

School for Dental Medicine  
Center for Dental Informatics

## **Internship Report**

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## 1. Usability

**Technology** Word XP, Adobe Premier 6.0, Adobe Photoshop 6.0

**Internet Resources** www.useit.com  
www.dental-computing.com

**Pre-Conditions** The interface was already implemented, a first evaluation script was drafted by the website developer and test participants were contacted. The whole evaluation process was advised by a HCI (Human Computer Interaction) specialist.

**Preparation** My work in the field of usability started with an introduction to the actual website "Computing in Dentistry". This website, which was going to be the object of evaluation, is the supplement to the book of same denominator. Together, this media concept consists of a combination of a book and a Website about computer and information technology applications in dentistry. It will fill a critical need in the dental community as a comprehensive resource on computer technology in dental practice. "Computing in Dentistry" combines the hardcopy and web format into an organic whole. It thus breaks new ground not only in terms of content, but also in the design using digital media. Starting with the use of the book, a computer novice user will learn to apply computer technology and internet resources step by step by utilizing the complementary website.

**Tasks** Mainly, it was my task to conduct the usability testing together with the participants. After initial testing performed by the HCI specialist, the script was modified and the testing series could start. Besides, an evaluation and the composing of a test-report would be required.

**Participants** The participants picked were three representatives each of dental students and faculty of the School for Dental Medicine. Their computer knowledge varied from very novice to professional.

*See Appendix A: Test Report*

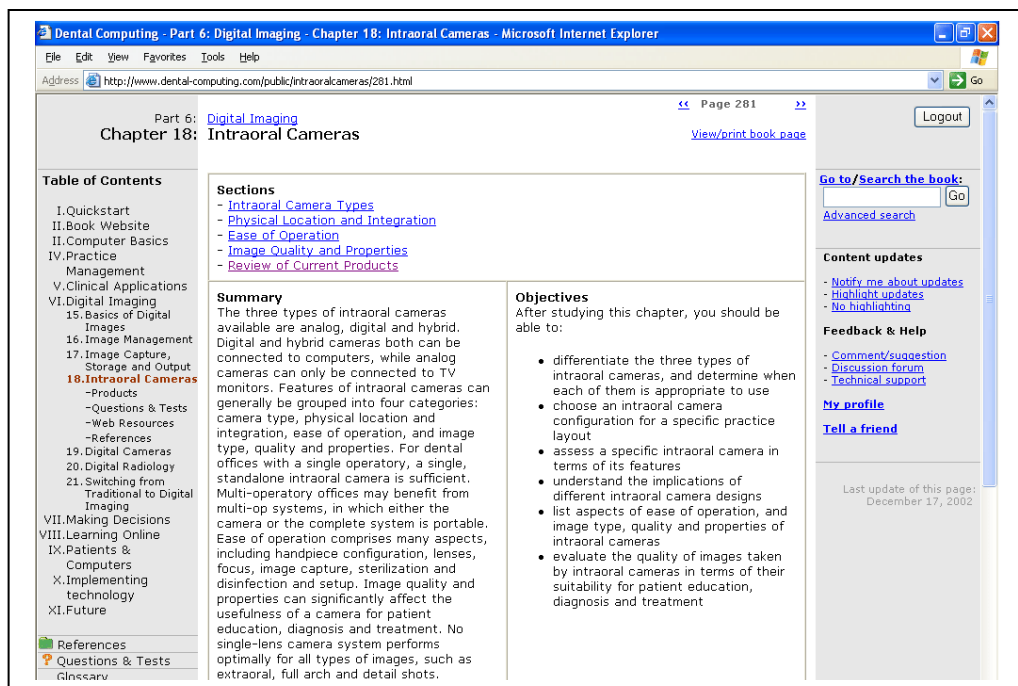
**Testing** The script consisted of four main parts. In the introduction the basic rules and procedures were explained and a demonstration of the usability methodology "Think Aloud" took place. The interview questioned the participant's background in computer literacy and his expectations concerning the features and functionality of the website first. Tasks performed by the participant could be differentiated between guided questions and explorative tasks. Guided questions dealt with the expectations of the user when pointing to specific elements on the screen, whereas explorative tasks requested the participant to solve some problems. The user was asked to find certain information within the site. By doing this, I gathered useful results about the usage and the appropriateness of navigational elements on the site. The last part of the testing was the debriefing. After applying the website for solving the requested task, the participant had to answer some questions about his experience of the website,

things he did not like during the test, things which were discovered and the structure and terminology in general.

For successful evaluation, it was important to audio-tape the testing and to write down additional non-verbal actions of the participant.

*See Appendix B: Testing Script*

## Interface



Screenshot 1: Dental-Computing Example Page

**Evaluation** After the tests, I produced complete test reports of each of the participants. As a basis, this gave me the opportunity to compare results and select important functions of the website that lacked in usability according to the tests. Together with the HCI specialist, I could outline the content and summarize the findings of the testing. For an adequate visualization, along with every function listed in a table, there is a description of the problem occurred in the testing, the severity of this problem regarding navigation and terminology, an explanation about the participants' comments and finally my own comments and suggestions about a possible way to solve the problem.

*See Appendix A: Test report*

*See Appendix C: Example of Single Test Findings*

**Lecturing** The Center for Dental Informatics at the School for Dental Medicine is carrying out a post-graduate program in Dental Informatics. One of the student's assignments was it to perform their own usability testing on the website "Dental-Computing". Therefore,

my testing experience was a basic source of knowledge which I had to provide. In order to get an impression about usability testing and its different aspects, I was conducting four more tests with them. But differing from the previous tests, I focused on the information about what is important for them to know being a test interviewer. Moreover, they needed more information about the selection of test participants and its effects on the results.

As well, the last test was video-taped in order to become a part of Heiko Spallek's presentation being part of the curriculum at university. During the development of this video, I designed and produced title slides and became familiar with Adobe Premiere, an application for digital video editing. For the final video, specific scenes from the 30 minutes of testing had to be selected and cut down to a length of 12 minutes showing the basic methodology of Thinking-Aloud in usability testing.

## 2. Dynamic Database Driven Web Applications

**Technology** HTML, PHP, mySQL, Dreamweaver, SSH, Photoshop, WordXP, Textpad

**Internet Resources** <http://selfhtml.teamone.de/>  
<http://www.php.net/manual/en/>  
<http://www.mysql.com/doc/en/index.html>

### 2.1 Project 1: Dental Public Health Student's Project Clearinghouse

**Description** This Project is available for the public to facilitate interaction between researchers or project managers with available research projects/data and students looking for research data to support residency projects or masters/doctoral theses work. Individuals with projects can post here the details they wish to make available to students.

**Links** [http://www.dental.pitt.edu/public\\_health/about.htm](http://www.dental.pitt.edu/public_health/about.htm)  
[http://www.dental.pitt.edu/public\\_health/dphspc/index.html](http://www.dental.pitt.edu/public_health/dphspc/index.html)

**Pre-Conditions** This application was designed for Dr. Robert Weyant (Customer), Division chair of the department of Pediatric and Developmental Dental Sciences at SDM for projects in the field of dental public health. Heiko Spallek had already created some static dummy screens for the website appearance approval before I started working on the project. Furthermore, the coordination process for the necessary data fields was completed.

