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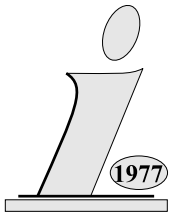

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Concourse: The Design of an Online Collaborated Writing Center

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The project presented here is Concourse. The project is aiming at the development of an online writing community as a study support environment for students in Higher Education. Concourse is the name of an online collaborated writing center and is intended as a virtual space for online interaction, a place for collaborated writing in a knowledge rich environment. It offers services required for professional development of students and for the development and exploitation of knowledge about scientific writing. Examples of services provided by the system are services for information access, information dissemination, communication, study rooms, research, support, coaching, training and study, and knowledge management. In this paper, we present our design research approach that we applied in the Concourse project. After that, we elaborate on the design guidelines and the online collaborated writing center Concourse based on these guidelines, as a part of this approach.

1 Introduction

Attractive online places for continuing professional development of (junior) professionals, which are legitimate, fully personalized, offering a wide range of knowledge services, flexible, highly interactive, and reliable - that is the focus of our research into the development of successful online knowledge communities. We are investigating the relationships between essential design guidelines for and the development of online knowledge communities.

The project presented here is Concourse (www.concourse.nl). The Concourse project is aiming at the development of an online writing community as a writing support environment for students in Higher Education. The Concourse project is a cooperation between the University of Utrecht (www.uu.nl), namely the Faculty of Arts, in particular German and Spanish Language and Culture Studies, Information Studies, and IVLOS, and Konict BV (www.konict.nl), the project is co-funded by the SURF foundation (www.surf.nl). This community is an example of an online knowledge community, a group of people working online and sharing an interest in the development and exploitation of a particular knowledge domain, in this case academic and business writing [8, 9]. The purpose of this community is to obtain, create, manage and use writing support relevant to the community and for its members to share. Therefore there is a need for an online center as a meeting place and as a place for collaborated writing in a knowledge rich environment.

The project Concourse started in 1999 and is expected to be finished in February 2003. We are aiming to continue the community as a part of the curricula of the involved studies German and Spanish languages. The writing community is located a didactical university setting, called the 'Workshop'. The Workshop is a one-year course (160 hours of study) for developing students' skills in business and scientific writing in various languages. The Workshop provides support for students' writing in different courses. The support can be by means of online information, drill & practice, or tutorials, but also by peer, or senior students, teachers or experts from outside the University. In the study, participants are mainly university students and teachers. Students can use the Workshop when they are taking courses that require particular writing skills. The Workshop started in the academic Year 2000-2001 in the Faculty of Arts, in the German and Spanish Language and Culture Studies. In 2002-2003 we are introducing and online meeting place for establishing an online community.

Participants are mainly first and second-year students and teachers. The participants are not expected to be specifically interested in the use of ICTs and they do not receive a specific introduction in the use of digital media. It is expected that they possess limited skills in using these media. However, a majority of the students is expected to have access to a computer at home, and a minority also to the Internet. We consider ths students and teachers as (junior) professionals.

As basic communication media e-mail and a WWW-based system Concourse (www.concourse.nl) are used. Concourse is the so-called online collaborated writing center and is intended as a virtual space for online interaction, a place for collaborated writing in a knowledge rich environment. It offers services required for professional development of students and for the development and exploitation of knowledge about scientific writing. Examples of services provided by the system are services for information access, information dissemination, communication, study rooms, research, support, coaching, training and study, and knowledge management.

Not all Workshop activities, such as communication and training, have to take place online. In many situations, if possible, face-to-face communication is preferred over online communication because of its limitations, for example loss of communication cues and loss of perceived social presence. Nonetheless, with further technological developments, such as the growth in bandwidth of data, the quality of online communication is expected to improve further. In addition, it is expected that participants will become more familiar with and experienced in the use of online communication, which might have a positive effect on the quality of communication. Bearing in mind what has been said above, a mixture of face-to-face and online communication is expected to be ideal.

In this paper, we present our design research approach that we apply in the Concourse project. After that, we elaborate on the design guidelines and the online collaborated writing center Concourse based on these guidelines, as a part of this approach.

