‘HEALER, HEAL THYSELF!’: INFORMATION MANAGEMENT IN AN ARCHITECTURE FACULTY

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SUMMARY

The architect’s profession has always been that of an organizer; a coordinator. In an increasingly specialized society such as ours there is an even greater demand for professionals with a wide range of management abilities. Today’s architect will have to organize and coordinate the flow, the means and the systematic storage of information in a project. For an institution that ‘produces’ architects, it is, in the opinion of the authors, vital to not only teach modern / contemporary methods of organizing information but also to practice them. If architecture students are to comprehend the necessity of organizing skills & tools, they will have to encounter these from day one of their student life. In 2002, the Faculty of Architecture of Aachen University (RWTH) reached a decision to provide all members of the faculty, teachers and students alike, with a central service for the management of information. That service, called *RWTH Information Technology Assistant (RiTA)* is to be a set of web-based tools for organizing and managing the curriculum and all matters connected to that. The objective of *RiTA* is to increase efficiency and transparency in the administration of the faculty.

THE ARCHITECT AS A MANAGER OF INFORMATION

The architect’s profession has always been that of an organizer; a coordinator. In an increasingly specialized society such as ours there is an even greater demand for professionals with a wide range of management abilities. If today’s architect desires to be more than a designer & draftsman, if he wants to keep control over his designs & the ideas and concepts behind them as well as see them become built reality, he will have no choice but to be a manager. Essentially, that means he will have to organize and coordinate the flow, the means and the systematic storage of information in a project.

For an institution that ‘produces’ architects, it is, in the opinion of the authors, vital to not only teach modern / contemporary methods of organizing information but also to practice them. If architecture students are to comprehend the necessity of organizing skills & tools, they will have to encounter these from day one of their student life.

Infrastructure Projects exist at universities since the late 1980s. Most, if not all of these, involved tutor organisation. The students were not involved as users in these systems. In the late 1990s, projects to transfer course content to the World Wide Web became common. Platforms such as Blackboard.com enabled many educators to easily present their content; however, the presentation of course content rarely involves "community" services. The authors consider that the success of such systems can only be reached when all members of the faculty are included and all faculty processes are supported.

RITA – CENTRAL INFORMATION MANGEMENT

At the RWTH Aachen, the spatial situation in the Faculty of Architecture is such that the faculty as a whole has long been fragmented. The faculty is housed in the former "Reiff Museum" which is not able to house all of the educators, let alone provide workspace for the students. The shortage of space and the large number of students means that the opportunities for informal communication are few. Furthermore, the lack of physical space for the students means that they work elsewhere, but still are required to physically comb the hallways for information. The situation offers a chance for Information systems to support a much more integrated and informed faculty.

In 2002, the Faculty of Architecture of Aachen University (RWTH) reached a decision to provide all members of the faculty, teachers and students alike, with a central service for the management of information. That service, called RWTH Information Technology Assistant (RiTA), is to be a set of web-based tools for organizing and managing the curriculum and all matters connected to that.

The objective of RiTA is to increase efficiency and transparency in the administration of the faculty. Among others, the desired effects are:

- a closer integration of all faculty members ('community-building' effect)
- the optimization of the information flow in the faculty & elimination of information redundancies
- the effective usage of available resources such as rooms, devices, skills ('human resources')
- an improvement of the interaction between faculty members

RiTA is to be realized initially as a pilot project in the Faculty of Architecture over a span of approximately three years, starting in 2002. New services are introduced at regular intervals in order to give the users sufficient time to adapt to new services and to allow for each service to be optimized after undergoing practical tests.

The concept of structuring a faculty using higher level programming techniques is not new. In his Paper entitled "The Application of Object-Oriented Software Concepts in Architectural Pedagogy", (Liebermann 2000) explains how Object Oriented programming could be used to structure the information describing a faculty, its members and the processes it uses.

'HIDDEN SERVICES' – THE MOTOR OF RiTA

With RiTA being an IT solution, a number of 'hidden services', namely servers running in the background, provide the infrastructure for the front-end, the user-interfaces.