**Preparation** Before I was able to start programming, I needed to learn some basic mySQL and PHP. Both computer languages were necessary to implement my first dynamic database driven web application. mySQL is the world's most popular open source database, whereas PHP is a widely-used general-purpose scripting language that is especially suited for web development and can be embedded into HTML. Moreover, PHP is the tool that allows access from the HTML application to the database.

Besides the internet tutorials, the analysis of an example application was of good use for training.

**Communication with Customer** Basically, there was only one first appointment with Dr. Weyant. During this meeting we discussed the steps of this project. Several parts of content were missing at that point of time and it was the customer's responsibility to provide, for example introductory blurbs for different pages. Even though the dummy screens made it possible to agree on the data fields, there were still some details that Dr. Weyant requested for a change. The main communication on the other hand was achieved by email only.

**Development Environment** First, I had to develop and test the application on the staging server before it could go life on the SDM web server. For this procedure, the site setup of Macromedia Dreamweaver MX was utilized.

**Implementation of Website** The implementation of the website went along with several code reviews with my supervisor Heiko Spallek what enabled me to fully understand the necessary PHP syntax. In this way, my development could be overseen and milestones for the whole project were set up.

The following steps describe the implementation process:

- Setting up development environment
- Creating table with appropriate column types
- Creating new database on mySQL server
- HTML form development
- Database entry for new additions with online form
- Data retrieval on index and description
- Modification of form for editing mode
- Review page on administrator site
- New submission listing on administrator site
- Testing with complete data sets
- Implementation of validation of data entries
- Search functionality
- Testing
- Linking from Dental Public Health (DPH) web pages
- Review of Customer
- Final modifications and testing

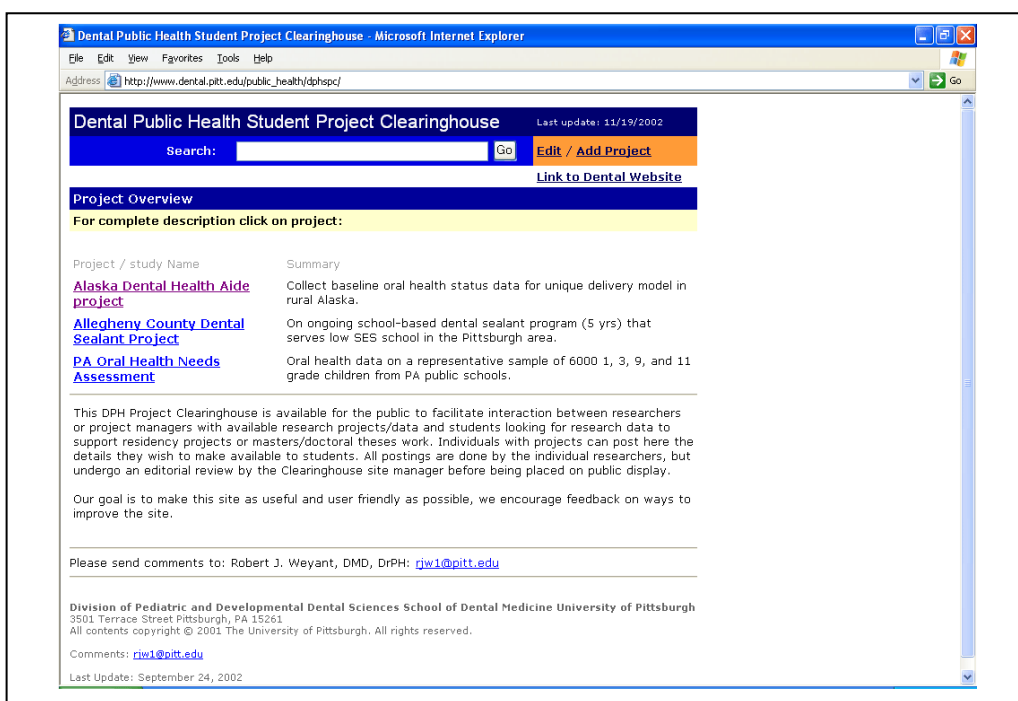
**Database Construction** Fundamentally, the database administrator had to create my log-in for the mySQL Server. Creating a table was not very difficult anymore after having studied the mySQL online tutorial. Inherently, I had to consider the right length of data entries, column types and default settings. For a correct documentation, I listed all data fields and their descriptions. This was as well helpful for the following project and could be used as a form for data acquisition.

See Appendix D: Data field Specifications and mySQL Command

**Functionality and Specifications** The application consists of two different websites, one for the public for entering new projects and one for an administrator for reviewing entries. Only the public website should be linked from the Dental Public Health page on the SDM website.

### Public Site

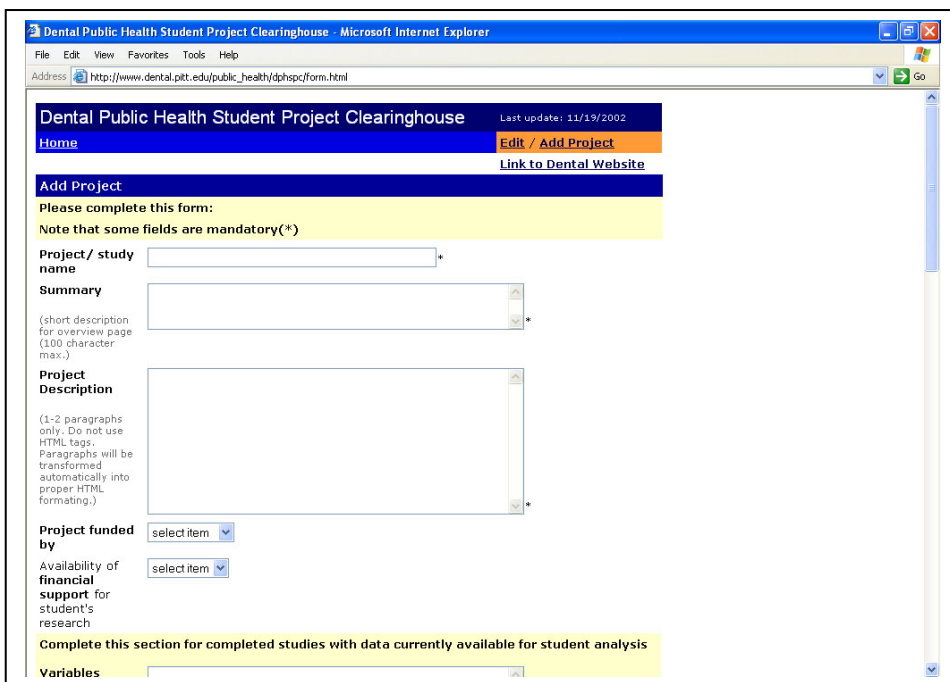
**Specifications** The homepage had to list all projects confirmed by the administrator with project name and a summary. The project name was used to link to a more detailed description of the same project. The header contains all global navigational links for adding or editing a project, the search function and a link to the Dental Public Health webpage.



