2008

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Abstract

Research – not only in the discipline of Information Systems (IS) – must address the tasks faced by practitioners. The goal must always be to transform the ideas and findings into real-life business solutions. In IS research, this entitlement is particularly acknowledged by the design science research paradigm. Whereas the goal of behavioural science is truth, design science generally aims at developing an "IT artefact" highly useful for practitioners. Utility is commonly evaluated on the basis of case studies or simulations, for example. We argue that these evaluation methods must not necessarily be applied by the researchers themselves: Teaching cases represent a suitable alternative by also providing new potentials for refining the artefact. As an example of application, we refer to a newly emerging field in IS research, Enterprise Content Management (ECM). We present the results and experiences from two ECM project seminars that have been set up on the basis of workshops and interviews with a large-scale international enterprise. The teaching cases are based on firsthand accounts from our research in the field of ECM – a framework for content analyses. Accordingly, both courses focussed on analysing the company's content situation. The company highly valued the results gained in the seminars and has since applied our framework within additional application areas.

Keywords

Content Analysis, Design Science, Document Classification and Management, Document Management Systems, Teaching Case

INTRODUCTION

One major challenge of Information Systems (IS) research lies in its transition into practice (Hevner and March 2003, p. 111). Research outcomes lacking relevance to practitioners may question the very existence of the whole research process (Rosemann and Vessey 2008, p. 1). However, in many cases there is a significant gap between research and practice (Benbasat and Zmud 1999): The *Business Week* asked as early as 1990 "Is Research in the Ivory Tower 'Fuzzy, Irrelevant, and Pretentious?'." Unfortunately, this is not an isolated perception and often the case in IS research (Zmud 1996).

During the last few years, particularly the design science approach has attracted the attention of the IS communities (Hevner et al. 2004; Simon 1996). The primary objective of design science is building and evaluating IT artefacts that are highly useful for practice (Hevner and March 2003, p. 111; Kasanen et al. 1993, p. 246). The utility of such an artefact is influenced by its rigorous design (Peffers et al. 2008, p. 49) and demonstrated via well-executed evaluation methods (Hevner et al. 2004, pp. 80, 85f.). The evaluation of an artefact is crucial for the whole research process as it not only serves the purpose of successively refining and improving the artefact (Hevner and March 2003, p. 112), but also transforming it into the business environment (Hevner et al. 2004, p. 85). Concluding, evaluating an artefact finally aims at bridging the above mentioned gap between research and practice.

There are lots of suitable methods for an artefact's evaluation (cf. Hevner et al. 2004 for an overview). In most cases they are applied by the researchers who have designed the artefact (Peffers et al. 2008, p. 50). We argue that their application may also be delegated to other researchers, practitioners, or even students. This can be reasoned by the fact that valuable new perspectives, thoughts, and competencies can be captured within the evaluation and design process. As a result, the utility of an artefact – and thereby its practical relevance – can potentially be enhanced. Providing the means for realising a high degree and quality of supervision, we state that teaching cases in particular represent a suitable alternative.

In order to underpin this perception, we present the main issues and results from two IS project seminars dealing with Enterprise Content Management (ECM). The courses were directly linked to our research in the field of

ECM which accords to the design science paradigm. Our artefact, a framework for content analyses, has been applied by the students within a real-life business context. In this paper, we intend not only to document and discuss the learning outcomes of both teaching cases – there are various institutions offering IS projects which are arranged in cooperation with industry partners. However, usually such courses are aimed at teaching the students and serving the practice. On top of that, we aim to discuss the teaching cases referring to the improvement of our artefact. Nevertheless, as there are only a few institutions offering courses on ECM, the results can also serve as guidelines for conducting similar ECM seminars.

The remainder of this paper is structured as follows. In the next section, we present an established framework for IS research by Hevner et al. (2004) in order to firstly give a short introduction into design science and to secondly discuss (i) why the evaluation of an artefact is crucial for its practical relevance and (ii) why it may be delegated to third parties, such as students (section 2). Subsequently, we briefly demonstrate the fundamentals of our research in the field of ECM in order to provide a basis for the following sections on our teaching cases (section 3.1). We then present the organisational background (section 3.2) as well as the schedule and key contents of the two project seminars (section 3.3). In section 4, we discuss the teaching cases and in particular refer to the refinement of our artefact. We finally conclude with a short summary (section 5).