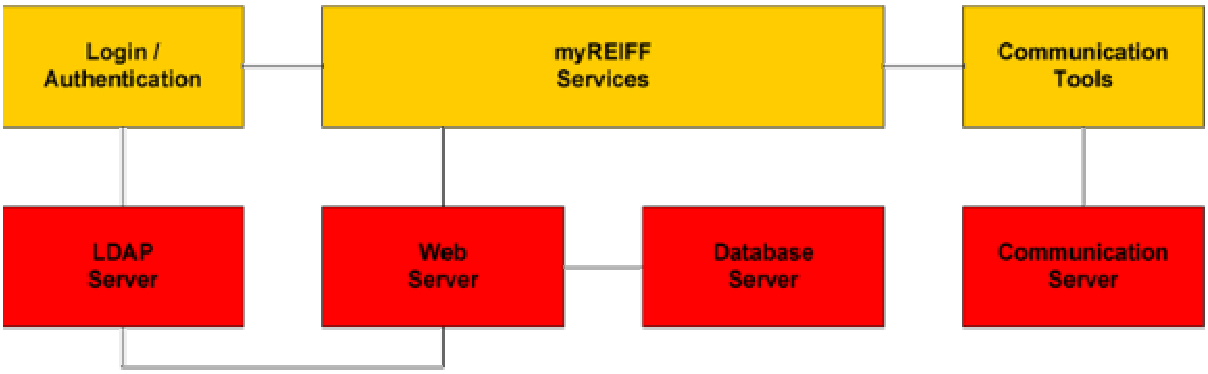


Figure 1 Simplified diagram of server structure

The core of these services is the central authentication server which has been in use since April 2002. This so-called LDAP-server enables every member of the faculty to use all 'front-end'-services available to him with a single login and password. The server does not only know single users, it also allows for the creation and administration of user groups. By assigning users to groups, defining user access rights becomes an easily accomplished task. This way, specific services can be made available to specific groups (e.g. professors, assistant teachers, students…). The appearance of the same user-interface will depend entirely on whether the user is, for example, a member of the administrative staff (more functions) or a student (less or completely different functions).

Another service of great importance is the central database server. All information that is to be shared by the faculty members is stored here. The server uses mySQL, a free database system that is highly popular in the realm of web-based database-use. One of the prime advantages of mySQL in comparison to commercial products such as Access is that there is a vast amount of open source software available that is specifically designed to work with a mySQL-database, which keeps development costs low for the faculty. The access rights to this server are dependent on the membership of the user to specific LDAP-groups.

The database can only be accessed via the faculty's web-server which, essentially, performs two functions: firstly, it is host to the faculty's and the respective departments' websites and secondly, all front-end services of RiTA are exclusively available through this server. In addition to this third server, there is a communication server, which is being used for video-conferencing and other means of remote communication / collaboration.