Screenshot 2: Homepage of Clearinghouse Database Application

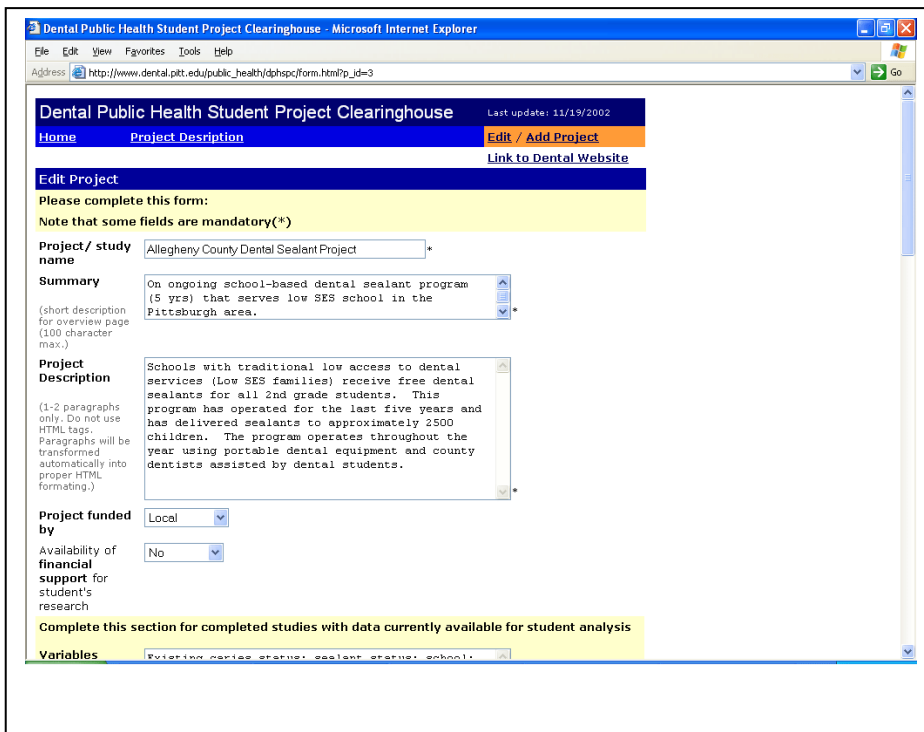
While editing was possible from the description page directly, a project had to be selected first when clicking on the edit link on any other page of the site. Regarding confirmation of project entries, it was necessary to distinguish between five statuses. Submitters should only be able to suggest projects and editions: “A” for additions, “U” for editions and “D” for deletions. For project listings only status “C”(confirmed addition or update) and “E” (confirmed deletion) were relevant. Some data fields of the form needed to be validated, e.g. contact name and email address, project name and description. As a result, submissions are only successful by entering all the requested data fields, otherwise the missing data will be requested. Going along with the submission process, several messages are sent by email.

Adding New Projects



Screenshot 3: Empty form for new additions

Editing



Screenshot 4: Form with project data

After entering a submission, the submitter gets a confirmation email of the submission and the administrator an entry message requesting to review the entries.

## File Descriptions

Filename	Functionality	Programming features
index.html	<ul style="list-style-type: none"> <li>▪ Homepage</li> <li>▪ Alphabetical listing of confirmed projects with display of summary</li> </ul>	Retrieval of project data with status confirmed, ordered by project name
description.html	Display of some important data field entries, e.g. contact information, project description and research criteria	Retrieval of selection of data fields, display of data in two column layout
form.html	<ul style="list-style-type: none"> <li>▪ Adding new projects</li> <li>▪ Empty data form with submit function</li> <li>▪ Editing projects</li> <li>▪ Data sheet of selected project</li> <li>▪ Update and delete function</li> <li>▪ Submit link</li> </ul>	Depending on project status retrieval of data displaying in data form fields or just opening of a new data set
confirm.html	<ul style="list-style-type: none"> <li>▪ Request of necessary data fields if not entered</li> <li>▪ Confirmation message for submitter</li> </ul>	<ul style="list-style-type: none"> <li>▪ Validation for posting datasets from form.html (security measure)</li> <li>▪ Cutting of empty spaces at the beginning and end of string data entries</li> <li>▪ Validation of mandatory data entries</li> <li>▪ Ensuring strings do not exceed DB fields</li> <li>▪ Storing of data in DB with appropriate confirmation status</li> <li>▪ Posting of message of confirmation to submitter and message for project review to administrator</li> </ul>
search.html	<ul style="list-style-type: none"> <li>▪ Output of search keyword(s)</li> <li>▪ Search limited to AND logic</li> </ul>	<ul style="list-style-type: none"> <li>▪ Eliminating wild card characters</li> <li>▪ Extraction of single keyword</li> <li>▪ Generation of DB query</li> <li>▪ Searching primary data fields with highlighting of keywords</li> <li>▪ Searching secondary data fields without highlighting of keywords</li> <li>▪ Highlighting of primary search data fields</li> </ul>
project_list.html	Display of a list of all confirmed	Retrieval of project data with status

Filename	Functionality	Programming features
	projects	confirmed, ordered by project name
db_access_dphspc.inc	Management of access to mySQL database	Included file
globals_dphspc.txt	Contains project variables, like administrator email address and base URL	Included file
footer.txt	Inserted at the end of every page, Copyright information	Generating current date, included file
head_1.txt	Header with navigation for index	Retrieval of last submission date, included file
head_2.txt	Header with navigation for search, description, project_list	Retrieval of last submission date, included file
head_3.txt	Header with navigation for form, confirm	Retrieval of last submission date, included file

