Teaching the Transformation from Classical On-Premise towards On-Demand Enterprise Systems

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1 Introduction

Enterprise Systems, specifically integrated information systems such as Enterprise Resource Planning, are heavily used in practice. However, teaching concepts for these system areas haven't been established and standardized yet. When it comes to the practical perspective of enterprise systems, there is a lack of adequate business scenarios and detailed use cases.

Furthermore, enterprise information systems, and in particular ERP systems, are in an ongoing transformation process. For example, the extended ERP concept with systems supporting Customer Relationship Management or Supplier Relationship Management, evolved in the last decade. Another important example is the rise of Software-as-a-Service based solutions in the enterprise systems area. The innovative technology concept and delivery model Software-as-a-Service (SaaS) is expected to have a major impact on enterprise systems from a technological and business perspective. Successful enterprise applications have already been provided, for example, in the CRM area. However, from a research and business perspective it is still unclear if it makes sense to provide full-fledged ERP capabilities as Software-as-a-service, or if one should instead focus on light-weight satellite processes. Yet, in a time when buzz words like cloud computing can be found almost everywhere in the media and the scientific literature, this manifesting paradigm shift towards internet based software should not be ignored in teachings of enterprise systems anymore. Our teaching concept wants to address this gap in teachings and help our students to grasp the impact of these ongoing changes in detail.

The teaching of enterprise systems underlies several challenges. First, students should learn the conceptual principles of enterprise systems in combination with

real-world examples of one or more commercial products. Second, the students should become also aware of the fact that enterprise systems are in a constant change and transformation process as mentioned above. Therefore, students should learn how to deal with this change and transformation process not only in theory but also by analyzing concrete practice examples.

This paper explains a teaching approach we are pursuing at our university to address the second challenge. The teaching concept described here builds upon previous work in a variety of fields. Boyle (2007) describes a general curriculum for teaching ERP in higher education. Watson and Schneider (1999) address ERP systems education and favor a curriculum that gives students the opportunity to gain hands on experience.

The latter part of this paper, which specifies the case-study, also draws a great deal from the work of Daun and Theling et al. (2006), who describe a blended-learning scenario in the field of ERP systems. Also, the work of Hawking and McCarthy (2000), who evaluated the potential advantages of industry collaboration in ERP education, supplied us with valuable input for our case-study. But, few other authors have described a teaching approach which makes use of on-demand platforms. Instead, one of the main obstacles in teaching ERP systems is still the high acquisition and maintenance costs of such systems. In addition, such systems usually require professional technical knowledge, which is usually not available at educational facilities (Fernandez and Murphy et al. 2000). We address this problem by choosing a cost free on-demand platform that requires no additional administration effort from our side.

The paper is structured as following: Section 2 provides an overview of the Enterprise Systems course given at our university for Master of Science students. Section 3 explains the case study in detail including the business case, organizational and problem sets including the input and sources we provided and the list of expected deliverables. Finally, section 4 summarizes the work presented in this paper and lists our plans for future teaching activities in the enterprise systems area.

2 The Enterprise Systems Course

The Enterprise Systems course targets Master of Science in Business Informatics students. The course is a fundamentals module which introduces the overall topic. Specialization courses are offered to provide an in-depth look into specific areas of enterprise systems. The course builds on the Bachelor in Business Informatics educational content. As part of the Bachelor education in information systems, the students have already learned the basics of integrated systems, specifically ERP.

The Enterprise Systems course is designed to provide the participants with comprehensive insight into concepts, methods, tools and the current practice of information systems used within enterprises. The course starts with an introduc-

tion in the basics of enterprise systems, and is completed with detailed coverage of the three major classes of such systems. It focuses particularly on integrated operational systems such as Enterprise Resource Planning (ERP), information- and decision-centric systems such as Business Intelligence (BI) and people-centric systems such as Groupware or Enterprise Portals.

The next step addresses the relevant interdependencies and potential synergies between the different classes of information systems. Finally, the students are made familiar with current trends in enterprise systems and their impact on businesses.