2 The design research approach

The design research approach is comparable to that used in other disciplines such as Human Factors [2, 5]. We outline the phases and describe outcomes, differences and relationships between them. Our approach includes four research phases (see Figure 1), represented as rectangles. Inputs and outputs are represented by parallelograms and input-output relationships by arrows.

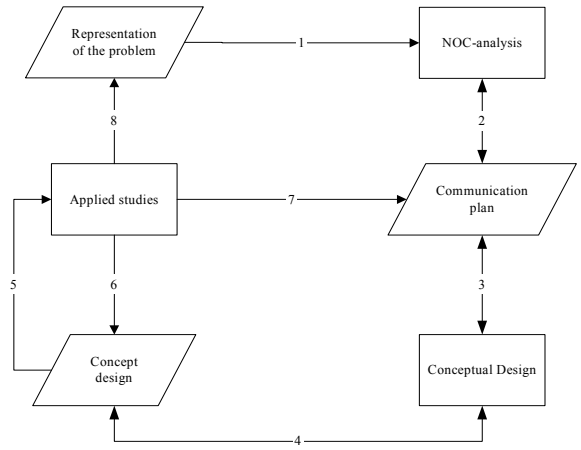

Figure 1: Approach for design research

Analysis. The first phase, Analysis, is the analysis of a 'networked organisational communication' situation. This situation can be considered for example as a communication problem, communication opportunity, or communication hypothesis, for instance as a result an existing communication design process. In the case, this phase addressed questions such as 'how can a Workshop contribute to the quality of student's academic writing'. Expectations included 'active writing, writing in online intensive co-operative groups within an information-rich environment and purposeful writing will have a positive effect on writing quality'. This type of expectation makes a claim about use of the Workshop, but does not specify the design of the Workshop in any way. However, expectations do impose constraints on system design, in this case that active writing, intensive communication and purposeful writing should at least be supported and stimulated if possible. Based on the analysis, decisions can be made regarding the situation that is aimed for. These decisions can be described in a plan, for instance a communication plan or, as we did in our case, 'The global functional structure of Concourse' [10]. In the case, the plan was the input to the design of the Workshop including an online collaborated writing center and constraints that the design must satisfy in order to be successful.

Conceptual Design. The second phase is Conceptual Design, where guidelines are drafted for the communication technologies to be used and a system design based on these guidelines. The 'concept design' is a combination of guidelines and a system design and will be discussed in detail later. In the case, the question addressed in the Conceptual Design phase was 'which guidelines should the design of Concourse adhere to in order allow active writing, intensive co-operation and purposeful writing and stimulate if possible?'. A design guideline is seen as a high level and broadly applicable directing principle. More concrete than guidelines, we also use patterns. A pattern is a named description of a problem and solution for it that can be applied to a variety of contexts [4]. One or more patterns may be derived from a design guideline. In our case, we also distinguished between proof of concept and proven concept. In general, we consider a prototype as a proof of concept if it meets the stated guidelines and if it is acceptable to users. If the community uses the system and if it has positive effects on the quality of scientific writing, then we consider the concept design as a proven concept. A proven concept meets the expectations of users. In the Concourse project, we described one leading guideline and four patterns [10]. The leading design guideline was: 'the centre has to enable a social network of members to develop and efficiently and effectively exploit all relevant information as knowledge assets at the time'. The patterns were 'Knowledge Object model', 'information data profiles', 'knowledge service model', and 'knowledge activating study'. These will be discussed later.

Applied studies. The third research phase is called applied studies. We consider applied studies as studies focussing on a specific concept design in a specific

context of use. These studies investigate a concept design as it is used. The purpose of this type of studies is to collect data to test, documented expectations (from the Analysis phase); second, guidelines from the Conceptual Design phase); or third, effects of interventions that are intended to understand or influence the NOC. Questions that are addressed may include 'how do students study using the Workshop?', 'how do patterns of relations develop using the Workshop?' and 'how does the Workshop develop?'. Such questions are more descriptive of nature. Questions addressed may also include 'what is the effect of collaboration opportunities within the Workshop on study behaviour?', 'what is the effect of an online information-rich environment on the quality of 'writing products'?', 'what is the effect of online coaching on instructors' behaviour?'. These questions focus on for instance efficiency or effectiveness of the use of a concept design and use empirical research, employing quasi-experimental or non-experimental research methods. The aim of these studies is to investigate relations between characteristics of participants, context and media.