Table 1: File Description, Public Site

Link structure

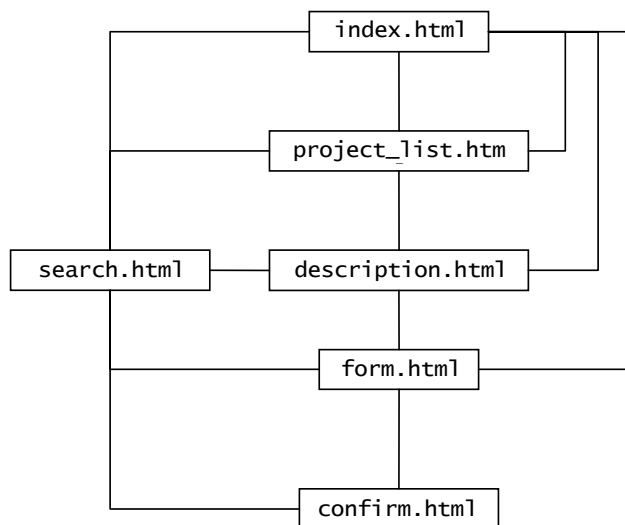
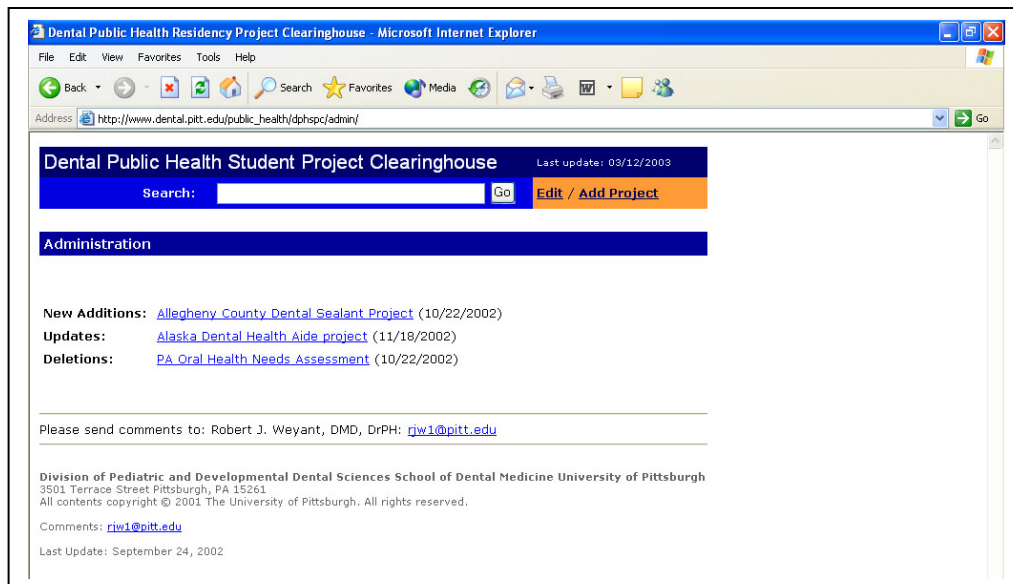


Chart 1: Link structure of public site

**Administrator Site** This site is accessible by a link sent with the submission message the administrator receives.

Initially, the homepage shows all new submissions, categorized into new additions, updates and deletions. Again, the project names are links for entering the review page with the data entries.

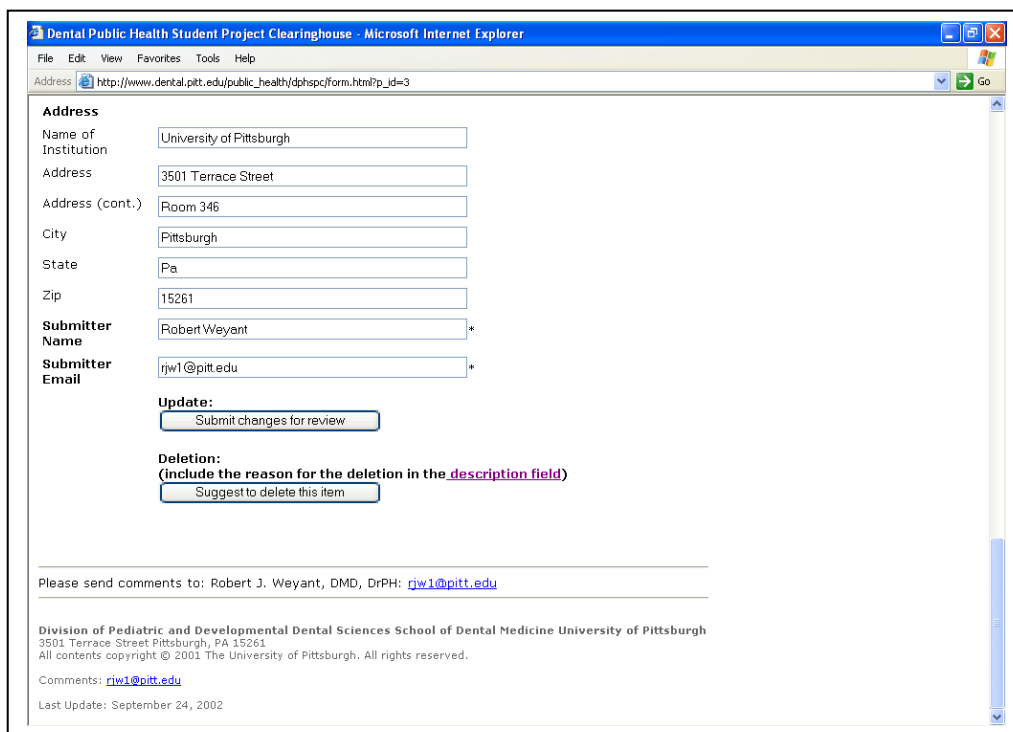


Screenshot 5: Homepage Administration Site

Submissions shown in the data form can be released or rejected. In case of an update, the original will be displayed underneath the data field with the new entry for comparison whereas the reason for a suggestion for deletion is written into the description field.

Dependent on the review decision, different email messages for the submitter are generated with the result of the review.

Released projects get the status “C” which means confirmed. Deleted projects are entered into the database with status “E” and will be kept for potential future use.



Screenshot 6: Option Buttons on the Admin Review Page

File Description

filename	functionality	Programming features
index.html	<ul style="list-style-type: none"> <li>▪ Homepage</li> <li>▪ Alphabetical listing of suggested projects with submission dates</li> </ul>	Retrieval of project data with status A, U and D, categorized and ordered by project name
release.html	<ul style="list-style-type: none"> <li>▪ Display of form with all new and depending on status with old data set or reason for deletion</li> <li>▪ Release and Reject link</li> </ul>	<ul style="list-style-type: none"> <li>▪ Checking for project status</li> <li>▪ Retrieval of complete data set</li> <li>▪ Display of submission/ update suggest dates</li> </ul>
releaseconfirm.html	<ul style="list-style-type: none"> <li>▪ Database storage of data set under new status</li> <li>▪ Email message posting</li> <li>▪ Link to next review</li> </ul>	<ul style="list-style-type: none"> <li>▪ Changing of project status</li> <li>▪ Database actualization</li> </ul>
head_1.txt	Header with Navigation for index	See public site, only with different home link destination, included file
head_3.txt	Header with navigation for form, confirm	

Table 2: File Description, Admin Site

File and Link Structure

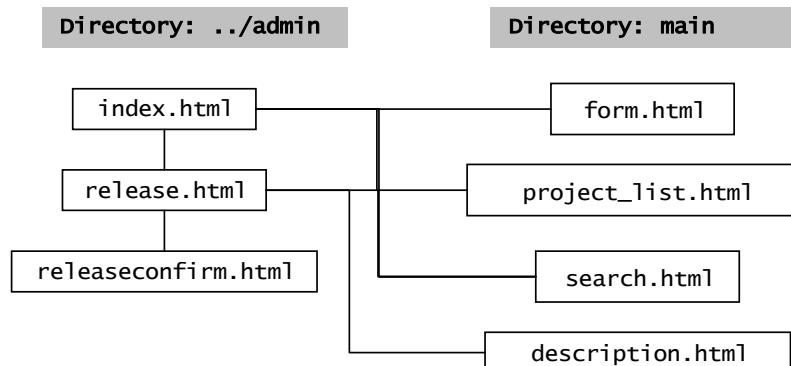


Chart 2: Link Structure of Public Site

**Testing** Especially the storing and retrieving of every single data field was important to test. In connection with the different status of projects the application had to display the right entry. Regarding pull-down menus this was more difficult to program. Also, the correct posting of email messages took some time to test and verify.

