to advance science and research, especially elite research, but also a higher level of quality across the board in German Higher Education. These efforts to strengthen Germany as a scientific world location and its international competitiveness were complemented by specific measures in various Länder. In Northrhine Westfalia, the government went very far in breaking with the traditional system: it passed a new law on the universities in 2004, the „University Freedom Act“. Its main points are:

1. The universities are legally and professionally autonomous organisations whereas before they formed part of the state and were subordinate to the Ministry responsible for higher education. The supervision of the Ministry is much reduced, the universities themselves define their professional orientation
2. A new type of body was introduced for leading the universities: the university council, with some of its members from outside the university (e.g. industrial leaders and others).
3. Bureaucracy is cut down and replaced by direct responsibility.

Direct responsibility means also more economic responsibility for the universities. This is most visible in the „global budget“ and the related transition from public sector accounting (cameralistic accounting) to commercial accounting (double-entry). In the framework of the global budget of a university there is a nearly complete mutual coverage of all available funds. The scheme for job-appointment, managed by the Ministry has been abandoned, though small remnants of it are still in force in relation to the civil servants. Another important change is the renunciation of the principle of annuality in planning and drawing up future budgets. Now, funds can be transferred to the next year. This also means, it is no longer necessary to spend all remaining funds at the end of the year, lest they are not forfeited. There is another systematic change: 20 % of funds are allocated according to parameters of performance, such as number of graduates, number of doctorates and amount of third party funding.

Yet, in the transition of global budgets, the underfunding of jobs according to the former scheme of appointments has been preserved, so that not all of the existing staff posts are fully funded.

All these challenges have to be taken up by the universities in their entirety. In the following section, effects of these changes will be examined on the level of particular organisations in the university.

## 3. Challenges to Be Met by the University

From direct responsibility for the universities follows the necessity to act in a similar way as do economic enterprises. This enforces a re-alignment of all business processes.

This has immediate effects on what is demanded from staff members, the systems employed and their functionalities. The systems used traditionally do not fulfill the necessary requirements.

For example, it has become customary recently in Germany to divide the processes in a university into „campusmanagement“, which in essence covers the student life cycle and into resource

management, covering the financial processes. This has brought a number of new solution providers on the market, for example the company Datenlotsen from Hamburg.

Also the German Technical Universities („TU9“) conducted a much respected market analysis, which came to the conclusion that it is imperative to introduce new integrated processes in the universities, These processes are supported by new integrated software products, which involve great challenges for future staff member profiles.