The breakdown of communication research into phases that has been presented above is a variant of a standard empirical research process, with specific inputs and outputs of each phase indicated. The role of Conceptual Design was clarified and some indication has been given of how a concept design can be evaluated. Standard social science research methods and techniques [3] can be used in empirical implementation and effect studies of NOC systems.

In this paper, we want to present the Conceptual Design of Concourse in more detail. First, we describe two interfaces of Concourse as the system design based on guidelines -- the concept design -- that are presented later.

3 Concourse: An online collaborated writing center

Concourse has a number of interfaces, depending on the number of user groups and tasks. The basic interface is called the back office. It is a menu driven interface, on the left hand the tree which shows objects hierarchically, and the right screen shows the input and output views of the objects. Below, a number of typical views can be found, for instance, 'who is online', 'what's new', and 'messages'. We have chosen a 'traditional' tree-based interface to lower the learning curve for users and to make them feel comfortable with the program.

The collapsible object tree on the left side shows the wide variety of available objects. These objects can be messages, folders, persons, groups, chats, discussions, tasks, and etcetera. The top of the hierarchy consists of members or groups. We have chosen for the members or groups as the top, because it offers the user a consequent view on the objects. Moreover, members and groups form the professional network, the hearth of an online knowledge community. The tree does not allow for drag-and-drop operations, but is managed by the standard, cut, copy, paste, delete and link to operations. If members want to share specific information or interact with other members, they can form a new group and do so. Also, they can share for instance a discussion board with members, in that case the board is available in a shared items folder. A third way of making information available for for instance non-members is the opportunity to publish objects to others by means of a front office, of which an example is shown in figure 3. Examples of front offices are a showcase, portfolio, and an online magazine. Another example is a guest book in the public area, or a discussion thread. In this example, the folder ‘my groups’ contains links to the most important groups for this user.

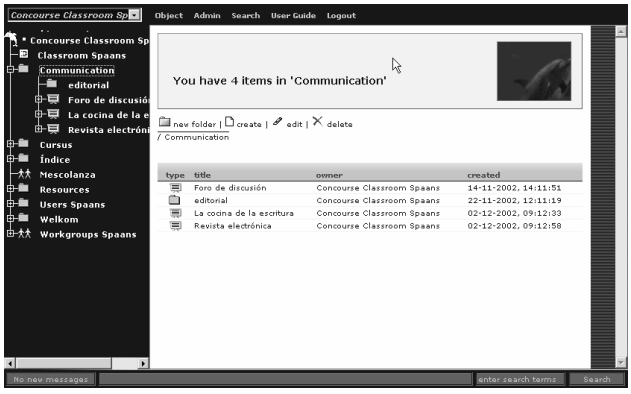

Figure 2: An impression of the back office interface of Concourse

The menus refer to the basic services. The menu is role driven. Here we give an overview of the main items. The Object menu enables the user to enter new objects and new object types. Entering objects implies filling in the object attributes. The possible choice of entries and values depends on the object types and the context of the center. The entries and values can be modified online and changed. For instance, typical values of the ‘folder genre’ are: archive, portfolio, and showcase. Values of a discussion board are: brainstorm discussions, announcements, and project proceedings. Each context has a typical set of genre concepts and these can be added by certified users in the role of, for instance, an editorial board. New object types offer the opportunity to add object types without the need of programming. An example is the object ‘project’. A project is a group with a specific task given limited resources in a specific period. Members can use the object type group for these purposes and, for instance, add the value project to the entry group genre. However, they can also decide to add the object type project based on the group object type. In that case, a project type has the same functionality as a group object type. This offers opportunities to also add the entry project genres, so that a specific set op projects can be classified. It also contains functions like: cut, copy, paste, modify, copy as link, etcetera. These operations concern the objects in the object tree. The admin menu offers a number of administration options. Often-used items are presented here. ‘Manage profile’ allows users to choose between different interface

profiles, for instance, simple, basic, and advanced. Personal preferences allow altering the personal member information. 'Manage users/groups' allows users to add users and if needed to create their personal area, to add groups, to modify users and groups, to close and delete. 'Manage keywords' allows users to maintain the fixed and free keywords. 'Associate keywords/object types' permits users to associate members and groups to keywords and object types. This offers the opportunity to distinct between different knowledge areas in one center. If members become a group member, then they are automatically associated to the group keywords and object types. 'Manage roles' allows users to maintain and add user roles, by filling in the rights to menu and object functions. The user guide menu offers the standard support options.