**Going life** Finally, it was also my responsibility to get the password protection set up for this site from the network administrator. In addition, the site had to move from the staging to the web server and the Dental Public Health navigation on four single pages was supplemented with a new link. That meant to create new textual pictures.

## 2.2 Project 2: School of Dental Medicine Research Project Database

**Project Description** This database contains brief summaries of the current research projects managed by School of Dental Medicine faculty. These projects are listed here as an aid to collaboration and to facilitate student involvement in research.

**Links** [http://www.dental.pitt.edu/public\\_health/about.htm](http://www.dental.pitt.edu/public_health/about.htm)  
[http://www.dental.pitt.edu/public\\_health/sdm\\_intern/index.html](http://www.dental.pitt.edu/public_health/sdm_intern/index.html)  
[http://www.dental.pitt.edu/public\\_health/sdm\\_publ/index.html](http://www.dental.pitt.edu/public_health/sdm_publ/index.html)

**Preperation** For data acquisition, I extended and modified the available table with the old data types and established a request form for Dr Weyant and Dr Marazita.  
*See Appendix E: Completed Database Specifications Request Form*

**Communication with Customer** Like in the first project, one meeting was enough to clarify the project development and specifications. For contact, email was the only means of communication.

**Implementation of** The following steps describe the implementation process:

**Website**

- Creating new database and table with appropriate column types
- HTML modification regarding new data fields
- Emphasis on modularization of code elements
- Emphasis on security
- Testing
- Review of customer
- Final modifications and testing

**Functionality and Specifications**

After the completion of the first database application, Dr Weyant got a request from the Associate Dean Dr Marazita for a research database. The Clearinghouse database application should only be modified and adjusted to new data entries. Moreover, my supervisor wanted me to advance the programming as I was familiar with basic syntax and code now. Concerning project management, I had to organize the whole process this time. New to this project was also to enable access for two different target audiences: Public visitors and SDM faculty and students. Identical in layout and functionality, it was only necessary to modify the code in regard to the changed data fields and the different target audiences.

**SDM Internal**

This site is identical with the previous database application. Hence, there is the same procedure with submissions and reviews on the administrator page. Exclusively for faculty and students, the site can be accessed with SDM log-ins.

**SDM Public**

For visitors interested in SDM student research projects, I created a site with limited visibility of data fields. Only basic information, like contact and project description is shown. Visitors are not allowed to edit or add new projects; therefore only the description page was necessary to be modified.

**Different Access Rights**

Simply, there are two separate folders each containing the public and the internal site. Rights for access had been set by the Microsoft Network Environment.

**Code Modularization**

There were several text modules that could be integrated into the globals-file, e.g. the text blurbs on the index and description page. More, some static parts of the database commands became variable, i.e. the name of the table has only to be changed in one file when using the application for another project.

**Security**

The first database application was lacking security regarding the convey of data entries from the form to the confirm file. Practically, it would be possible to enter a URL which could include a script that enters completely other data into the database than entered into the form. This meant that the source of the data, in this case the form, needed a validation process. In PHP, it was very simple because of the use of the `$_POST` variable which automatically checks the source.

**In General**

All other steps for this project are similar to the first one.

*See 5.2.1 Project 1*

### 3. SDM Website Project

**Involved Committees** Just upon my arrival at SDM, the school had launched its preparations for the new SDM website. This was a project not to be carried out by the Center for Dental Informatics but by an outside vendor. In order to guarantee a professional process Heiko Spallek founded two supporting task forces. The WebContent Task Force would make an intensive effort over a 4-6 month period to plan and guide the development of the School of Dental Medicine's new Internet Website. The main focus of this Task Force is understanding the Website's audience and creating an architecture for the information to be presented, rather than designing the actual look and feel (or the technical construction) of the Website. Its members, who are composed of a representative cross section of content providers, will determine and define the content displayed on the Website. The WebTech Task Force will work on the technical specification of the new School of Dental Medicine's Internet Website. The work will be mainly based on the input from the Web Content Task Force which determines what should be displayed and how. The Web Tech Task Force is responsible for checking this input for technical feasibility and the translation of the input into technical specifications. Members of the Task Force will oversee the creation of an architecture which allows for a high degree of usability, ease of maintenance and cost-saving solutions. The Web Technical Task Force leads in selecting a vendor for this Web design project. Members of the Task Force will act a liaison to the vendor to ensure compliance to our technical specifications and requirements.

Becoming a member of the WebTech Task Force, my tasks in this projects were:

- Being present in meetings of both task forces to get important background information
- Updating of both Task Force websites
- Evaluation and selection of vendors relevant for posting proposals
- Research and construction of a Request for Proposal(RFP)
- Design, implementation and updating of a project information website for the proposal process
- Preparation of WebContent TF meeting
- Discussing vendor proposal presentation within both task forces

**Updating of Websites** During the development of this project, it was vital for the distribution of information to update various sections of the two task forces' websites, e.g. task list and minutes. Especially while improving the content map of the future website, the coordination of all contributions of the content providers was important.

**Vendor Selection** Researching a web design portal, I reviewed the portfolios of national and regional IT companies that could be interesting for the RFP submission. Relevant were all companies that either had worked for customers in fields of medicine and education or long-year experience with various different businesses and a convincing design.

Result was a company evaluation list recommending adequate companies. Based on this list, CDI distributed the RFP to the vendors.

**RFP Writing** An example of an RFP provided a former project of Temple University in Philadelphia. Structure and legal aspects helped developing our RFP. The table of contents contained the sections:

- RFP procedure
- general information and website overview
- website specifications
- response requirements.

Additionally, the appendices were a content map and a technical feasibility list. While writing on the proposal, I was researching and requesting necessary information mainly in collaboration with the CDI project manager. In order to be in correlation with university guidelines, I had to take other dependences of SDM regarding Pittsburgh University into consideration, e.g. the Three-Year Strategic Web Site Development Initiative of the Office of Public Affairs'. At the same time, my supervisor decided that it would be supportive to create a template for the RFP response. Therefore, I programmed a Microsoft Word template with particular formatting and layout functions. My work on this document ended with improving the written English with help of the tutors of the universities' writing center.

After the reviewing by the WebTech Task Force chair, some aspects of the structure and contents were modified.

**Bottom Line** Even if the template was not used and the final version of the RFP had a complete different layout (American style), the content and the specifications were still mainly my contribution.