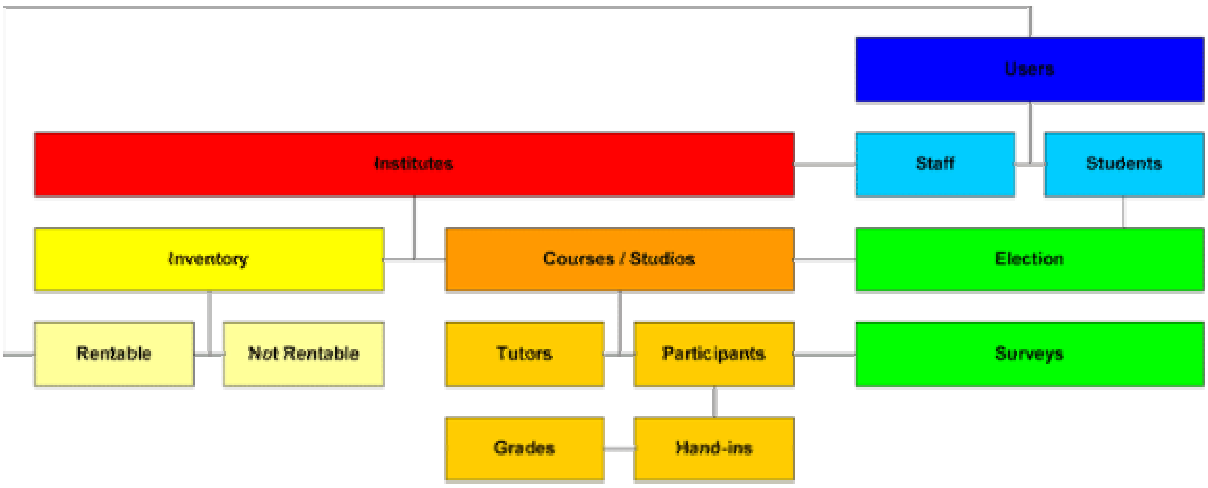


Figure 2 Simplified diagram of database structure

myREIFF – THE FRONT-END

With the front-end services being web-based, they can be accessed world-wide over the internet, allowing all faculty members to manage their information from outside the university. For security reasons, exceptionally sensitive services (e.g. access to students' grades) are only enabled within the RWTH-network (or through a VPN-tunnel: a 'Virtual Private Network'). The whole site uses encrypted data transmission (SSL) to ensure that the data cannot be tampered with. Users log in via the aforementioned LDAP-server that also determines which services are made available to the respective users.

The name myREIFF (the faculty is housed in the 'Reiff' building) suggests exactly what the service is all about: to provide each faculty member with a set of personalized information management tools according to his status at the faculty.

FROM MICRO TO MACRO: myCAAD AS A TESTING-GROUND

As mentioned above, new services are added to myREIFF on a regular basis. Before it is made available to all faculty members, any new feature that is developed first undergoes tests at the Chair for Computer Aided Architectural Design (CAAD) which is, in fact, responsible for the development of new services and the whole management of RiTA. Services are tested by students in the institute's courses or by institute staff, depending on which user group they are designed for. This way, the new developments can be optimized before affecting the whole of the faculty body. This method can be projected on a larger scale: when completed, RiTA could very well be a prototypical solution for the whole university.

myREIFF – YEAR ONE

2002 has been the starting-point for the services bundled in myREIFF. An interface linked to the LDAP-server was developed, which currently includes, among others, the following functions:

'Digital index-card'
Until this service was introduced, each institute had a separate set of index-cards for all architecture students. The index-cards were filled in at the beginning of their studies, making it highly unlikely (with

students changing apartments every few years) that the contact information provided by the student stayed accurate during the whole of his student career. If students were genuinely interested in keeping their contact information up-to-date, it meant keeping every institute informed about e.g. changes of address.

The 'digital index-card' is an interface to a central student database. Students can edit their contact information autonomously whenever any changes occur. Furthermore, students can provide additional information such as a cellular phone number or email-address. The Chair for CAAD has been using this data successfully for the past year to get in touch with students when necessary; by the beginning of 2003, all institutes will be able to access this information.

