

EduBITE- Educating Business and Information Technologies

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Abstract: The development of multimedia learning materials is expensive and very time consuming. In spite of these high production costs most materials are reusable only to a very small extent. Project results are often lost in obscurity. This paper demonstrates a cooperative approach of several Austrian universities and polytechnics to produce, configure and reuse multimedia content in the field of Integrated Business Information Systems. A recently founded association called "AKIT" may be used to distribute this content on a nationwide scale.

Introduction

Knowledge concerning "Integrated Business Information Systems" (IBIS) is focused in most computer science studies and spans a variety of topics from the conceptual business process modeling to the implementation details using various Enterprise Resource Planning (ERP) Systems. This knowledge is also currently taught at several universities and polytechnics in Austria focusing on different aspects of IBIS. Learning takes place exclusively in the form of face-to-face courses using individual teaching and learning materials (slides, books, scripts, exercises). Thus far the continuous use of case studies and the connection of background knowledge to such case studies have rarely been practiced in order to understand the universe of discourse. Overtaxing individual teachers' time to prepare sophisticated (multimedia) course materials and the costs of staying up to date with current software versions are the main reasons for this.

A group of university teachers realized this gap and in April 2001 joined an association called *AKIT* (*Akademische IT Lehr- und Lernplattform*, see also (AKIT)) spanning more than 12 Austrian universities and polytechnics. The main objective of AKIT is to benefit from the synergies available within this network in the teaching process. AKIT members discovered that their teaching objectives in the area of IBIS are mostly similar and they aimed to reuse teaching materials and jointly develop virtual courses based on well prepared case studies. This task, however, could not be achieved immediately. Teaching and learning materials as well as case studies were inhomogeneous, too strongly coupled or demonstrated a lack of continuity. Multimedia materials were not available at all, the way towards virtual classrooms was not feasible.

Having this background five AKIT members, among them universities and polytechnics, designed a project called EduBITE (Educating Business and Information Technologies) to overcome these problems and build up a common repository of multimedia IBIS materials as well as an environment for the customizable usage of these materials in different courses. They chose a situated learning approach focusing on a manufacturing case study enterprise called DeBITE (Demo for Educating Business and Information Technologies). EduBITE started in summer 2002 and has a running time of two years. It is funded by the Austrian Federal Ministry for Education, Science and Culture (bm:bwk).

Project Objectives

EduBITE tries to compensate the deficits mentioned above in the following respects:

- *Teaching Materials:*

Topics relating to 'Integrated Business Information Systems' such as conceptual business engineering, enterprise modeling, the support of business processes implementation or the customization of Enterprise Resource Planning (ERP) systems are prepared for multimedia use based on a case study enterprise (DeBITE). The produced learning modules focus on computer science students as well as business administration students. They cover a four hour/week conventional course in the field of IBIS and will be evaluated over one semester in at least two courses at two different universities or polytechnics.

- *Instruments:*

Instruments are developed to categorize developed materials according to the IEEE international metadata standard. The meta-indexed learning objects can so be used to construct specific lessons according to special target groups or certain learning processes. Instruments for the configuration of course materials using learning process models are also developed. These guarantee adaptation, enhancement and interoperability of the developed multimedia material.

- *Communication Platform:*

The output of the project is aimed to increase the reuse of available multimedia materials in the IBIS context. The AKIT association mentioned above will be the framework to gain access to the multimedia materials and to improve and enhance them. Its members also constitute the market for the sustained use of the project products.

Project Content

EduBITE develops multimedia material using business processes as a basis for the business information system, investigating business process properties, their co-operation on various levels and their technological support. Often students are not able to bridge the gap between complex business processes in reality and the abstract information systems supporting them. But particularly abstraction mechanisms should be comprehensible for students. Using the case study enterprise DeBITE, this process of abstraction should become clearer and more comprehensible, while at the same time making much basic background knowledge accessible. The target group for using the multimedia IBIS material in the first stage comprises about 2200 students per annum.

The following topics are to be dealt with in depth in EduBITE:

- The case study manufacturing enterprise DeBITE
- Business Engineering and Enterprise Modeling
- Architecture of Business Information Systems
- The architecture of ERP Systems, including related topics such as customizing and integration
- Sales and Distribution
- Materials Management
- Production Planning
- Financial Management and Controlling

Usability is guaranteed using specific style guides focused on by the EduBITE partner from Vorarlberg. Students will learn in the use case context of DeBITE, which enables a situated learning approach.

Students' learning objectives as well as their prior knowledge differ from course to course. Accordingly, learning processes and the required learning materials vary (e.g. for computer science students, business administration students, high school students, etc.). EduBITE develops a tool that enables to define metadata for learning objects, to declare learning processes and to configure individual multimedia course materials based on the learning object repository according to learning processes. This *EduBITE-Configurator* also allows the export of course materials according to a learning standard (see also (LOM), (SCORM), (IMS)), guaranteeing interoperability with various learning management systems.