The teaching concept followed in the course consists of literature analysis, a foundational lecture split into five modules with presentations by guest speakers, and a case study. The literature analysis is carried out by the participants as a preassignment to the course. The actual teaching contents of the course are broken down into five modules as visualized in the next figure.

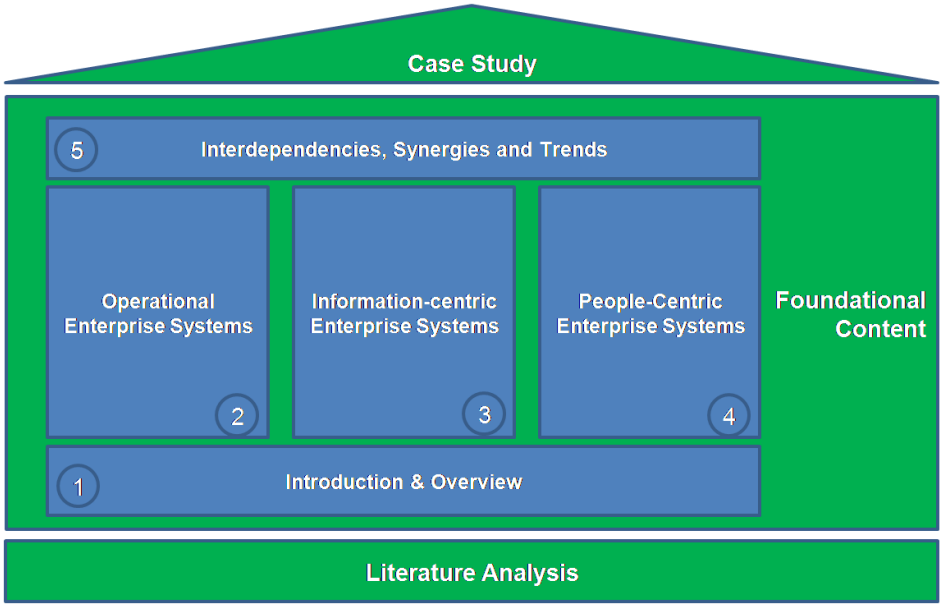

Figure 1: Teaching Concept & Course Structure

Each module represents foundational content serving as an introduction and later provides additional background knowledge. The contents of the foundational modules are summarized shortly in the table below.

Table 1: Overview of course content

Module	Content
Introduction	- Definition - Motivation - Overview Enterprise Systems - Software Market Overview - Examples
Operational Enterprise Systems	- Enterprise Resource Planning - Product Lifecycle Management - Supply Chain Management - Customer Relationship Management - Supplier Relationship Management
Information-Centric Enterprise Systems	- Master Data Management - Information Integration - Business Intelligence & Business Performance Management - Enterprise Search
People-Centric Enterprise Systems	- Computer Supported Cooperative Work (Groupware) - Enterprise Content Management - Enterprise Portals - Enterprise 2.0
Interdependencies, Synergies and Trends	- Examples of Interdependencies and Synergies of Breaking the Silos - Software-As-A-Service Platforms and Enterprise Systems

Presentations by guest speakers compliment the foundational lectures by providing a comprehensive look into a selected business function and the use of enterprise information systems within. Thirdly, a case study is included in the teaching concept. The goal of the case study is for students to understand enterprise systems in detail and to get a basic impression of how to design and implement business cases. Specifically, the challenge of enterprise system's current transformation, as mentioned in the introduction, is addressed here. Further details of the case-study will be described in section 3 of this paper.

From a workload perspective, the overall course has 6 ECTS points (equal to 180 hours of students work), distributed into 30 hours of literature analysis, 30 hours of lecture with integrated exercises, 90 hours of case study, and 30 hours of exam preparation.

3 Case Study

The lecture accompanying case study aims to provide students with deep insight into the question of the impact on-demand platforms have on classical on-premise ERP solutions. The learning objective of the case study is to discover the strengths and weaknesses of the on-demand concept and to get an impression of what kind of business process can be mapped on today's available on-demand platforms successfully.