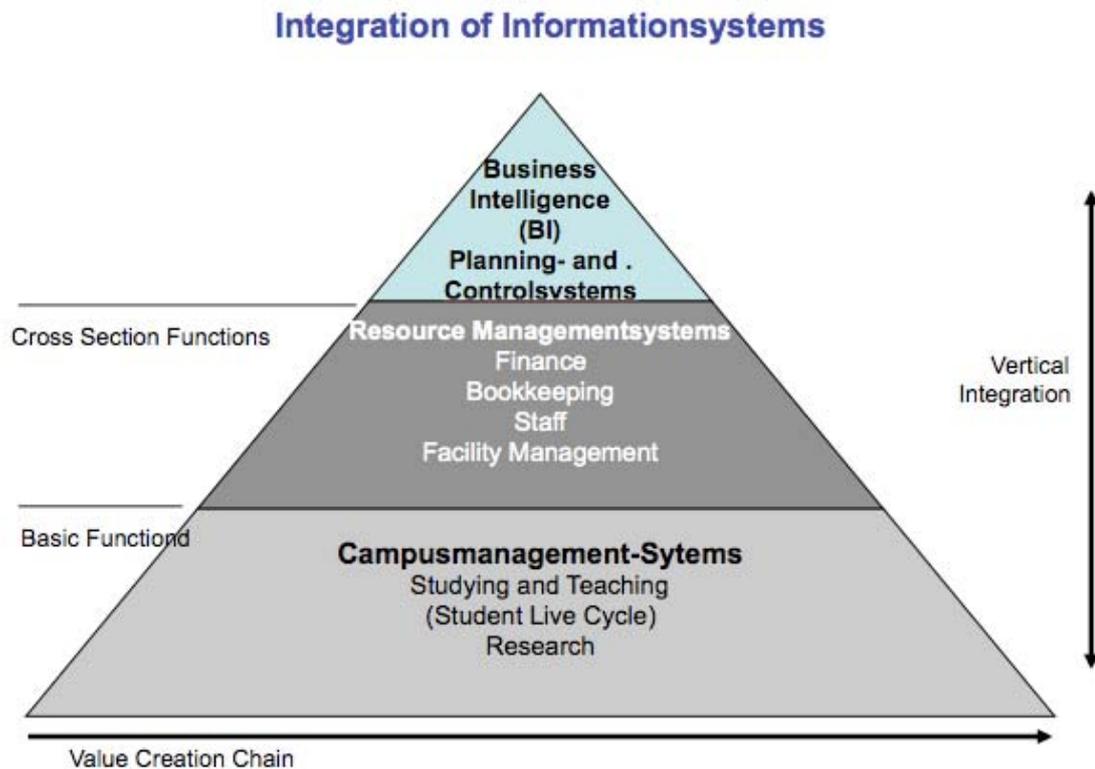


Fig. 1: Integrated Informationpyramid

In the last analysis, requirements on IT service departments like the CIM are changing drastically. A paradigm shift in requirements on staff, systems and integrated processes takes place simultaneously with the need to introduce standards like ITIL and to build an IT-Service management working on the basis of Service Level-Agreements (SLA), cost and activity accounting and detailed tracking of time and expense for IT-services and IT-projects.

In the next section deals with the objectives of internal budgeting and the introduction of budgeting for service organisation.

#### 4. Introduction of Budgeting in the University

The objectives of internal budgeting in the university are:

- To increase the autonomy of decentralised organisations by transferring financial responsibility, including staff expenditures

- To increase efficiency by relying on direct responsibility of decentral units, their orientation to problems and information advantages

Concentration of leading bodies of the university on strategic decisions

- Loop consisting of:
  - strategic objectives,
  - performance agreements with all units of the university
  - objective-oriented funding
- decentralised (autonomous) management of financial resources
- Evaluation/Accreditation
- Controlling

Necessary cost reductions can be implemented in a „milder“ manner on the immediate level concerned

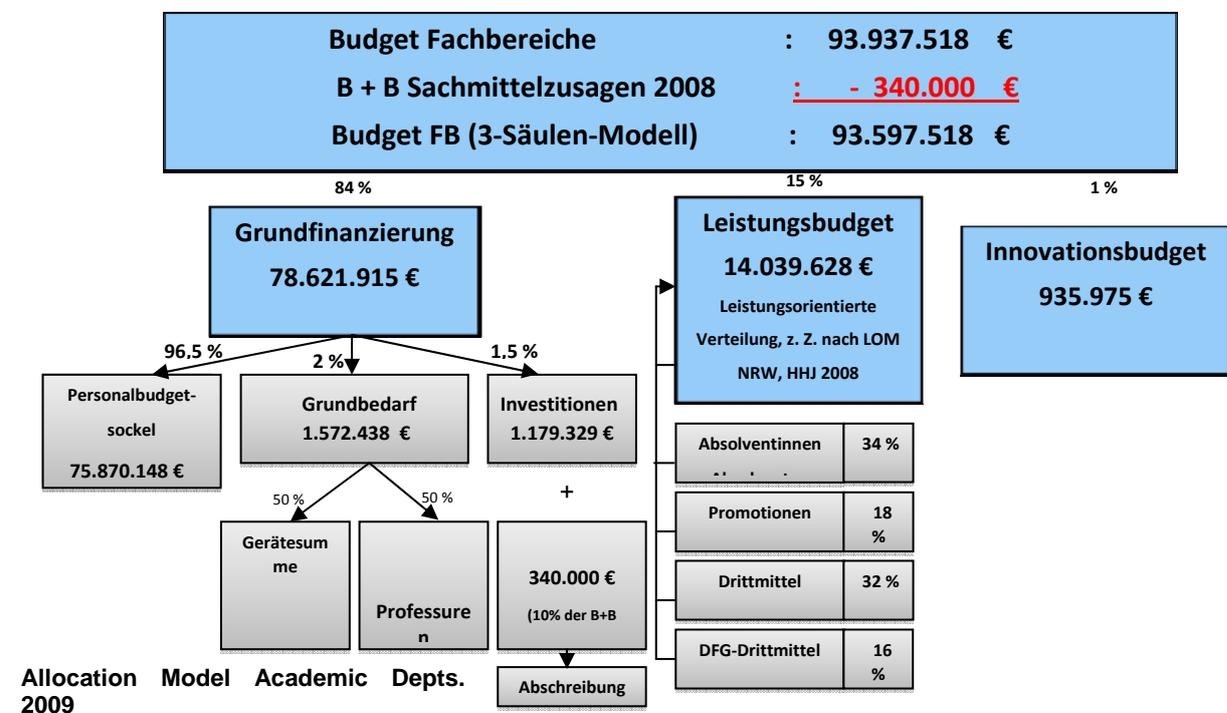


Fig 2: Budgeting of Academic Departments 2009

From the table it can be seen that 15% of the budget are allocated to the academic departments according to a performance oriented allocation of funding.