The EduBITE Configurator will be realized by the EduBITE project partner from the University of Vienna which has just completed substantial preparatory work in this tool area. The Configurator will contain a modeling component in order to graphically describe the learning processes. The allocation of smallest learning units to the according part of the training process will be supported. With its functionalities training processes can be easily modeled and training material can be professionally managed, but the main focus of the Configurator is the individual course production based on the idea of Learning on Demand. A specially designed interactive questionnaire will capture the actual knowledge demand of the focused target group. Based on this information the Configurator will automatically, based on reference processes, compose the required course. The course description will be in a standardized metadata format in order to assure compatibility to learning management systems through export/import interfaces.

One of the main questions coming up in this context is the warrantee of pedagogically right provision of course materials. To deliver a solution to the question of automatically building of courses from "instant" learning units and still having didactically right learning processes will be one of the biggest challenges of this project beside the technical realization of the Configurator.

During the end phase of the project the developed multimedia materials will be evaluated twice in typical project partner IBIS courses. WebCT will be used as the learning management system for these evaluations. Blended learning will be realized. Interaction and communication elements as well as group work will encourage learning during online phases.

After the evaluation, a rollout of project results to interested AKIT members is planned using the association as a multiplicator for the project results.

Project Architecture

The project architecture can be sketched as follows in figure 1. It also allows a continuous extension and update of the business process models of DeBITE by incorporating case studies from other enterprises as well as by adding further basic knowledge. Through meta description of the learning units the Configurator can always pick up and bond the demanded contents to a multimedia course. The use of other learning management systems besides WebCT is also possible as far as learning object standards are supported.

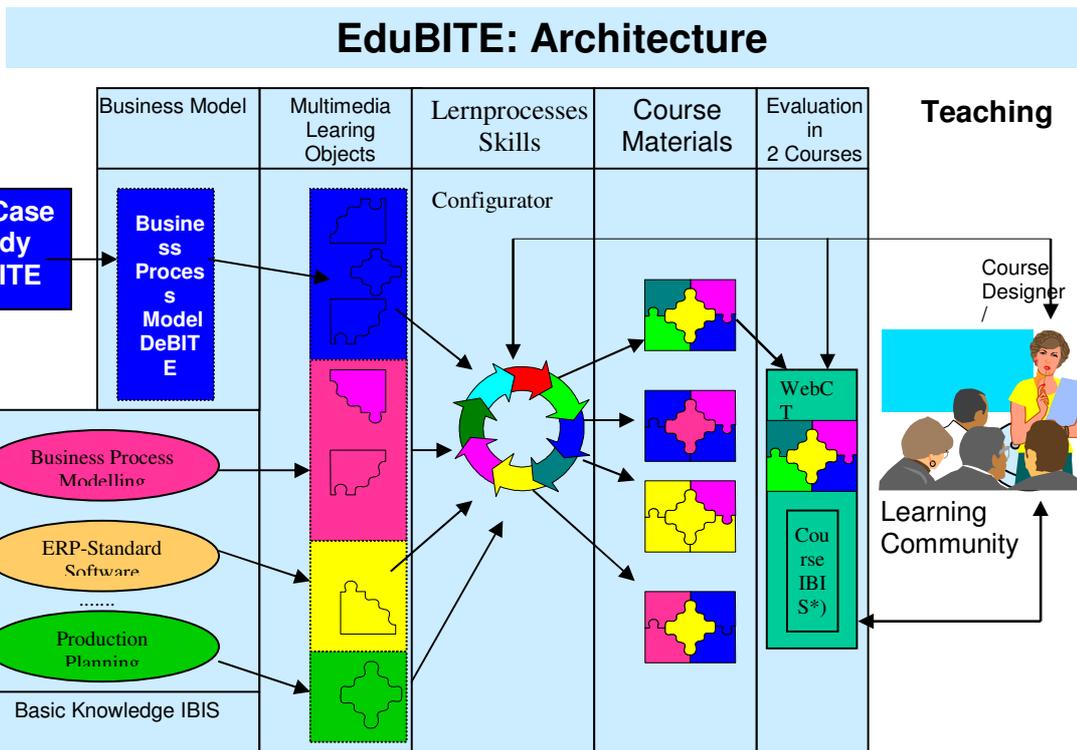


Figure 1: EduBITE Architecture

Resume

The production of didactically well designed modular learning materials is an important precondition for a successful application in virtual learning. But this mostly goes beyond the capacity of individual teachers, and thorough learning object engineering is not enough to assure project success. EduBITE adds to the engineering process also a circumstanced approach using the extensive case study example DeBITE. It enables individual course configuration and also places the produced multimedia learning material in a co-operative environment. The AKIT association thus guarantees that the multimedia material outlives the duration of the project as well as it encourages future expansion and extension.

References

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