Members and member groups can design tailored interfaces for their 'rooms' in Concourse. For instance, a member is able to make use of a portfolio and can develop a portfolio interface for those who have access to the portfolio information. A member group may like to have a typical classromm interface, or wants to to make use of a 'electronic magazine' interface in order to present course results to the 'outside world'. An example of a classroom interface is shown in Figure 3.

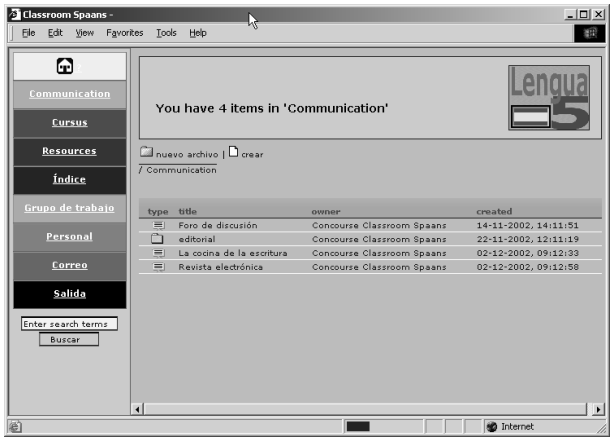

Figure 3: An impression of a member group interface in Concourse

The interface shown here, concerns the same room in Concourse as shown in Figure 1. However, the interface is designed by the user group, a class.

4 Concept design of Concourse

As described earlier, the function of Concourse is a meeting place that enables members to take part in the professional network, to develop them and to develop and exploit knowledge. In this part, we describe one leading design guideline and four related patterns, based on the function of Concourse. The leading design guideline is: the center has to enable a social network of members to develop and efficiently and effectively exploit all relevant information as knowledge assets at the right moment. To meet this leading guideline we deduced the following four patterns, which are described in Table 1.

Pattern name	*Knowledge objects*
Solution	Model all relevant information units in digital knowledge assets, where an asset is seen as an object containing information and activities.
Problem it solves	How to model information so that it can be looked upon as knowledge assets?
Pattern name	*Information meta data profile*
Solution	Describe all information objects by means of appropriate meta data profiles.
Problem it solves	How to model information so that it can be efficiently and effectively developed and exploited as knowledge assets at the right moment?
Pattern name	*Knowledge services*
Solution	Develop a comprehensive service model that encourages the development of the professional network and enables knowledge development and exploitation.
Problem it solves	How to facilitate a social network to develop and exploit knowledge assets?
Pattern name	*Knowledge activating study*
Solution	Develop a knowledge activating study as the primary work environment for the professional.
Problem it solves	How to enable members to take part in the professional network, develop them and exploit knowledge?

Table 1: Four patterns for the design of Concourse.

In the next sections, we describe the patterns.

4.1 Knowledge objects

We need to model all relevant information units in digital knowledge assets, where an asset is seen as an object containing information and activities. So, from a software system point of view knowledge assets are seen as knowledge objects. In order to describe this view, we use the concepts and notation of the Unified Modeling Language (UML) as described by Larman [4], among others. As a widely accepted standard, UML is used for modeling object-oriented concepts.

We make a distinction between four super classes of knowledge objects (See Table 2). A class is a description of a set of objects that share the same attributes, operations, methods, relationships and semantics. A super class is a more generic object that encapsulates two or more subtypes.

Super classes	Simple object	Container object
Information object	1) Information object: File, URL, Message, Simple Chat, Simple Discussion board, ...	3) Information view: Folder, Archive, Interactive magazine, Brainstorm discussion, Concluded project, Concluded workshop, ...
Enterprise object	2) Enterprise object: Person, Simple Organization, Simple Group, ...	4) Enterprise space: Project, Workforce, Conference, Workshop, ...