A FRAMEWORK FOR IS RESEARCH

The primary objective of IS research "is to produce knowledge that enables the application of information technology for managerial and organisational purposes" (Hevner and March 2003, p. 111). This definition underpins the fact that IS research is both an organisational and a technical discipline. Due to this bilateral goal of IS research, two research paradigms in particular gained much of the attraction from the IS communities: behavioural science and design science – two distinct but nonetheless complementary approaches (Hevner and March 2003, p. 111; Benbasat and Zmud 1999; March and Smith 1995; Markus et al. 2002; Mingers 2001; Nunamaker et al. 1991; Walls et al. 1992). In the following, an integrative framework for IS research by Hevner et al. is considered which combines the two paradigms (Hevner and March 2003; Hevner et al. 2004). Thereby, we provide a basis for the subsequent section on our research process which accords to the design science approach. As our work is based on the perception that the evaluation of a design science artefact is crucial for its success in practice, the main emphasis is put on this phase of the design process. By also referring to behavioural science, we further intend to point out that our results are not only limited to design science, but are also of value for other IS methodologies. The framework is displayed in Figure 1 (also see Hevner et al. 2004, p. 80; Hevner and March 2003, p. 112, for a more detailed presentation).

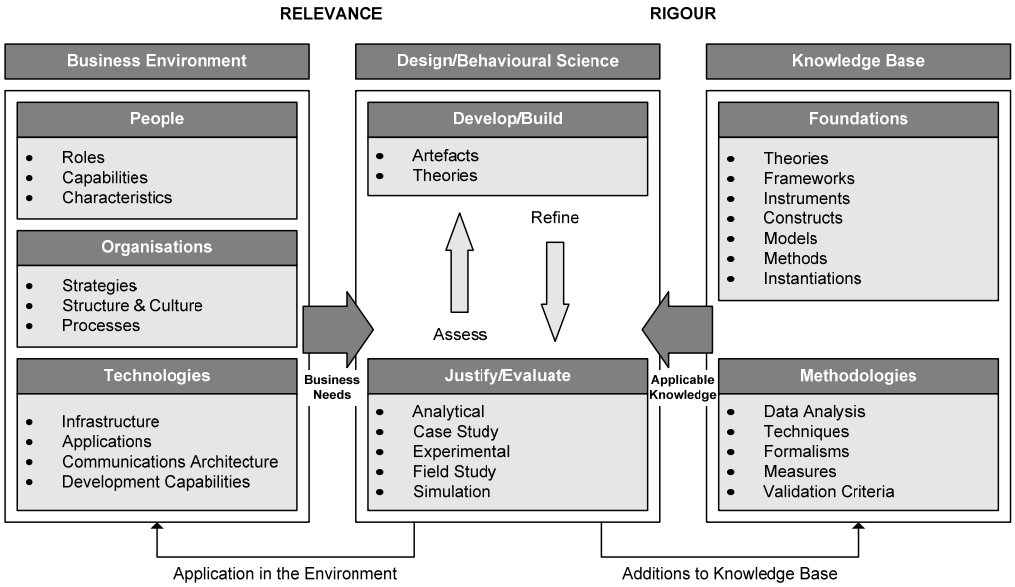

Figure 1: Framework for IS research (cf. Hevner et al. 2004, p. 80; Hevner and March 2003, p. 112)