3.1 Scope

The actual business scenario is situated in the field of Human Capital Management. It particularly focuses on Talent Management, which has become an important part of workforce management in modern corporations during the last few years. The term Talent Management refers to the process of developing and integrating new employees, developing and retaining current employees, and also recruiting highly skilled workers for a company (Schweyer 2004, p. 38f). Nowadays companies can chose from many on-premise and on-demand solutions for talent management on the market (SAP 2009, Success Factors 2009). However, there is no serious on-demand approach which uses a standardized on-demand platform. The case-study tries to address this situation and evaluate whether on-demand is actually the right delivery model for talent management software.

The case study is based on the on-premise talent management solution within the SAP Business Suite ERP (EhP4). The module supports all the necessary processes for planning, creating, and maintaining a company's talent base. The processes affect the talents themselves, who create and update their personal profiles regularly, their superiors, who contribute performance reviews and propose a talent for promotion, and also professionals from the human resource department, who plan and conduct the development of a company's talent base on a strategic level (See figure 2).

SAP's EhP4 solution focuses on process support for talent and performance calibration, capabilities to provide transparency on talent demand and talent supply, and integration across the talent management suite.

Figure 2: Talent Profile Process in SAP ERP

Within the SAP ERP, these various relationships are represented in a complex model of linked data objects. An object can either represent a person, a position, or an organizational unit within the business.

3.2 Organization

The case-study is conducted in close cooperation with Tangible Concepts (www.tangible-concepts.com); a young start-up that specializes in innovative talent management solutions. Tangible Concepts supports the students with their practical experience in on-premise talent management based on SAP ERP and on-demand talent management with focus on the force.com platform.

Support from Tangible Concepts is provided by email during the semester. Students also have the chance to discuss problems with the concepts in person, with an expert, during a joint team session in the middle of the semester. The students are advised to make intensive use of the e-learning infrastructure provided by the university. This gives students the opportunity to discuss theoretical and practical problems with their classmates and to address questions directly to the instructors.

The case-study itself consists of three work-packages that are executed by teams of three students each. All work packages have to be solved together as a team, but each student is held accountable for handing in the solution for one part of the assignment. The quality of the solution handed in by the student determines his or her grade.

3.2.1 Tasks

The main assignment for the students is to implement a subset of SAP ERP's talent management process on an on-demand platform and to evaluate this platform regarding its suitability to host such a process. The study covers only those processes which are involved in the creation, updates, or display of talent data objects (talent profiles) (See figure 3). Other important processes that are usually part of a talent management solution are left aside and are not to be implemented by the students. We have chosen the well-known force.com platform which is the foundation for Salesforce.com that has already established itself on the market as a successful on-demand CRM solution (D'Aquila and Freyermuth 2009). It is also the ideal choice for educational purposes, because the terms of service allow users to develop and test applications for free.

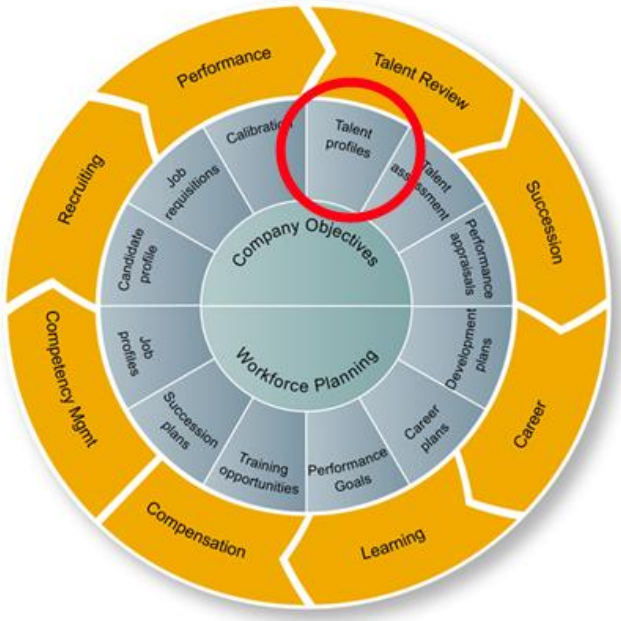

Figure 3: SAP ERP Talent Management

Students receive access to a demo installation of the SAP ERP talent management functionality in order to give them a first impression of how user-interfaces in talent management can be modeled. Furthermore, they are supplied with a high level description of the SAP talent data object, which includes the attributes and relations of this object (See table 2).