Table 2: The four super classes of knowledge objects

Firstly, we make a distinction between a simple and a container object. A simple object is a singular object,

while a container object is a plural object, containing two or more simple objects. Secondly, we distinguish between an information and an enterprise object. An information object is an object that has no 'development' or 'exploitation' capabilities. An enterprise object is an object that is capable to learn, and develop and exploit knowledge. Based on this distinction it is possible to record objects that offer information and objects that have a disposition to act in a particular way and have value-adding potential [1]. Herein lies the reason we speak of knowledge objects instead of, for instance, only information objects.

The first super class is the information object. Examples are: files, URL's, chats, discussions, tasks, etcetera. Clearly, we also include interactions like chats and discussions in our model. We aim to refer to all information units that can be relevant for the professional development and the development and exploitation of knowledge.

The second is the enterprise object. Examples are: persons, simple organizations, simple groups, etcetera. These can be described partly by competences, and capabilities that refer to their disposition to act in a particular way. One major characteristic is that these objects can be described by their competences like knowledge, skills, attitudes and experiences and that these competences can change during the time.

The third is the information view. Examples are: folders, archives, interactive magazine, brainstorm discussions, portfolio's, showcases, finished projects, finished workshops, etcetera. These are information sources containing two or more objects. It can contain for instance all finished projects, written articles, showcases, or combinations of these. A wide variety of genres of information views is possible. These can be static or dynamic. A static information view is edited and filled manually by, for instance, a project or a person, while a dynamic information view builds up a set of relevant information objects based on a designed query request.

The last super class is the enterprise space. Examples are: projects, workforces, conferences, workshops, and etcetera. These are objects that can make a difference in what is known. For instance, "the online workshop in 'a certain topic' has shown that …". As soon as these objects are finished, there is no development of the object itself anymore. It becomes a container object. That means it can be used as a source of information but is not 'able to learn' anymore.

A question to be answered is: why do we need this distinction between the four super classes. The first reason is that it offers a clear overview of typical knowledge objects. Secondly, each of the super classes has a typical basic meta data profile. Finally, each of the super classes has typical, basic, knowledge services. We come back to the profiles and services in the next section.

In the center, we realized all four super classes and members have opportunities to add additional object types. The capabilities to learn of the enterprise objects such as person and group are expressed in the meta data profiles of these objects. Each is described by, for instance, a competence profile, which is (partly) dynamically maintained based on the activities in which the person or group is involved. Starting the design of Concourse, implied a description of the main object types, typical for an online knowledge center in a higher education context. The education concerned the master phase of students, so they were highly motivated and could be seen as junior researchers who took part in the development of the knowledge domain. Examples of typical objects are: references, workshops, project groups, and courses.

4.2 Information meta-data profiles

The second pattern refers to the meta-data profiles. Meta-data has several meanings depending on the context of use. Basically, meta-data describes data. It can refer to a more technical description, for instance, the format of the calendar date, but we are interested in meta-data about the knowledge objects. In this context, we see meta-data as a bibliographic description of these objects. Of course, a technical description is also needed, but not relevant in this context.

The purpose of meta-data is to facilitate search, evaluation, acquisition and use of knowledge objects. A number of initiatives have been initiated to define meta-data standards (www.dublincore.org, www.imsproject.org, and http://ltsc.ieee.org/). A major advantage of an internationally accepted standard is to facilitate sharing and exchanging of electronic knowledge objects among or between users and organizations.

Here, we have chosen the approach of the IMS Global Learning Consortium (IMS). IMS is developing and promoting open specifications for facilitating online distributed learning activities such as locating and using educational content, tracking learner progress, reporting learner performance, and exchanging student records between administrative systems. IMS has two key goals:

- defining the technical specifications for interoperability of applications and services in distributed learning, and
- supporting the incorporation of the IMS specifications into products and services worldwide; IMS endeavors to promote the widespread adoption of specifications that will allow distributed learning environments and content from multiple authors to work together (in technical parlance, "interoperate").

IMS is a global consortium with members from educational, commercial, and government organizations. IMS is producing eight specifications that address logically bounded domains, such as learning resource data, enterprises, competencies, accessibility, etcetera. IMS works closely together with the IEEE Learning Technology Standards Committee's (LTSC) LOM (Learning Object Model) Working Group.