Behavioural science originates from natural science and primarily aims at developing and justifying theories (Venable 2006, p. 1). In contrast, design science research seeks to build and evaluate different types of artefacts, such as constructs, models, methods, or concepts (Järvinen 2007, p. 45). Whereas the ultimate goal of behavioural science is truth, it is utility in design science. However, in spite of their differing objectives, the underlying research process of both approaches is quite similar: Design science as well as behavioural science aims at studying an appropriate business environment which is comprised of the interactions between people,

organisations, and technologies. The business environment defines the business needs which finally influence the practical relevance of both the theories and artefacts. Furthermore, both approaches seek to apply existing foundations and methodologies from the knowledge base – comprised of established theories and artefacts – in order to ensure the rigour of research. As a last commonality, the built (developed) artefacts (theories) are evaluated (justified) in order to assess their utility (truth) and refine them where reasonable. We argue that this phase of the research process is particularly crucial. On the one hand, the findings are applied to the business environment in order to assess their relevance (and their fit to the business needs). On the other hand, only those artefacts (theories) that have been evaluated (justified) can be added to the knowledge base. Hevner and March (2003, p. 112) rationalise this as follows: "A justified theory […] that is not useful for the [business] environment contributes as little to the […] [knowledge base] as an artefact […] that solves a non-existing problem".

Traditionally, the evaluation (justification) work is in fact done by the researchers themselves. This paper is based on the perception that it may also be delegated to third parties who have not been involved in the design (build) process. We argue that this delegation can provide new opportunities for improving the artefact (theory) as new competencies and ideas can be captured within the refinement process. However, third parties – for example practitioners – are usually unskilled in executing adequate evaluation (justification) methods. Thus, the main challenge lies in ensuring consistent rigorous research. In this paper we state that in particular teaching cases represent a suitable alternative. Therefore, in the following we focus on the evaluation of a design science artefact. The reasoning for this proceeding can be seen in the fact that teaching cases provide a suitable organisational framework for both honing the students' evaluation skills and monitoring the evaluation process. In the next sections, this proposition is underpinned by presenting the essentials of two ECM pilot projects which were directly linked to our design science research in the field of ECM. Accordingly, the teaching cases are not only presented and discussed in reference to the learning outcomes but also with respect of the refinement of our artefact.

DESCRIPTION OF THE TEACHING CASES

General Framework: The ECM-Blueprinting Project

Our artefact, a model for content analysis, is designed in the context of the research project *ECM-Blueprinting* which follows the design science paradigm. The project is promoted by a large-scale international enterprise which is currently implementing ECM processes worldwide. According to the issues presented in the previous section, this cooperation provides a valuable foundation for the practical evaluation of our artefact. A process model for the whole research project, the *ECM-Blueprinting Framework*, is outlined on the left-hand side of the following Figure 2. The latter builds upon the framework for IS research previously presented.

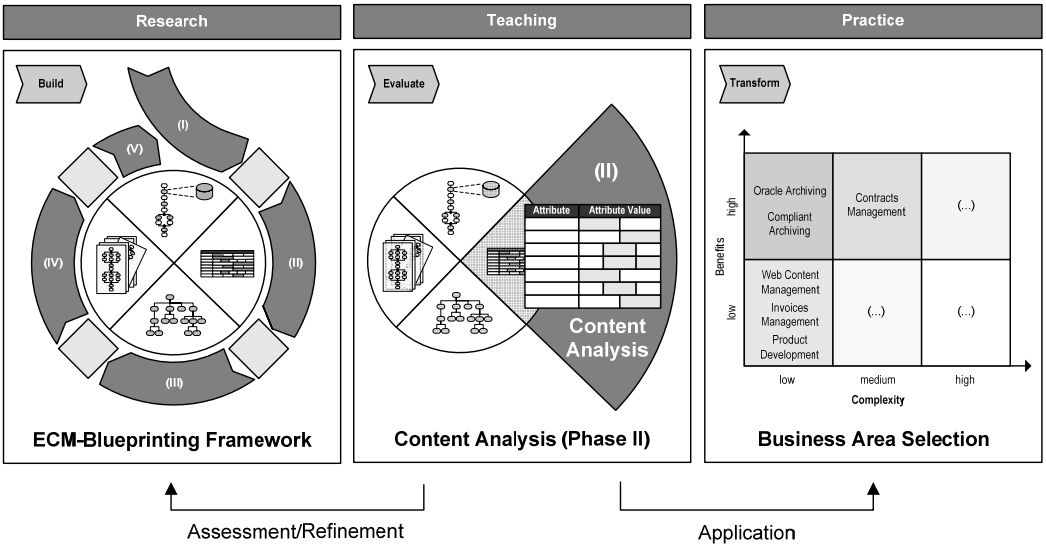

Figure 2: Framework for the research project *ECM-Blueprinting*

In the following, the research project is described on the basis of the three domains as seen in the figure – research, teaching, and practice – in order to illustrate how the gap between research and practice as mentioned in the introduction may be bridged by conducting teaching cases.