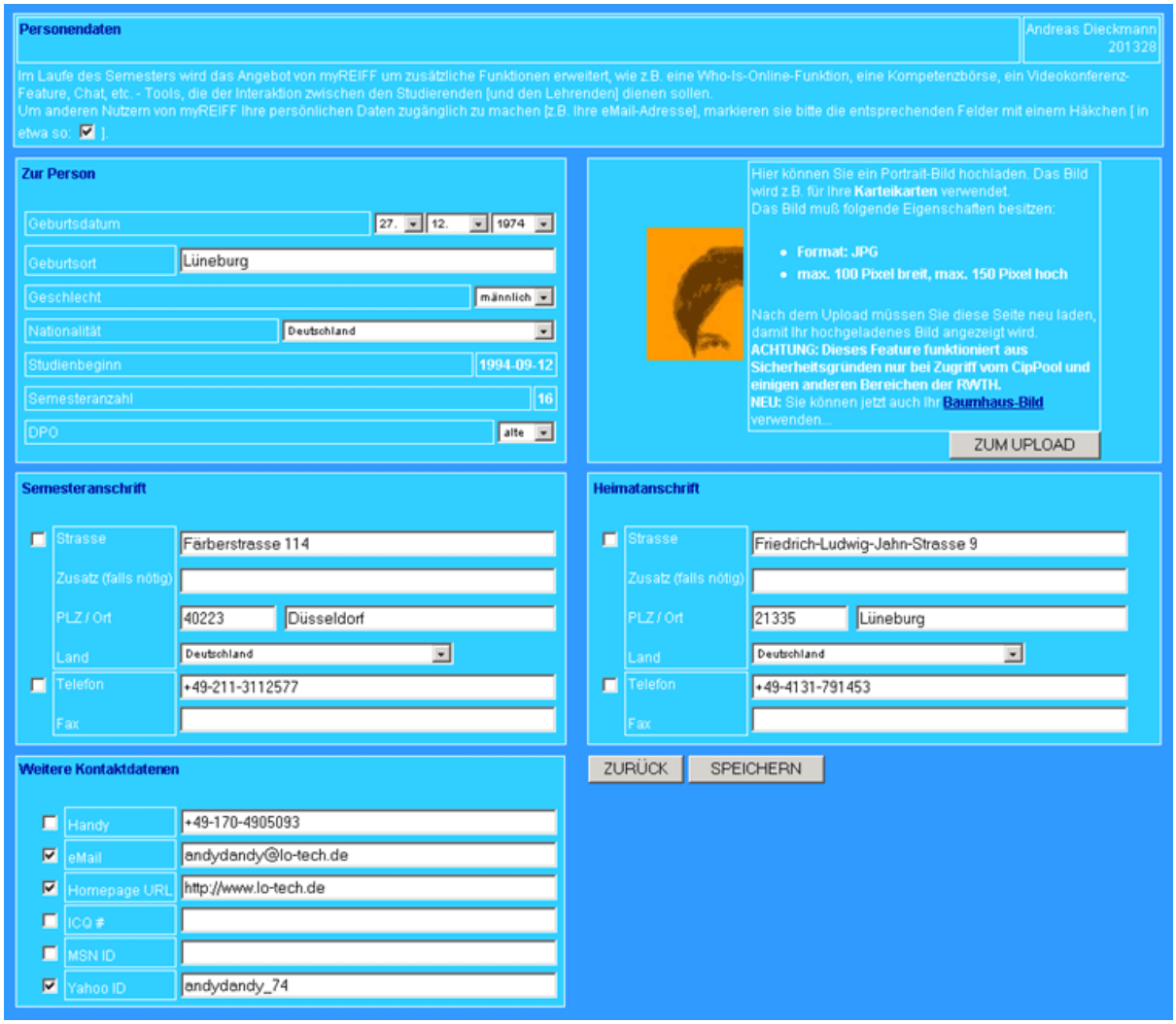


Figure 3 Screenshot of 'digital index-card'

Electoral procedure for design studios

In April 2002, the Chair for CAAD introduced a web-based procedure for the placement of students in elective courses. With the experience gained from the evaluation of that first web-based 'election', a larger, more flexible interface was built that can be applied to any course or design studio offered in the faculty. In October 2002, all upper and lower level design studios could be elected online.
In previous years, the studios had been assigned to the students by means of a 'classic' ballot-box election where each student could choose three preferences. The ballots of the 800+ students were then sorted over four days by hand – one pile of ballots for each studio.

