



# Technologically Comprehensive E-Collaboration Platform

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## ABSTRACT

*Nowadays, universities are challenged by changing students' requirements, demanding labor market and fast pace environment. The evolution of communication technology allows us to deal with these problems. Advances in e collaboration are crucial to modern learning process, as it prepares students to work in groups over tasks. In this article we propose comprehensive basis for e collaboration platform which has been developed during successful implementation of e collaboration solution in Department of Management Information Systems at The Poznań University of Economics. The solution utilizes state-of-the-art web portal technology and digital assets management system to provide consistent, common platform for system users to work, communicate, and share knowledge. As opposed to e learning solutions, which are designed to provide environment for distant learning, e collaboration aims at supporting groupwork, communication, and is rather task oriented. Therefore it is well suited for specific didactic processes in the Department. The implementation took place during two-week summer apprenticeship of 23 students in July 2002.*

## 1. ESSENTIAL ELEMENTS OF SUCCESSFUL E-COLLABORATION SOLUTION

We believe that there are at least three factors that have to be taken into consideration when planning for successful deployment of e collaboration solution: organizational culture, scrupulous and detailed plan, and technology.

*Organizational culture* can make or break the whole initiative. Introducing e collaboration solutions in organization demands that its members accept necessity for the improvement. If they are not convinced of its advantages over current process implementation they would not accept changes. The best way to motivate and convince organization members is to let them take active part in development of planned e collaboration project. The organization, which efficiency we plan to improve by introducing e collaboration solution, already exists, and there is a certain community along with (clearly or unclearly) defined processes that put together this organization. The community of practice (CoP) can and should be recreated. CoPs are groups of people who share information, expertise, technology, or simply take part in the same processes. They can operate at workgroup, departmental, or corporate level (Conway & Sligar, 2002). At the educational field, we can distinguish CoPs which operate at class, departmental, school and faculty level. Less often, there are groups which function at cross-university level. E-collaboration requires extending this community into virtual community. Evolution of organization demands that we first "virtualize" its existing structures and only after that can we introduce new ones. This leads to modification of organization based on experiences gained through e collaboration. E collaboration develops new connections between community members while still supporting and enhancing those already existing. It eases building new connections as it is easy to find people that have similar interests or goals. Such community members gather around certain newsgroups, chats and mailing lists,

which are available only to community members, in order to exchange ideas. This communication means tightening relations in communities that already exist in educational organizations. Becoming a member of these groups is relatively easy for people that are too much intimidated to join more formal groups (Walker, Ilardi, McMahon, and Fennell). Therefore, it eases integration of student groups. This is true nowadays, when studying is tightly bound with joining students' community and becoming member of several groups. However in the future peoples attitude towards learning can change. New techniques of communication and demanding labor market may shift students' interests from gaining formal education to achieving certain skills. They may become more information than socially oriented. Nevertheless it is hard to deny that instant messaging eases communication. Moreover, it changes people's attitude towards communication. People tend to be more creative and communicate more often as opposed to traditional face-to-face communication where shy people are often inhibited by more straightforward group members (Garton and Wellman, 1993). There can of course be the opposite effect – some may easily communicate verbally while having trouble expressing their thoughts in writing. Though, they also may benefit from instant messaging even with its current limited capabilities.

E collaboration requires also some of the processes to be redesigned. This includes formal definitions of processes and its participants, simplification, and sometimes introduction of new processes demanded by information system. The example are processes related to maintaining user information in the system, user identification, granting permissions, administration of user personal and public resources stored in the system.

*Thoroughly planned solution* - a broader view on a project. After being convinced of the need of e collaboration one has to define the outcome of the whole transformation. It means that before starting to implement it is necessary to define borders of the solution and think over what should be contained between these borders in detail. This is crucial for defining tasks to be carried out during implementation. However the success depends both on social and technological aspects. The former are related to organizing a group of people into e community and managing the group. One has to clearly state:

1. The purpose for establishing a community.
2. Community members.
3. Membership process.
4. Community rules.
5. Member generated content.

Technological aspects that have to be taken into account include:

1. The area to be covered by e collaboration.
2. User information and rights.
3. Process design.
4. Data organization.
5. Data flow and workflow:

- a. Data organization.
  - b. Processes design and implementation.
6. Means to access data and work in "e"-space.

*Technology.* The technology itself cannot guarantee success – a common mistake is to focus on technical aspects while neglecting preparation phase or social factors. The essential technological elements are described in paragraph 4, here it seems enough to say that recent advances in network technology and still growing number of means of communication (WWW, Newsgroups, Email, Instant Messaging, VoIP, and Videoconferencing) form just right environment for e collaboration.

## 2. ECOLLABORATION IN EDUCATIONAL ORGANIZATIONS

Organizational culture is comprised of assumptions, values and norms of organization members. In education these include forms of contact between teacher and students, relations in student groups, formal norms concerning studying and marking, and more. Successful implementation of e-collaboration depends on organizational culture because people tend to be conservative and they usually need time to accept changes derived from introducing new technology. Education may be particularly hard because of established view of the course of this process.

The solution we propose does not go directly towards Virtual University (VU) paradigm. By introducing the platform we want to enhance traditional didactic process, which proves to be successful, as it has proved to be for hundreds of years until now. Of course, we should not forget that emerging VU solutions are an answer to the problem of people being able to study only remotely. However, our proposal does not deal directly with distance learning issue. Nevertheless, the platform can be incorporated in a larger distance learning project that will provide additional required features.

In our solution we focus on the merger of knowledge management and e-collaboration. Education deals with knowledge – its sharing and dissemination. This can be supported by e-collaboration which in turn may contribute to creating new knowledge.