#### 4.1. Budgeting of Service Organisations

Just as the academic departments, the service organisations are also budgeted. Here it is still necessary to introduce performance-related criteria.

## Budgeting – Aspects of Economic Efficiency

Economic Efficiency	Economic efficiency by competition and market relations	No Budget → Funding of the performance unit by price/income under conditions of Competition with external service providers.
	Economic efficiency by recording performance	Time and motion studies methods: Expertise Mummert & Partner on university administrations in NRW 1992 Examples: Im-/Exmatriculation and employment
	Economic efficiency by - Transparence - Benchmarking	<ul style="list-style-type: none"> <li>• Key data on In- and Output („Products“)</li> <li>• Comparison of expended time</li> <li>• Comparison of organisation („Benchmarking“)</li> </ul>

Fig. 3: Budgeting of Service Organisations

The „Basic financing“ of a service organisation at the UDE consists of:

Staff expenses according to job scheme (minus underfunding)

- + budget material expenses (lump sums for travel, training, ...)
- + budget investments (average values)
- + innovation budget (according to the performance agreements with the rectorat)

= Budget of Service Organisation

Still unsolved is the demand to stimulate more dynamism and competitiveness by introducing „performance-oriented funding allocation“ according to performance indicators as it is in the academic departments.

### 5. Requirements of Change Processes

The requirements on campusmanagement- and ERP systems have resulted in enquiries for Best-Practise solutions with existing systems, for example SAP, as a system much utilised in the financial sector, but also in a number of universities. In Germany a number of workgroups have been formed in the framework of DINI (German Initiative for Network Information) and the ZKI (Centres for Communication and Information Processing) to look at reference processes and intrduction scenarios.

Together with its partner, the HIS GmbH, Hannover the UDE, too, looks for interesting European partners. For example, HIS-GmbH will develop their new integrated informationsystem HISinONE in part together with the Spanish ERP system provider Openbravo.

One example of a planning and control system for staff planning is the product axion.PAB by ion AG. This is used at the UDE for allocating staff and planning staff budgets. This is a high performance, complex software for budget management, -planning and -controlling, originally not developed for universities. Far-reaching adaptations for the needs UDE have been implemented to enable users,

particularly in the decentral departments to work comfortably and intuitively with the software. Axion.PAB makes it possible to manage budgets and budget units on different levels („budget unit tree“). It provides integrated staff planning and staff cost calculation options including „scenario analysis“ (simulation of events). Staff costs can be calculated across years for long-term planning and calculation may be based on average or actual costs