Our research project aims at developing artefacts for ECM implementation. The displayed *ECM-Blueprinting Framework* implicitly structures the project work and is comprised of five phases (cf. vom Brocke et al. 2008a and the upper-next subsection for more detailed information). As the process model represents a top-level approach, our project work seeks to identify and/or develop methodical support for each phase. Whereas several methods and concepts for the first phase (business process analysis) have already been developed (cf. Kavakli and Loucopoulos 1999), in contrast common guidelines for the second phase (content analysis) have not yet been established (cf. vom Brocke and Simons 2008). Thus we developed a framework for analysing content which represents the key content of the two teaching cases.

In order to assess the practical applicability of the framework, it is applied within several application areas at our project partner (as symbolised on the right-hand side of Figure 2). According to the design science approach, the evaluation provides us with essential feedback for improving our process model. Furthermore, our project partner benefits from gaining insights into the framework's practical applicability referring to his specific business environment. This evaluation work has been done partly by our students in the two project seminars. Thus, and as symbolised in Figure 2, the application of the framework has been delegated to the students who in turn delivered results that we used for assessing/refining our artefact. Concluding, the seminars served as the interface between research and practice. Therefore, we arranged the teaching domain as the centre of Figure 2. In the following subsections, the seminars are described referring to their organisational background and key content. When discussing the cases, special emphasis is put on the improvement of our framework.

Organisational Background

The organisational background of the two ECM project seminars is summarised in Figure 3. The seminars have been arranged on graduate (Master) and undergraduate (Bachelor) level. The number of students participating in project seminar 1 (2) amounted to 10 (12). Two students from project seminar 2 were female, whereas all students from seminar 1 were male. The average age of the students was relatively high in both seminars (seminar 1: 24 years, seminar 2: 27 years). The duration of the first seminar totalled 12 weeks, while the second seminar ran for 10 weeks. During that period, the students collaborated personally and via the internet – as several students in the case of both seminars were not in residence near the university. Thus, the students applied a set of different collaboration technologies, namely: the university's collaboration platform (comprised of document repositories and discussion databases), e-mail, and videoconferences. In particular the students of seminar 2 primarily cooperated in a decentralised manner.

	Project Seminar 1	Project Seminar 2
Level	Bachelor	Master
Number of Students	10 (all male)	12 (2 female)
Duration	12 weeks	10 weeks
Collaboration	E-mail	E-mail, collaboration plattform, videoconferences
Assigment	Identification of general ECM attributes and attribute values	Identification of ECM attributes and attribute values explicitly referring to IT compliance
Application Areas	Contracts, invoices, web content, product spec.	Contracts, invoices, product specifications
Deliveries	Final written report (including experiences), one hour presentation at our project partner	Final written report (including experiences), weekly oral report, one hour presentation at our project partner
Evaluation	Written report: 70%, Final presentation: 30%	Written report: 50%, Participation in weekly discussions: 25%, Final presentation: 25%
Schedule & Key Contents	Kick off seminar	Kick off seminar
	Lecture: Enterprise Content Management	Lecture: Project Management
	Guest lecture: business case	Lecture: Enterprise Content Management
	Lecture: content analysis	Guest lecture: business case
	Guest lecture: Enterprise Content Management	Lecture: Design Science
	Project work: interviews	Lecture: content analysis
	Final presentation	Project work: workshops
		Final presentation
	Bi-weekly discussions	Weekly discussions

Figure 3: Organisational background of the two project seminars

The assignment for both courses was the analysis of the content situation of our project partner referring to certain application areas, namely: contracts, invoices, product specifications (seminar 1 and 2), and web content (1). Whereas the objective of seminar 1 was to identify attributes and attribute values (characterising the managerial requirements of content) generally relevant for the ECM implementation, seminar 2 focussed on attributes and attribute values explicitly referring to IT compliance. At the end of the seminars, the students had to deliver a written report and to present their final results to our project partner. The evaluation criteria and weightings are also displayed in the figure.