Every work-package of the case study consists of several problem sets which have to be solved and recorded in a maximum of ten pages by the students.

Work-package 2 contains tasks which aim on making students familiar with the force.com platform. The students have to work through the available manuals on the force.com website and find out about the strengths and weaknesses of the platform; the students must especially analyze the limitations of the force.com user interface. The output of this section should be a written analysis of the force.com platform in view of its suitability to map complex business cases like the talent management process.

Table 2: Excerpt from the SAP talent data object

Data element	**Data type**	**Length**	**Description**
MANDT	CHAR	3	Client
PLVAR	CHAR	2	Plan version
OBJID	NUMC	8	TalentID
AD_TITLE	CHAR	4	TitleID
BU_NAMEP_F	CHAR	40	First name
BU_NAMEP_L	CHAR	40	Last name
…	…	…	...

Work-package 3 is composed of the implementation of a working prototype on force.com and a documentation of it. The prototype should be able to create and change talent data objects and also generate a list of the stored objects. The assignment is completed by a critical evaluation of the prototype which discloses the strength and weaknesses of the chosen design. A complete evaluation also covers problems caused by the force.com modeling approach or by force.com's DHTML user interface. The prototype must be delivered to the instructors by handing in the necessary login data. Table 2 summarizes the requirements of each assignment.

Table 3: Summary of the tasks and deliverables

Work package	Task	Deliverables
Work package 1	Understand SAP talent management solution, create ER model and database design for the talent profile	Ten page paper, ER diagram
Work package 2	Analysis of the strength and weaknesses of the force.com platform targeting especially its suitability to map complex business processes.	Ten page paper
Work package 3	Documentation and critical evaluation of the developed prototype. Answer to the question in which way the modeling approach and the user interface of force.com influenced the prototype.	Ten page paper, Prototype which is able to create, change and display talent data objects.

In addition to the work packages and the deliverables, the students receive recommendations on how to proceed:

1. Analysis of the SAP HCM Talent Management solution, specifically the talent profile on the basis of the handed out documentation (2 days).
2. Familiarization with the force.com platform (7 days).
3. Implementation of a first basis prototype on force.com (7 days).
4. Clarification of open questions during the joint team session with the instructor from Tangible Concept (mid-semester).
5. Enhancement of the prototype until an almost perfect copy of the SAP solution is reached (at least one week).
6. Documentation of the prototype and analysis of the force.com platform and the prototype (at least one week).

The order of the tasks and the time estimations are based on our experience and will be evaluated and adjusted after we have conducted the case-study. Nevertheless, we think giving clear instructions to the students and helping them to distribute the workload equally over the semester is absolutely necessary for the success of the case-study. Otherwise, students might trend towards leaving the class or the delivered result might not meet our expectations.

4 Summary

In this paper, we have presented a teaching concept for master courses which provides scholars with a tool set to make students familiar with the impact of the continuing transformation process of ERP systems. It specifically focuses on the emerging field of on-demand platforms and associated solutions. The teaching concept and in particular the case study pursues the following teaching goals:

- Understand a selected state-of-the-art business process in SAP ERP (in this case talent management).
- Learn the capabilities of an actual on-demand platform (in this case force.com).
- Gain practical experience in implementing a business process.
- Analyze opportunities and limits to implement business processes on the on-demand platform.

In the future we are planning on including multiple activities. First, we are currently running the presented teaching concept the first time in this winter semester 2009. Initial feedback of our students is positive and the already handed in deliverables exceed our expectations so far. However, we will need to run a thorough analysis of the outcomes of the literature analysis, case study and the prototype.

Second, the presented case study currently focuses on re-implementing the talent management process on an on-demand platform. A more realistic approach would be to follow a hybrid on-premise/on-demand approach, where the major business objects are stored in the on-premise system (e.g. SAP ERP) and only specific processes with the associated data are carried out in the on-demand environment.

Third, we are looking into opportunities to broaden the presented approach and case study to other enterprise system classes (e.g. involving business intelligence or groupware systems).

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