Apart from automating that process, the new procedure has the following advantages:

- through iterations of the placing procedure, the percentage of students placed into studios was increased from roughly 80% to 96,5%

- during the election, students could access a summary page listing how many students had chosen which design studio and could change their vote accordingly as often as they wished
- additional statistic data was gathered for a more accurate determination of the students' demand for design studios

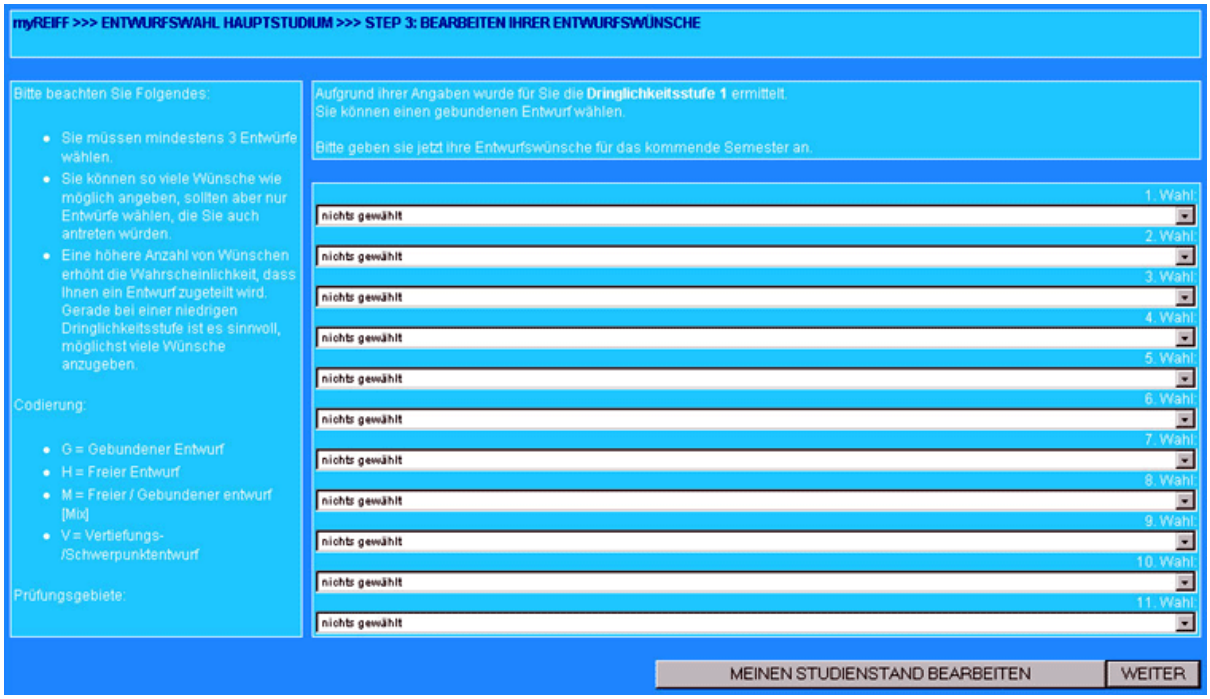


Figure 4 Screenshot of studio selection interface

Figure 5 Screenshot of summary page showing the percentage of votes the respective studios received

'Who's On Campus?'

All users that log on to myREIFF are displayed with their name and photograph (from the student database) in a fixed frame of the website which is refreshed in a regular interval. Additional information provided is the user's IP-address and his location on campus, which can be determined through the IP-address.

'Who's On Campus?' is the first step towards 'community-building' functions under myREIFF. It is being developed within the scope of a research project called *URMEL – 'Ubiquitous RWTH for Mobile E-Learning'* of which the Chair for CAAD is one of the project partners. The goal of *URMEL* is to

develop tutoring applications for the use of wireless networks at Aachen University and evaluate them.