The seminars were organised around a set of in-class (guest) lectures, group-based exercises, and the project work itself. Whereas periodical meetings had been arranged bi-weekly for seminar 1, the discussions took place every week in the case of seminar 2. The reasoning for the differences in organisation (e. g., assignment, deliveries, collaboration, or scheduling) is given when discussing the two seminars in the upper-next section. Afore, schedules and common key contents of the seminars are presented.

Schedule and Key Contents

Both seminars started with kick off seminars at the university. The objective of these meetings was to get to know each other and to present the schedule for the working period (also summarised in Figure 3). As there are several ECM-related – and already well-researched – approaches, such as Web Content Management (WCM), Document Management (DM), Records Management (RM), or Digital Rights Management (DRM), the relevance of ECM was clarified at first. Therefore we used the argumentation summarised in the follow-up: ECM aims at managing the entirety of content captured within an organisation. Thus, it represents an integrative approach, subsuming concepts such as WCM, DM, RM, or DRM. Accordingly, ECM systems (ECMS) are comprised of a huge number of functionalities which are required to manage the various types of content. Content is not just content. For instance, a product catalogue is usually created and edited by several users. Thus, the management of this content type particularly requires ECMS functionalities supporting the process of collaboration (e. g. versioning which is commonly assigned to DM). Additionally, the publication of the product catalogue on the internet may require functionalities which are usually dedicated to WCM or DRM. In contrast, an invoice is created more or less automatically and may need to be archived in the long run due to legal restrictions (RM) – whereas ECMS functionalities referring to WCM are not necessarily required for administering an electronic invoice. Concluding, different content types require a differentiated administration, and the diligent analysis of content concerned with its managerial requirements represents a major success factor for identifying the best fitting ECMS functionalities.

Next, the *ECM-Blueprinting-Framework* was presented in order to illustrate a holistic ECM implementation process and to point out the importance of the seminars in the research project (cf. Figure 4). Within this context, the students were cautioned not to view ECM as being just the technology involved but instead to think in broader terms, including information, organisation, processes, and culture.

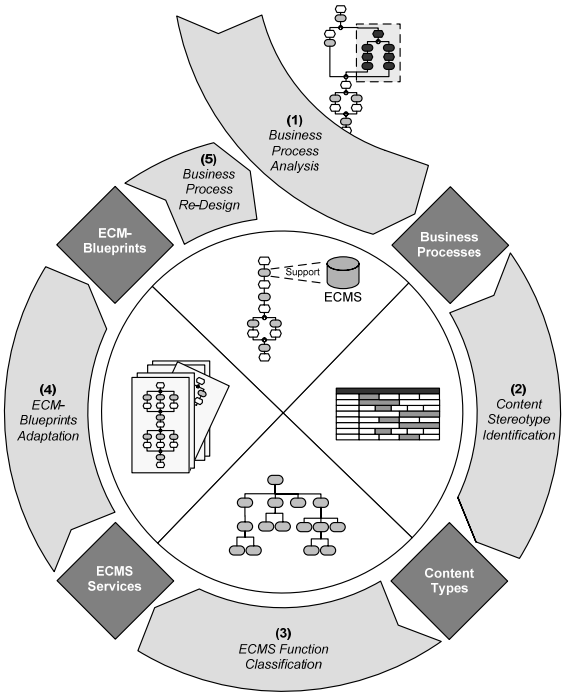

Figure 4: The *ECM-Blueprinting-Framework* (vom Brocke et al. 2008a)

Phase I of *ECM-Blueprinting* primarily serves the purpose of analysing business processes in order to identify content types, users, and systems (in which the content types reside). In phase II, the identified content types are analysed concerning their managerial requirements and then classified into "content stereotypes" (comprised of content types exhibiting the same properties). As a next step the required ECMS functionalities are assessed on that basis (phase III). In phase IV, reference processes for ECM, so called *ECM-Blueprints*, are adapted with

regard to both content stereotypes and required ECMS functionalities. Finally (phase V), the adapted ECM-Blueprints are embedded into the existing business process structure (cf. vom Brocke et al. 2008a for a more precise presentation). As a theoretical foundation for *ECM-Blueprinting*, a framework for ECM research by Tyrväinen et al. (2006) has also been considered.