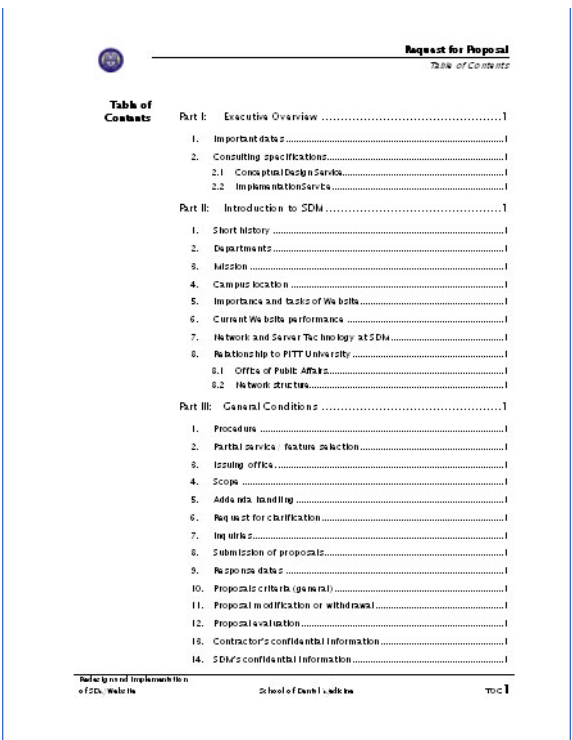
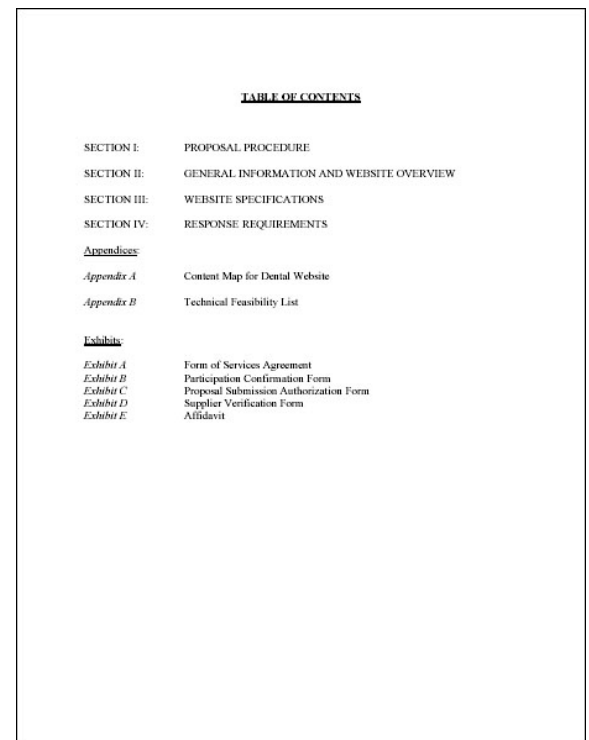
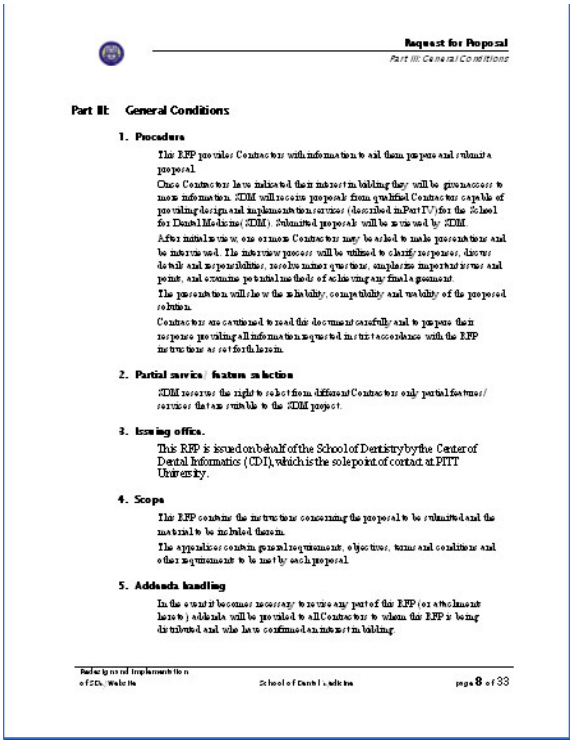
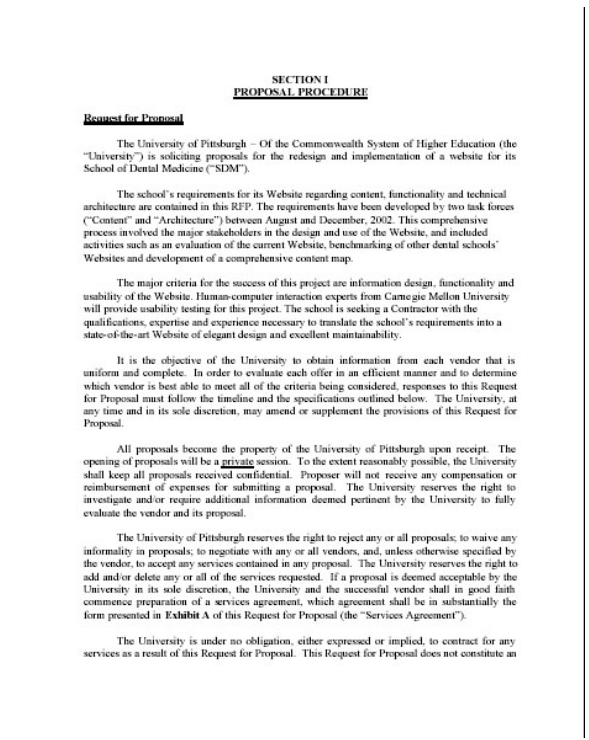
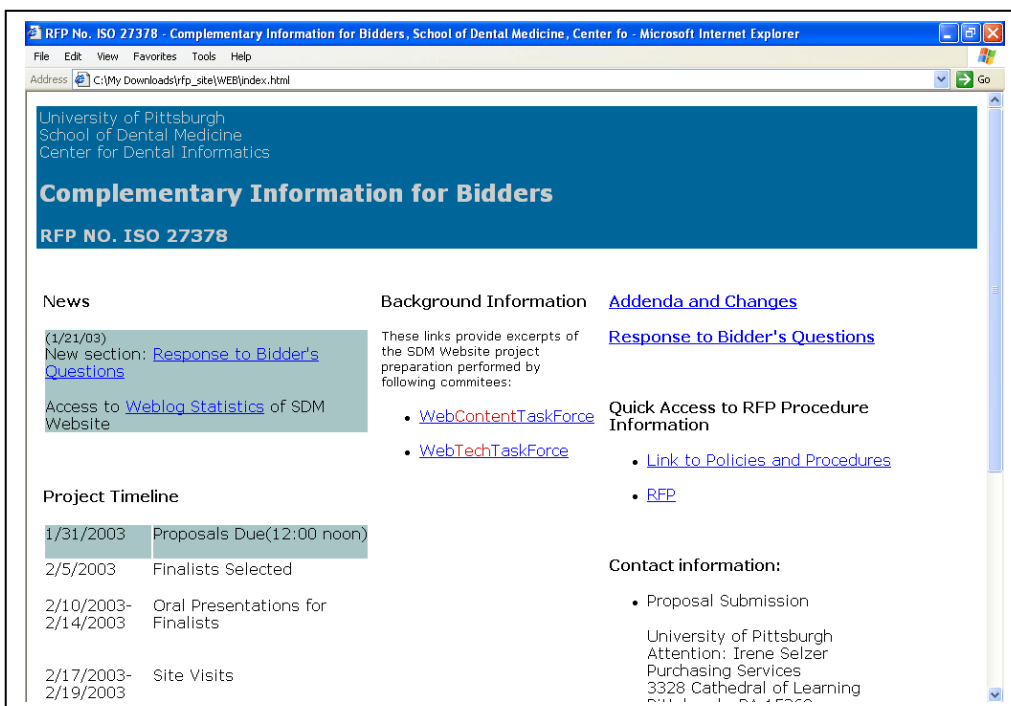
Original Layout	Final Layout
 <p><b>Request for Proposal</b> <i>Table of Contents</i></p> <p><b>Table of Contents</b></p> <p>Part I: Executive Overview .....1</p> <p>1. Important data .....1</p> <p>2. Consulting specifications.....1</p> <p>2.1 Conceptual Design Services.....1</p> <p>2.2 Implementation Services.....1</p> <p>Part II: Introduction to SDM .....1</p> <p>1. Short history .....1</p> <p>2. Departments .....1</p> <p>3. Mission .....1</p> <p>4. Campus location .....1</p> <p>5. Importance and tasks of Website .....1</p> <p>6. Current Website performance .....1</p> <p>7. Network and Server Technology at SDM .....1</p> <p>8. Relationship to PITT University .....1</p> <p>8.1 Office of Public Affairs .....1</p> <p>8.2 Network structure .....1</p> <p>Part III: General Conditions .....1</p> <p>1. Procedures .....1</p> <p>2. Partial services / feature selection .....1</p> <p>3. Issuing office .....1</p> <p>4. Scope .....1</p> <p>5. Addenda handling .....1</p> <p>6. Request for clarification .....1</p> <p>7. Inquiries .....1</p> <p>8. Submission of proposals .....1</p> <p>9. Response dates .....1</p> <p>10. Proposal criteria (general) .....1</p> <p>11. Proposal modification or withdrawal .....1</p> <p>12. Proposal evaluation .....1</p> <p>13. Contractor's confidential information .....1</p> <p>14. SDM's confidential information .....1</p> <p>Reference and Implementation of SDM Website School of Dental Medicine TOC I</p>	 <p><b>TABLE OF CONTENTS</b></p> <p>SECTION I: PROPOSAL PROCEDURE</p> <p>SECTION II: GENERAL INFORMATION AND WEBSITE OVERVIEW</p> <p>SECTION III: WEBSITE SPECIFICATIONS</p> <p>SECTION IV: RESPONSE REQUIREMENTS</p> <p><b>Appendices:</b></p> <p><i>Appendix A</i> Content Map for Dental Website</p> <p><i>Appendix B</i> Technical Feasibility List</p> <p><b>Exhibits:</b></p> <p><i>Exhibit A</i> Form of Services Agreement</p> <p><i>Exhibit B</i> Participation Confirmation Form</p> <p><i>Exhibit C</i> Proposal Submission Authorization Form</p> <p><i>Exhibit D</i> Supplier Verification Form</p> <p><i>Exhibit E</i> Affidavit</p>
 <p><b>Request for Proposal</b> <i>Part III: General Conditions</i></p> <p><b>Part III: General Conditions</b></p> <p><b>1. Procedures</b></p> <p>The RFP provides Contractor with information to aid them in preparing and submitting a proposal. Once Contractor has indicated their interest in bidding they will be given access to more information. SDM will receive proposals from qualified Contractor capable of providing original and implementation services (described in Part IV) for the School of Dental Medicine (SDM). Submitted proposals will be received by SDM.</p> <p>After submission of an original Contractor may be asked to make presentation and to submit a bid. The submitted proposal will be subject to change responses, drawings details and specifications, resolve minor questions, emphasize important items and point out economic potential as part of a preliminary final agreement. The presentation will be on the suitability, compatibility and viability of the proposed solution.</p> <p>Contractor are cautioned to read the documents carefully and to prepare their response providing all information requested in strict accordance with the RFP instructions as provided herein.</p> <p><b>2. Partial services / feature selection</b></p> <p>SDM reserves the right to select from different Contractor's only partial features/ services that are suitable to the SDM project.</p> <p><b>3. Issuing office.</b></p> <p>The RFP is issued on behalf of the School of Dentistry by the Center of Dental Information (CDI), which is the sole point of contact at PITT University.