## axion.PAB

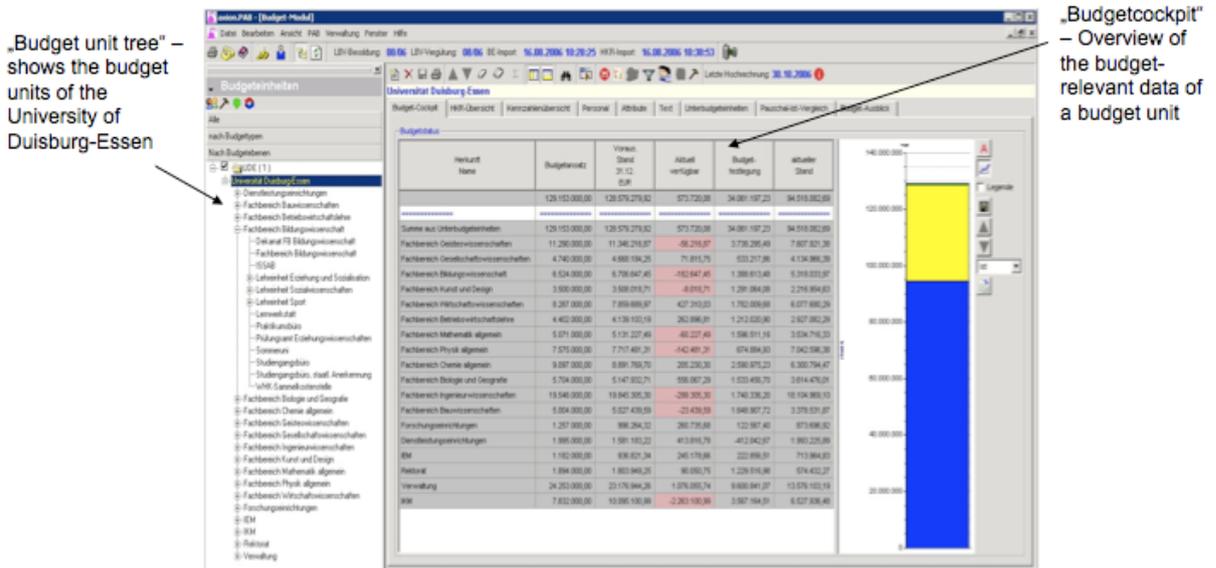


Fig. 4: Budgettree of the UDE

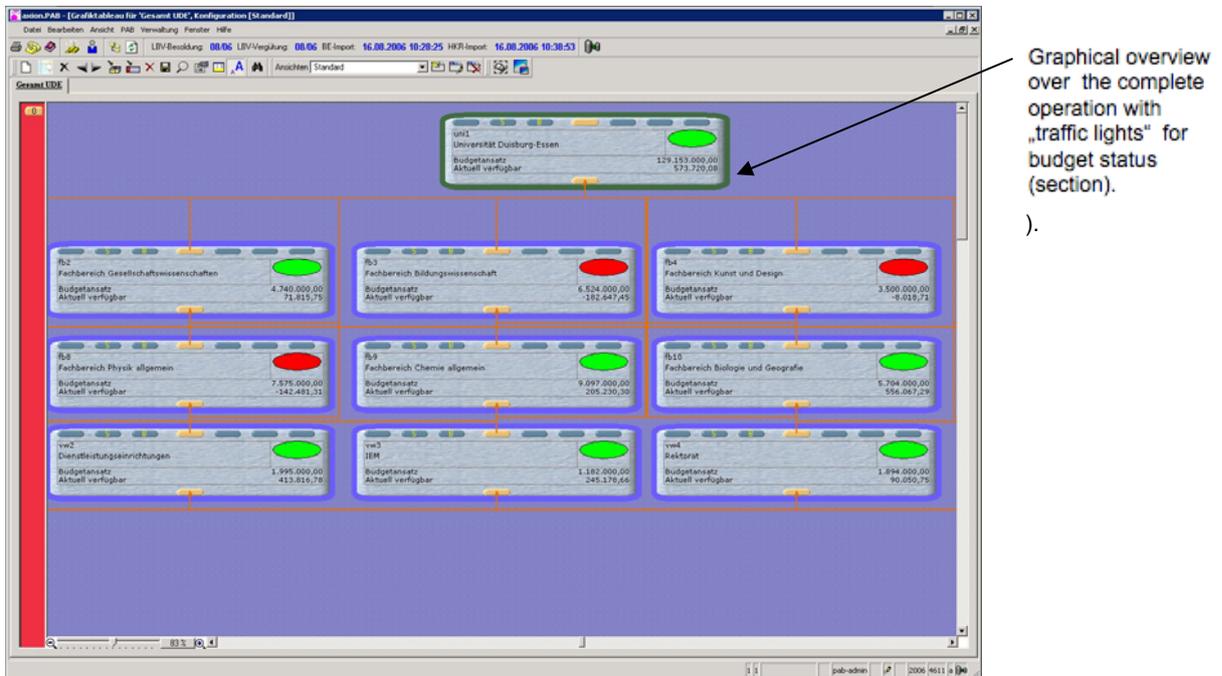


Fig. 5: Graphical View of Budget Status (Traffic Lights)

## 6. Conclusions

The University Duisburg-Essen is faced by a great number of detailed problems such as different ways of handling of budget and third party funds. The central administration is under a lot of strain because of interface problems between the departments for budget and staff. The decentralised units have adapted well to the new system. They have taken on the intended increase in direct responsibility. Great expectations are focused on the new software generation HISinOne by the HIS GmbH. Recently, the university has appointed the vice rector for studies and teaching to coordinate the relevant campusmanagement processes.

The IT-Organisation of the university (CIM) also has to embark on far-reaching adaptation processes. From the changed demands follows the need for changing its organisational structure and its organisational processes. A new generation of staff members seems to be called for. In the framework of its IT governance it has to work towards a much more efficient utilisation of its resources. It has to build an effective IT-servicemanagement based on ITIL processes, SLAs and performance agreements.

A very high degree of personal responsibility is required by the director and his senior staff.

For Best-Practise examples and reference processes concerning introduction and operation of campusmanagement and resource management systems, the UDE would be pleased to find interested partners from universities, consulting and software companies.