On the basis of this introduction, the schedules of the project seminars were subsequently presented. In preparation for the resulting guest lecture on the business scenario, the students were assigned some background reading on ECM. The reader was comprised of the work from Smith and McKeen (2003) and Päivärinta and Munkvold (2005), both presenting an introduction and terminology for ECM, as well as the work from Nordheim and Päivärinta (2004), (2006) and O'Callaghan and Smits (2005) presenting case studies on ECM. The business scenario was then presented by our project partner. The presentation focussed on the main drivers for ECM adoption, in particular compliance (e. g., archiving times) and efficiency (e. g., reduced searching times). Within that meeting, the project assignment has also been given to the students – the analysis of content in those application areas of our project partner mentioned in the previous subsection. On the basis of these application areas, the students were finally divided into four groups each headed by a team leader (serving as counterparts for us and our project partner).

In the next lecture we introduced our artefact, the framework for content analyses which is displayed in Figure 5. In preparation for this lecture, the students received another reading (Karjalainen et al. 2000; Reimer 2002; Rockley et al. 2003, pp. 3-125; Päivärinta 2001; Tyrväinen and Päivärinta 1999).

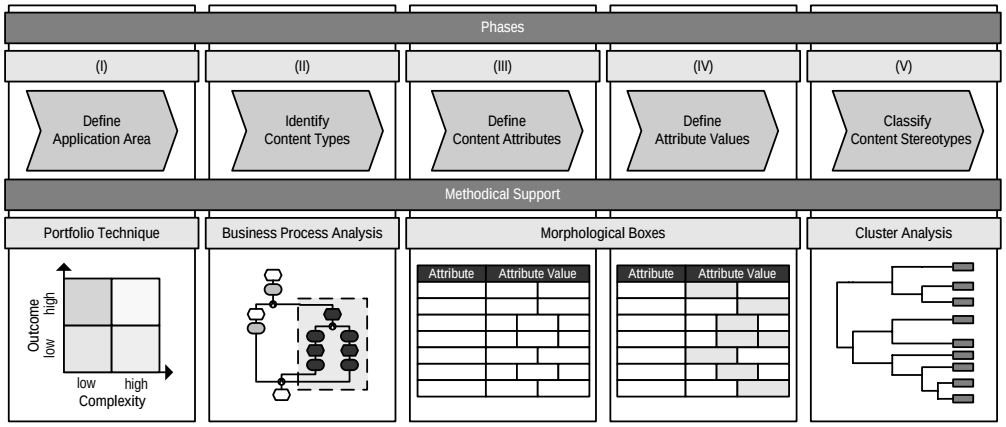

Figure 5: Process model for content analysis (vom Brocke and Simons 2008)

Our framework for content analyses is comprised of the selection of a suitable application area (phase I), the identification of content types (II), the definition of attributes (III) and attribute values (IV) – representing the above mentioned managerial requirements of content –, and the final classification of the content stereotypes (V). Furthermore, methodical support is provided for each of the phases, namely: the portfolio technique for identifying suitable application areas exhibiting high ECM outcomes and low implementation complexity (I), business process analysis for assessing both, process parts offering high potentials for ECM support and content types being accessed within the processes (II), morphological boxes providing the means for arranging the attributes and attribute values (III-IV), and the cluster-analysis for finally classifying the content stereotypes (V) (cf. vom Brocke and Simons 2008 for more detailed information).

The students' studies were mainly concentrated on the phases III and IV of the framework, i. e. the identification of suitable attributes and attribute values for characterising the content types captured within the considered business areas. A lecture example was used in order to illustrate the practical applicability of our approach (outlined in Figure 6).