</p> <p><b>4. Scope</b></p> <p>The RFP contains the instructions concerning the proposal to be submitted and the material to be included therein.</p> <p>The appendices contain general requirements, objectives, terms and conditions and other requirements to be met by each proposal.</p> <p><b>5. Addenda handling</b></p> <p>In the event of becoming necessary to revise any part of the RFP (as indicated herein) addenda will be provided to all Contractors to whom the RFP is being distributed and who have confirmed an interest in bidding.</p> <p>Reference and Implementation of SDM Website School of Dental Medicine page 8 of 33</p>	 <p><b>SECTION I: PROPOSAL PROCEDURE</b></p> <p><b>Request for Proposal</b></p> <p>The University of Pittsburgh – Of the Commonwealth System of Higher Education (the "University") is soliciting proposals for the redesign and implementation of a website for its School of Dental Medicine ("SDM").</p> <p>The school's requirements for its Website regarding content, functionality and technical architecture are contained in this RFP. The requirements have been developed by two task forces ("Content" and "Architecture") between August and December, 2002. This comprehensive process involved the major stakeholders in the design and use of the Website, and included activities such as an evaluation of the current Website, benchmarking of other dental schools' Websites and development of a comprehensive content map.</p> <p>The major criteria for the success of this project are information design, functionality and usability of the Website. Human-computer interaction experts from Carnegie Mellon University will provide usability testing for this project. The school is seeking a Contractor with the qualifications, expertise and experience necessary to translate the school's requirements into a state-of-the-art Website of elegant design and excellent maintainability.</p> <p>It is the objective of the University to obtain information from each vendor that is uniform and complete. In order to evaluate each offer in an efficient manner and to determine which vendor is best able to meet all of the criteria being considered, responses to this Request for Proposal must follow the timeline and the specifications outlined below. The University, at any time and in its sole discretion, may amend or supplement the provisions of this Request for Proposal.</p> <p>All proposals become the property of the University of Pittsburgh upon receipt. The opening of proposals will be a private session. To the extent reasonably possible, the University shall keep all proposals received confidential. Proposer will not receive any compensation or reimbursement of expenses for submitting a proposal. The University reserves the right to investigate and/or require additional information deemed pertinent by the University to fully evaluate the vendor and its proposal.</p> <p>The University of Pittsburgh reserves the right to reject any or all proposals; to waive any informality in proposals; to negotiate with any or all vendors, and, unless otherwise specified by the vendor, to accept any services contained in any proposal. The University reserves the right to add and/or delete any or all of the services requested. If a proposal is deemed acceptable by the University in its sole discretion, the University and the successful vendor shall in good faith commence preparation of a services agreement, which agreement shall be in substantially the form presented in Exhibit A of this Request for Proposal (the "Services Agreement").</p> <p>The University is under no obligation, either expressed or implied, to contract for any services as a result of this Request for Proposal. This Request for Proposal does not constitute an</p>