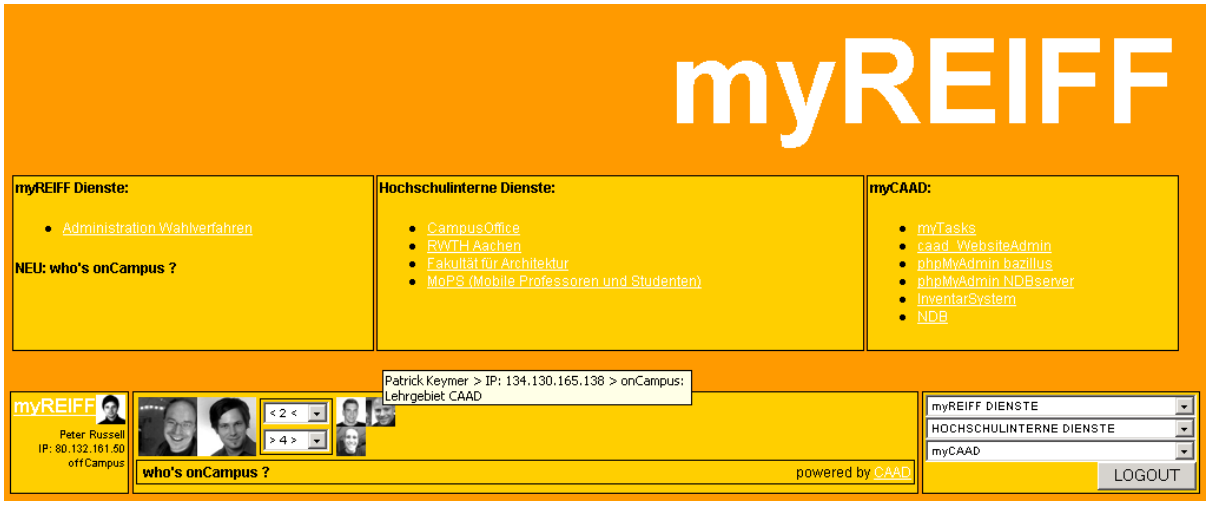
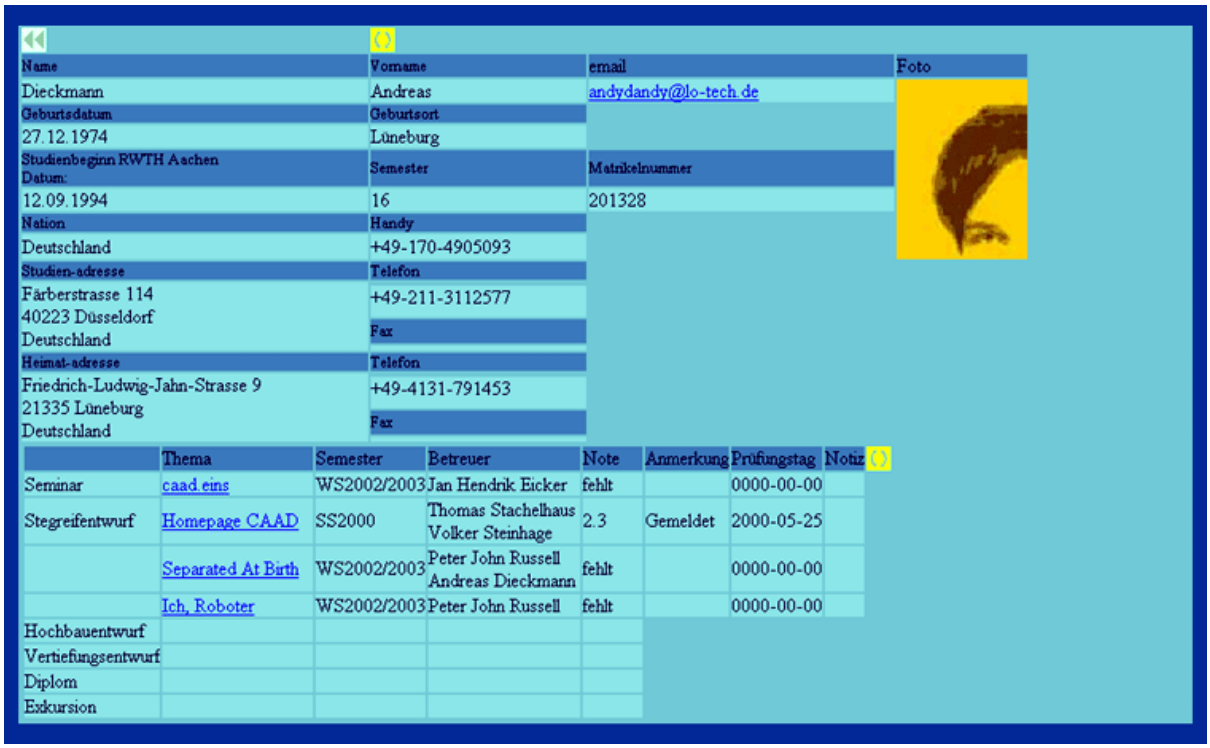