As an example, we give an overview of the learning resource meta-data information model, version 1.2.1 final specification (IMS, 2001). This model describes the

information objects, as described in the former section. Other models can be found on the website of the IMS Consortium. These models list the meta-data elements and describe how they are hierarchically organized. Each element is described with eight pieces of information. These are:

1. Name — How the meta-data element should be spelled.
2. Explanation — The definition of the element.
3. Multiplicity — How many elements are allowed and whether their order is significant.
4. Domain — What the element's vocabulary is limited to and other information.
5. Type — Whether the element's value is textual, numerical or a date; and any constraints on its size and format.
6. Extensible — Whether the element is extensible or not.
7. Note — Why the element was included, guidelines for its use, etc.
8. Example — Sample use of element, where appropriate.

The base scheme of the elements is described in Table 3.

Nr	Name	Explanation
1	General	Group's information describing resource as a whole. For instance: title, language, and description.
2	Lifecycle	History and current state of resource. For instance: version, status, and contribute.
3	Metametadata	Features of the description rather than the resource. For instance: contribute, meta data scheme, and language.
4	Technical	Technical features of the resource. For instance: format, size and requirement.
5	Educational	Educational or pedagogic features of the resource. For instance: interactivity type, learning resource type, and semantic density.
6	Rights	Conditions of use of the resource. For instance: cost, copyright and other restrictions, and description.
7	Relation	Features of the resource relationship to other resources. For instance: kind, and resource.
8	Annotation	Comments on the educational use of the resource. For instance: person, date, and description.
9	Classification	Description of a characteristic of the resource by entries in classifications. For instance: purpose, taxonpath, and description.

Table 3: The base scheme of the elements that describe the resources

Each entry is subdivided. From a bibliographic perspective, there are two important entries. These are Educational and Classification. The entry Educational is subdivided in eleven fixed subentries, Table 3 mentions three examples. Classification however offers the opportunity to add typical, context specific, bibliographic subentries. The context here is continuing professional development by formal and informal learning in the course of practice. Context specific entries can be chosen, based on characteristics such as the particular knowledge domain, the professional network, and the learning routes. The result is a situational base scheme.

The information meta-data profiles are crucial for the functioning of the center. We started with a description of the knowledge domain 'Networked communication', a so-called information space analysis [1]. We worked out a concept map, containing approximately 50 central concepts. The map is based on an analysis of relevant literature and of the related courses. We took the 50 concepts and ordered them hierarchically. These concepts were added as fixed keywords. We derived a 'table of contents' as the hierarchic description. This table was used as the starting point for the development of archives. We also developed four additional meta-data sub-entries related to Educational entries and Classification entries. These are genres, legitimacies, and usages. The genres are specific. The choices are based on a description of the information genres in organizations [6]. In Concourse, administrators have the functionalities to adapt the profiles based on the user experiences.

4.3 Service model: Description of meeting, development and exploitation services

The third pattern refers to the service model, a description of the services that encourage the development of the professional network and enable knowledge development and exploitation. From a software system point of view, these services are software functions. We prefer the concept services, to make clear that we consider the design of Concourse from a user perspective. Normally, services will refer to a number of software functions.

We distinguish three basic service types: information, interaction, and management services. Information services enable professionals to get information and to present information to others. Interaction services enable professionals to communicate with, to cooperate with, and to support others. Management services enable professionals to manage the center. These services types are related to the four super object classes. Basic knowledge objects can be seen as services. An information object like a simple chat or a simple discussion board, can stand for a number of interaction services like: brainstorm discussions, feedback discussions, frequently asked questions lists, who-knows-who discussions, private discussions, meeting, etcetera. For each service, information services like protocols, templates, and/or additional support can be given, but basically the interaction is (a-)synchronic and is based one or more media such as text, audio and video. Each object is subject to management services, such as: create, edit, copy, paste, monitor, review, etcetera.