Product Catalogue			
Attribute	**Attribute Value**		
Media	Paper	Digital	
Format	Text	Graphics	
Confidentiality	Low	Average	High
Change Frequency	Low	Average	High
…	…		

Client Record			
Attribute	**Attribute Value**		
Media	Paper	Digital	
Format	Text	Graphics	
Confidentiality	Low	Average	High
Change Frequency	Low	Average	High
…	…		

Figure 6: Exemplary attributes and attribute values (vom Brocke et al. 2008a)

The example has been taken from our project work. It illustrates the selection process of attributes and attribute values referring to two content types, a product catalogue and a client record. Within the example, the client

record is perennially stored in a digital format and contains only text elements. In contrast, the product catalogue is archived as both, a hard copy and a digital file, and it also contains graphical elements. Furthermore, the client record is highly confidential and infrequently changed, whereas the product catalogue may be accessed even by external personnel (e. g., via web access) and is altered more frequently. The attribute values imply a deviant treatment of the two content types and consequently different requirements on the technological level. For example, a high change frequency requires a high availability and therewith short-time access. The high degree of confidentiality of the client record in contrast requires the implementation of log-in procedures referring to authentication and authorisation. For gaining a deeper insight into the frameworks terminology and the underlying methods, the students were then assigned with some of our latest research papers (vom Brocke et al. 2008a; 2008b; vom Brocke and Simons 2008).

The practical project work was divided into two parts each taking approximately four weeks: The first part focussed on reviewing the literature provided in order to identify common attributes and attribute values for ECM implementation. In the second part of the project work, these results have practically been evaluated by the students at our project partner. Whereas this evaluation work has been accomplished on the basis of interviews in the first seminar (cf. Figure 6 for an overview), workshops with our project partner's legal team have been arranged for the second seminar (as it focussed on aspects of IT compliance, in particular legal requirements).

Business Area	Analysed Content	Number of Interviews	Duration of Interviews	Interviewee(s)
Web Content Management	Web content	1	1 hour	Web Content Manager, responsible for internet/intranet
Invoices management	SAP invoices	1	1 hour	Head of Process Competence Center Management Services
Product management	Product descriptions	2	1 hour each	Product Data Manager, CAD system specialist
Contracts management	Digital contracts	1	1.5 hours	Professional Services, Fleet Management

Figure 7: Number and duration of interviews for seminar 1

The students almost worked independently during that period. They were encouraged to think for themselves and to disagree with other members of the group in order to identify the most applicable attributes and attribute values. Each student was responsible for reviewing the work of the other group members. We participated as observers, monitoring how the students worked and behaved in the group. We had frequent informal discussions with the students, in particular the team leaders, throughout the semester. The results were presented to us by the students every week (seminar 2) respectively bi-weekly (seminar 1). The findings were then finally presented by the students to our project partner at his training centre.

Concluding, the general idea of the seminars was to support both, our project partner in implementing ECM and us in refining our framework – aside from the educational aspect, of course. Instead of presenting all the results gained in the two courses in detail, in the following, they are discussed referring to these two objectives and the learning outcomes.

EVALUATION OF THE TEACHING CASES

Learning Outcomes

The learning outcomes achieved in both seminars were quite similar – and equally successful. However, instructors should particularly take into account the following lessons learned when conducting similar seminars:

- *Assignment:* The assignment has to be formulated very precisely. Whereas the objective of seminar 1 was quite general, seminar 2 only focussed on aspects of IT compliance. We have chosen a more specific topic for the second seminar as it turned out during the first seminar that ECM is a highly complex task: The students identified more than 100 different content types solely captured in one application area, for example. As there are several attributes and attribute values which are only relevant for a few content types, their identification was subsequently highly complicated.
- *Communication:* As most of the students were not residing near the university during the working period, communication problems occurred – particularly during seminar 1. As a result, the findings were often not communicated frequently by the team leaders. Therefore, the internal communication platform of the university has been used in seminar 2 as well as an instant messenger for videoconferences. Moreover, the discussions took place weekly in seminar 2 in order to enable a prompter validation of

the results. These discussions were also part of the final evaluation. As a result, student participation increased.