As it was declared in chapter one, technology should never be considered as a crucial element for building e collaboration solution. Nevertheless, by planning for appropriate technological mixture, one can more easily put the two remaining aspects (organizational culture and thoroughly planned solution) into practice. From the technological point of view, our proposed set of ingredients is as follows: network server, directory service, messaging server, instant messaging server, digital asset management system, and web portal.

## 3. DEPARTMENT OF MIS CASE STUDY

*Organizational culture.* The Department of Management Information Systems at The Poznań University of Economics, Poland, offers education in a field of business information processing. The department concentrates on information retrieval and filtering for Management Information Systems, data warehouses, workflow, e marketplace and mobile systems. Its members also conduct research on decision support systems for top-level management of a company and for investment activities. Moreover, its interests cover other fields of business information like personalization of Internet services, knowledge management systems, customer relationship management systems and more. One of more popular didactic methods used in the department is writing essays at the end of each semester. Since this practice has been in use for a few years, the essay library has grown large – up to several hundred of CDs (each disc contains an essay, PowerPoint presentation and resources – mainly documents downloaded from the Web during the essay preparation). Such library in its form has become unmanageable, and could not be efficiently used by students and departmental researchers. On the other hand, one should not underestimate the value of the library – thousands of documents chosen by potential experts in the field along with essays, most of them containing valuable knowledge. We categorized them and provided access as part of our solution. We

also had to deal with change in culture of work which was caused by introduction of new technology. In our case we did not encounter much resistance because computer science students accept new technologies easily. They only had to accept new rules and the system that we provided.

*Scrupulous and detailed plan.* The group of departmental researchers who focus on knowledge management decided to implement an e collaboration system for the department basing on a digital asset management system. This is a part of a larger scale project, named D Leap aiming to implement a full knowledge management life cycle using topic maps and skill maps (Abramowicz, Kowalkiewicz & Zawadzki, 2002) in fully personalized courseware distribution. The deployment plan included moving existing communities into the e collaboration platform, full support for didactic process – from the first year of studies until the last contact with Department (including PhD theses), and complete project of knowledge base structure, along with user access rights. Throughout the tests it seems, that the plan accurately predicted the needs.

Currently the part of educational process supported by our system includes several phases:

1. Signing on.
2. Choosing classes (as presented on Figure 1).
3. Preparing essays, presentations, resource materials and practical implementations using digital library (with resources from lecturer) and communication means provided.
4. Publishing prepared materials.
5. Being notified of the mark (after presentation and final tests).

The platform has been created using three server machines: directory services server, portal server and DNS server, all of them in the same Internet domain: kie.ae.poznan.pl. DC and portal are Windows 2000 Server based systems, DNS runs on Sun's SunOS. The portal server utilizes Microsoft's SharePoint Portal Server and document repository in Web Storage System. DC is a primary Windows Domain Controller (Active Directory server) and an Exchange server, Sun's machine is a primary name server for the whole Internet domain.

These servers cooperate in order to produce common environment for system users. The front end portal is delivered by Microsoft's SharePoint Portal Server which is also digital assets management system. The document repository has hierarchical structure, defined according to topics of interests and categories. Document management

Figure 1 Sample class registration.

**Classes Registration**

**Assignment on classes**

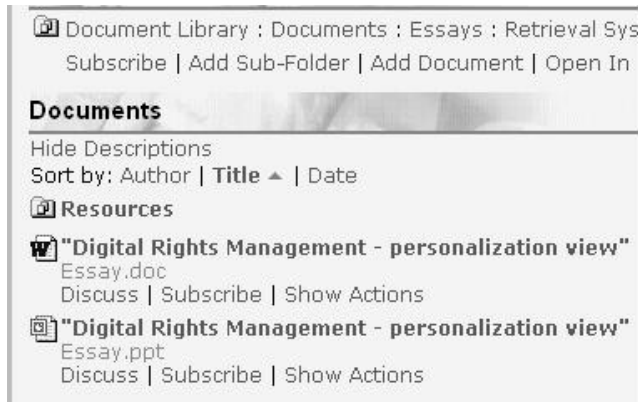
Choose classes  
CRM

Select lecturer  
----- Select lecturer -----  
Ceglarek, Dariusz  
Wecel, Krzysztof

Enter Password  
[ ]

Ok

Figure 2 Student's workplace after publication.



capabilities of SPS have been extended to support educational process needs. Web Part technology used to create portal interface allows integrating such modules as search engine, instant messaging and email access, advanced portal navigation through categories, subscriptions management (users can select portal areas in order to be emailed of their content changes). The backend of the system is provided by Active Directory and Exchange 2000 server. Directory service is accessed by scripts run on web server to store user information and manage user rights (in combination with SPS security system). It is also a database of user information for Exchange server which stores user mailboxes, enables instant messaging and group emailing.

#### 4. CONCLUSIONS

In today's world, successful implementation of e collaboration systems in universities is a must. It not only reduces costs, but – more importantly – prepares alumni to compete successfully on labor market. It also prepares students for lifelong learning, which seems to be the key to success in forthcoming years. We believe that while planning the e collaboration deployment, one should take into consideration three parts of a project: organizational culture, scrupulous and detailed plan, and technology. Because there are not many e collaboration products on the market, that provide complete answer to universities needs, there is a great potential in creating individual implementations. Such implementation, basing on the assumptions described in chapters 2 and 4 has been created at the Department of Management Information Systems, The Poznań University of Economics (chapter 2). The system is now undergoing tests, but results are promising.

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