The choice for services should be based on an analysis of the characteristics of the use context of Concourse, the workshop. So, who are the members, how are their social relations, what culture do they want, what knowledge assets can be identified, and maybe the most important question, what are the valued information processes, etcetera. This analysis leads to a starting set of objects and related services. Tracking research of the development of the professional network and of the knowledge development and exploitation has to ensure

for a continuing adaptation of the service framework of Concourse.

In Concourse, information services are mainly based on search options. Due to the coherent meta-data profiles, it is possible to develop a wide number of typical searches. One example is the overview object. It behaves like a dynamic folder, and when opened performs a stated query, displaying the actual results. Based on this object type, we are able to develop dynamic archives, containing the latest information. Interactions depend on the communication facilities.

4.4 The knowledge activating study

The last pattern we want to describe here concerns the knowledge activating study as the primary work environment for the professional. We use the word ‘study’ in the sense of ‘to spend time in learning’ and in the sense of ‘a virtual room used for studying’. Furthermore, this room has to activate knowledge. We prefer activating knowledge above, for instance a more often used concept such as knowledge management. The idea is that the primary task of the 'study' is to facilitate the professional in primary knowledge intensive processes; management of information is seen as a typical secondary process. The last characteristic of our interface concept is 'primary work environment'. More concrete, we see it as the desktop of the professional's computer, instead of, for instance, the desktop of an operating system or the intranet of an organization.

We derived the following three guidelines from this concept. The desktop needs to be communication based. The members, groups and projects and the interaction between or among them have to play a central role in the interface. The reason is that the professional network is the hearth of an online knowledge community. The desktop has to support knowledge intensive tasks. The interface has to allow for a far-reaching level of situational support. The reason is that activating knowledge is an active concept; it implies that there is a continuing performance support while the professional is working. Finally, yet importantly, the desktop has to be practical of use. The interface has to enable the professional to work as a practitioner. It has to be usable and practical.

The last pattern is the knowledge activating study. It has to stimulate communication, support knowledge intensive tasks, and it has to be usable and practical. We try to stimulate communication in a number of ways. First, members are objects, so if you are looking for typical information, you will also find members who most likely have that kind of information. Second, it is always possible to identify the 'owner' of information objects and to contact the owner, if the owner is still a member. Third, we make use of pop up 'online member' windows that show the current online members. This window is situated, so if you open this window while you are in a group space, you are able to see the online group members. Fourth, each group and member has the opportunity to add personal information that can be viewed by others. Still, we think that new ideas are needed, and based on member reactions we are still developing ways to improve. Supporting knowledge intensive tasks is crucial. Our starting point is the 'professional development activity model' that is described in the beginning of this article. This model has led to a typical set of information objects and meta data profiles. Based on these objects and related profiles, we are developing blue prints for each of these activities. A blue print can be a continuing workshop dedicated to a specific set of skills or a predefined support search for experiences, method fragments and best practices. Finally, yet importantly, all these opportunities have to be usable and practical. To enhance the usability, we have chosen for a typical 'windows program' interface. For instance, practicality is enhanced by continually seeking for ways to ease the input of information by the members and to ensure to provide them with practical information. Therefore, we developed an 'information design scheme', that allows for a fast scan of the usefulness of information provided. Still, the usability and the practicality are a constant concern. Based on member experiences, we are constantly trying to improve both.

5 Conclusions and discussion

The Concourse project is aiming at the development of an online writing community as a study support environment for students in Higher Education. Therefore there is a need for an online collaborated writing center as the meeting place and place for writing in a knowledge rich environment. We described the approach for the design of this center, and as part of this approach, the conceptual design of Concourse. We described this design in terms of four patterns. These patterns are 'knowledge object model', 'information data profiles', 'knowledge service model', and 'the knowledge activating study'. From a software engineering point of view, the first two refer to the data model, the third to the functionality, and the last one to the interface of the software system. The center Concourse is described as a proof of concept. The design of the center meets the stated guidelines. The question of usability and eventually the question of effectiveness and efficiency can only be answered after the extensive trials. The next step is to realize a proven concept. From october 2002 till februari 2003, we are carrying out a number of trials. In these pilots, social associations and interactions have to be developed, strengthened and intensified. In these pilots, we are interested in the development of these associations and interactions. Based on the results, we are able to support the development of Concourse and comparable online knowledge communities to proven concepts.

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