- *Project Management:* Instructors should note that a separate lecture on project management is highly important for the project success. The experiences gained from the seminars showed that the project work in seminar 2 (including a lecture on project management) was generally organised better than in seminar 1. The purpose of the additional lecture was to help the students visualise more clearly the working steps and milestones.
- *Duration:* Given more time, an extension of the introductory lecture(s) on ECM, e. g. referring to related approaches such as DM or RM, would give the students a more complete introduction into the topic. Within this context, in particular the presentation of the underlying terminology is crucial. It turned out that some students had problems in fully understanding the concept of attributes and attribute values.

The students also acknowledged these issues in their final evaluations of the seminars. Furthermore, they perceived the project work to be very challenging and time-consuming – but also interesting and motivating. Concluding, we only discussed the pedagogical aspects of the two seminars so far. In the following, we further focus on the evaluation success of our artefact and its resulting utility for practice.

Improvement of the Artefact: Meeting the Business Needs

According to the issues presented in the section on design science, the evaluation of an artefact serves two purposes: meeting the business needs and improving the artefact. In the following, these objectives are discussed referring to our teaching cases.

- *Meeting the business needs:* Through several iterations, the utility of an artefact to practitioners has to be assessed referring to its fit to the business environment (Cole et al. 2005, p. 11). So far, the students' evaluation work is limited to only two teaching cases. According to the idea of an iterative evaluation, the results gained from the first semester have been validated/falsified in the next semester. Moreover, additional attributes and attribute values have been identified in the second seminar. We firmly expect these results to be further improved in the following semesters. However, our project partner already highly values the results gained in both courses and has since applied our framework in additional business areas. The attributes and attribute values elaborated by the students represent an essential part of the ECM implementation in the company and are also of value for the administration of other content types.
- *Improving the artefact:* The application of an artefact in the business environment provides essential feedback which has to be used for refining it (Peffers et al. 2008, p. 56). Our initial framework for content analysis has been improved according to two issues in particular, communicated by the students to us: the terminology and the working steps. As mentioned above, it turned out during the seminars that the differentiation between the (well-known) concept of meta-information for searching/archiving content and our concept of attributes/attribute values was not completely clear to all students. Thus, we extended – and improved – our terminology according to the feedback of our students. Within this context, new constructs have been defined, for example the "content asset", the "content class", and the "content container." Furthermore, the guidelines for conducting the working steps of our framework have been deemed by the students in some cases as not being detailed enough. Accordingly, they have been refined, e. g., referring to the categorisation of content types or the systematisation of attributes and attribute values. Within this context, an innovative concept for the re-use of attributes has also been developed.

We must add that important success factors for the evaluation process involve both the degree of supervision and the teaching of design science, particularly in respect to adequate evaluation methods. Therefore, an introduction into design science and case study research was given in seminar 2 on the basis of the work from Hevner et al. (2004) and Yin (2003).

CONCLUSION

In this paper, we presented an approach for bridging the gap between research and practice by conducting teaching cases. We argued that a design science artefact must not necessarily be evaluated by the researchers who originally designed it. The evaluation can rather be delegated to third parties – such as students. This can be reasoned by the fact that new perspectives and thoughts can be captured within the refinement process. To further underpin this proposition, we presented the main results and experiences gained from two teaching cases on Enterprise Content Management (ECM) that were directly linked to our design science research in the field of ECM.

Thereby, we intended to contribute to an emerging field in Information Systems (IS) research which as until now has received far too little attention.

A theoretical foundation for this paper was given by considering an established framework for IS research that combines two well-known IS paradigms: behavioural science and design science. Thereby, we aimed at documenting that our results may also be of value for other IS methodologies. We also discussed the teaching cases referring to the improvement of our artefact and pointed out that the delegation of the evaluation process requires a high degree of supervision. Therefore, teaching cases in particular represent a suitable alternative. However, the objective of this paper was also to provide other instructors with useful information for conducting similar courses. Even today there are only a few institutions offering courses on ECM.

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