Figure 6 Screenshot of myREIFF start page with 'Who's On Campus?' – bar

myGrades & Grade Database:

The Chair for CAAD has developed a database for courses & studios, the enlisted students and the marks they obtained. This database is being used successfully since the summer of 2002 and could in the future be used by all the institutes of the faculty. It is linked to the student database, adding courses / studios and the grades received to the contact information of the student. Once all institutes use the 'Grade Database', the participant lists generated by the election module will be written into the database to be used by the respective departments when marking students' results.

For the students, a complete online-overview of the status of their studies would then be possible ('myGrades'). A student could see all grades that he has received so far and might even see a list of the courses & studios he would still have to do in order to finish his studies. Since December 2002, students who have taken CAAD courses or studios have the opportunity to review their grades online.



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	Thema	Semester	Betreuer	Note	Anmerkung	Prüfungstag	Notiz
Seminar	caad eins	WS2002/2003	Jan Hendrik Eicker	fehlt		0000-00-00	
Stegreifentwurf	Homepage CAAD	SS2000	Thomas Stachelhaus Volker Steinhage	2.3	Gemeldet	2000-05-25	
	Separated At Birth	WS2002/2003	Peter John Russell Andreas Dieckmann	fehlt		0000-00-00	
	Ich, Roboter	WS2002/2003	Peter John Russell	fehlt		0000-00-00	
Hochbauentwurf							
Vertiefungsentwurf							
Diplom							
Exkursion							

Figure 7 Screenshot of grade database

'Digital hand-in'

As of November 2002, students that take CAAD courses can digitally hand in their assignments using a myREIFF-interface. Students can see online which assignments they will have to submit until their respective deadlines have passed. Tutors have their own interface, which allows them to see the status of submissions of each student or group of students. Within a month the percentage of late hand-ins has dropped from roughly 15% to 4%. Should a student miss a deadline, he is not able to upload his work anymore, but has to contact a tutor to have his work uploaded and - at the same time - be reprimanded for not making the deadline!

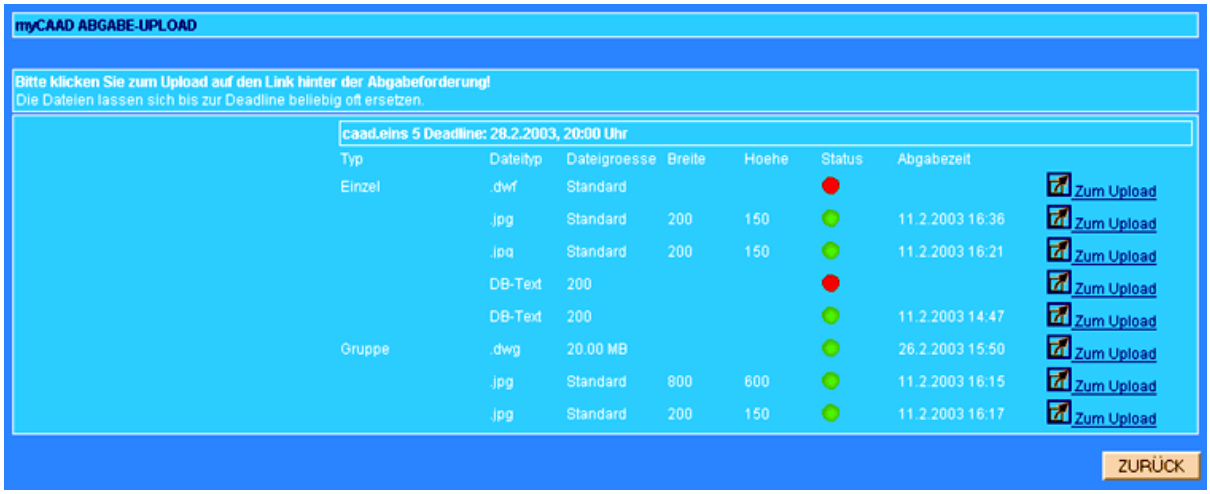

Figure 8 Screenshot of student interface for hand-in

myREIFF – THE FUTURE

Apart from making the functions that are currently being tested by the Chair for CAAD available to all faculty members, the following services will be implemented in myREIFF within the next two years:

Online-surveys

There is a growing demand for the evaluation of the courses and studios offered to the students. In the fall of 2002, the Chair for CAAD developed a tool for generating and evaluating online surveys. In the beginning of 2003, all CAAD students can evaluate their respective courses & studios, giving the institute statistic data to determine how the courses / studios offered could be improved.

Groupware

In the spring of 2003, the Chair for CAAD will start evaluating GroupWise, a commercial groupware-solution. As GroupWise is capable of using LDAP authentication, it can be easily integrated into the faculty's IT concept. Functions include: calendar, shared agenda, web mail. Should the evaluation be positive, GroupWise will be made available to all faculty members.

Central inventory & rental system

One of the goals of RiTA is to make resources such as devices available to all faculty members. The Chair for CAAD has developed a central inventory system where all the hardware, software, furniture and analogue media it owns have been catalogued. In 2003, all objects that have been marked as rentable (e.g. video projectors, cameras, etc.) can be rented via a user interface by all faculty members. Again, if this proves to be successful, other institutes will be invited to contribute their hardware to the pool.

'Who's On Campus?' – Additions / 'Team | Work | Space'

Virtual Design Studios have experimented with online communities. Some of these have involved

presence as a key factor to their success. The Compadre System at the University of Washington (Johnson 2000) and the Netzentwurf platform developed at the University of Karlsruhe (Russell 2001) have shown how a visual feedback of the presence of other users can establish a "sense of place" in an online community. The myREIFF Project is about community building and so it was considered of paramount importance to further this concept of "place making".

It is thought that by indicating the presence of other members, the platform can help to improve the interactions between faculty members. Several 'community'-functions are planned as additions to 'Who's On Campus?'. In their index-cards faculty members can determine which personal and contact information they wish to be made available to other users. A click on the person's image in the 'Who's On Campus?'-bar will open a page with that data, with links to text- and video chat rooms where users can meet. The video chat rooms, hosted on the communication server, are already being successfully used in CAAD design studios in remote collaboration with architecture faculties in Germany, Switzerland & New Zealand.

Another planned feature is a competence database that will enable users to add their competences into a database and search for competences of other users when they need help with a project. In connection with the communication tools and the users' location information, 'Who's On Campus?' will become a useful tool for spontaneous online and offline collaboration.

Finally, the envisioned module 'Team | Work | Space' will open up even more possibilities in the field of collaboration. By linking myREIFF to the university's room management system, groups of users will be able to check the availability of rooms throughout the university and book available rooms on short notice.

CONCLUSION

It is important to note that the project is a work in progress. Furthermore, the first students to fully complete their studies using the RiTA system will graduate in a minimum of four years. Nonetheless, early feedback from course tutors indicates that the "structured" processes (e.g. the Assignment Hand-In Module) have led to much better organised work by the students - at least the correlation seems so. This is not the first attempt to integrate a faculty, but is perhaps the most ambitious faculty integration project in Germany at this moment.

The "Who's Online?" module has established a "virtual" addition to the spaces available in the faculty. Student feedback indicates that they refer to the myREIFF platform as a place as opposed to a website.
Initial educator and administrator feedback is also positive, but qualified on further services becoming available in the near future. Work continues on the system and an independent assessment will be held in the summer of 2003. Further development can then be steered according to the findings of this evaluation. It must be remembered that RiTA system is a support for personal interaction and so its success will always be dependent on the quality of the relationships between the members of the faculty.

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