Table 3: Comparison of RFP layouts

**Bidder Information Website** After the bidders had confirmed their interest in the projects, we had to put an information website online. Before that, I had to design this website. It should contain basically necessary information on the project, and later on, it should give access to changes and addenda.



Screenshot 7: Homepage bidder information website

**Preparation of WebContent TF Meeting** One of the most important meetings was about the confirmation who is going to provide what content and will be a contact for the future selected vendor working on the SDM website. So, Heiko Spallek and I discussed several possible strategies for moderating this meeting. The problem was the enormous number of points on the content map that had to be discussed. Efficiently, the solution was to ask the content provider the right questions and ask for their engagement for bringing as much certain information flow to the table as possible in advance. My task in the meeting was to take the minutes and afterwards to update both content map and website.

**Bidder Presentations** In the end, four bidders remained seriously interested in presenting their proposal to the members of the WebContent and WebTech Task Force. After each presentation, the members had to give their impressions and opinions about the presentation.

## 4. Online Research

Searching the internet for specific information or data was one of the major tasks and requirements throughout my whole internship. Several informational needs had to be solved.

**Email Harvesting** For the marketing mailing event of the dental-computing webbook project and the postgraduate program of SDM, I had to collect all faculty email addresses of 55 dental schools in the US and Canada. Furthermore, during my work, I had to test the harvest of email addresses from the dental internet forum “www.dentaltown.com”.

**Strategy** Trying to avoid handpicking of every single email address, several tools were available to aid my task. Heiko Spallek for instance, programmed a php harvesting tool that is able to recognize email addresses in HTML code.

But this tool was not able to handle the majority of the websites because

- Data was retrieved from databases
- Email addresses were listed in text and pdf files
- Data access was protected by intranet passwords
- The email addresses were spread out on different pages on various file levels

**Spider Tools** Still in order to find a more efficient way of collecting email addresses for the problems stated above, I was testing commercial email spider tools. Unfortunately, after several applications, it was clear that none of the tools would be able to spider websites with database generated information. And more, with some spider tools the work would have been more difficult than picking each address with copy and paste because only the whole domain could be searched for email addresses. As mass spamming was not our intention, the testing of email spider tools was successful. The result of my email harvesting were approximately 5200 email addresses. Each address had to be inserted into a command in order to be added to a database. Included in this command was the time of harvesting and of course the dental schools name or internet resource. Using the macro function of Textpad it was reasonable to establish one long text file easily to include into a HTML/php file.

**Usability Studies** For two outdated usability studies with interesting findings, I was required to research for recent studies dealing with the same issue.

**Issue One** A Comparison of Still, Animated, or Nonillustrated On-Line Help with Written or Spoken Instructions in a Graphical User Interface

**Links** [http://www.acm.org/sigchi/chi95/Electronic/documnts/papers/smh\\_bdy.htm](http://www.acm.org/sigchi/chi95/Electronic/documnts/papers/smh_bdy.htm)  
<http://www.otal.umd.edu/SHORE2001/help/>

*See Appendix F: Comparison of On-Line Help Design*

**Issue Two** Internet Delay Effects: How Users Perceive Quality, Organization, and Ease of Information

**Links** <http://www.acm.org/sigchi/chi97/proceedings/short-talk/als2.htm>  
[http://psychology.wichita.edu/surl/usabilitynews/1s/time\\_delay.htm](http://psychology.wichita.edu/surl/usabilitynews/1s/time_delay.htm)  
<http://www.soc.staffs.ac.uk/seminars/web97/papers/johnson.html>

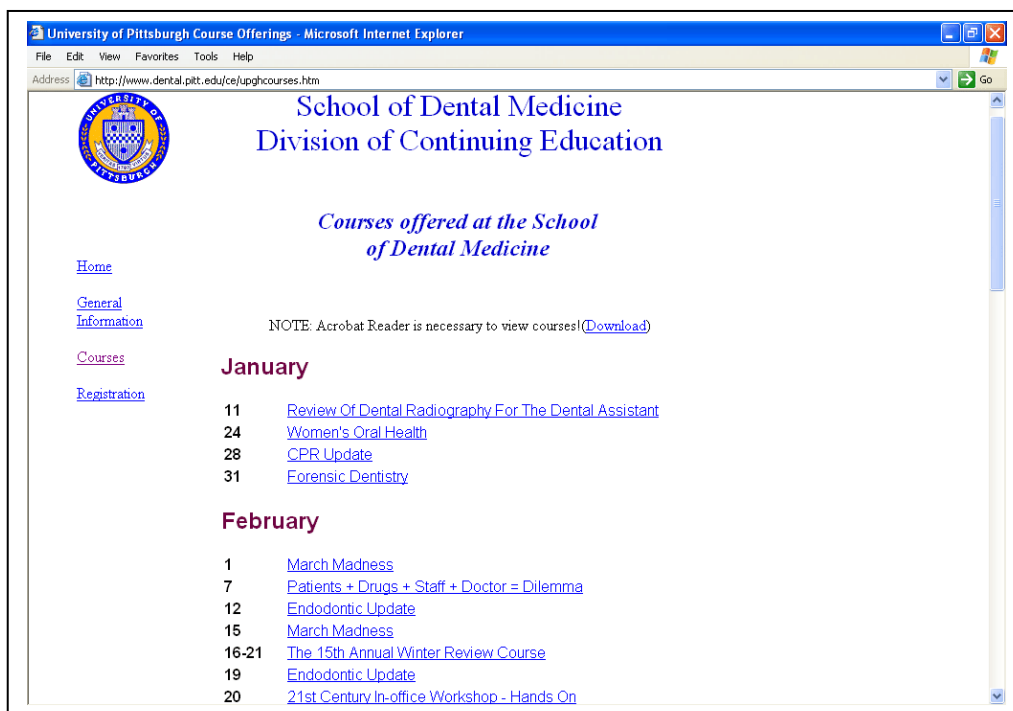
*See Appendix G: Internet Delay Effects*

**Research** Basically, only search engines were utilized, and a lot of scanning of the website information was necessary. Browsing through the search result, I was able to read about some other interesting topics in articles and studies about web usability and Human Computer Interaction.

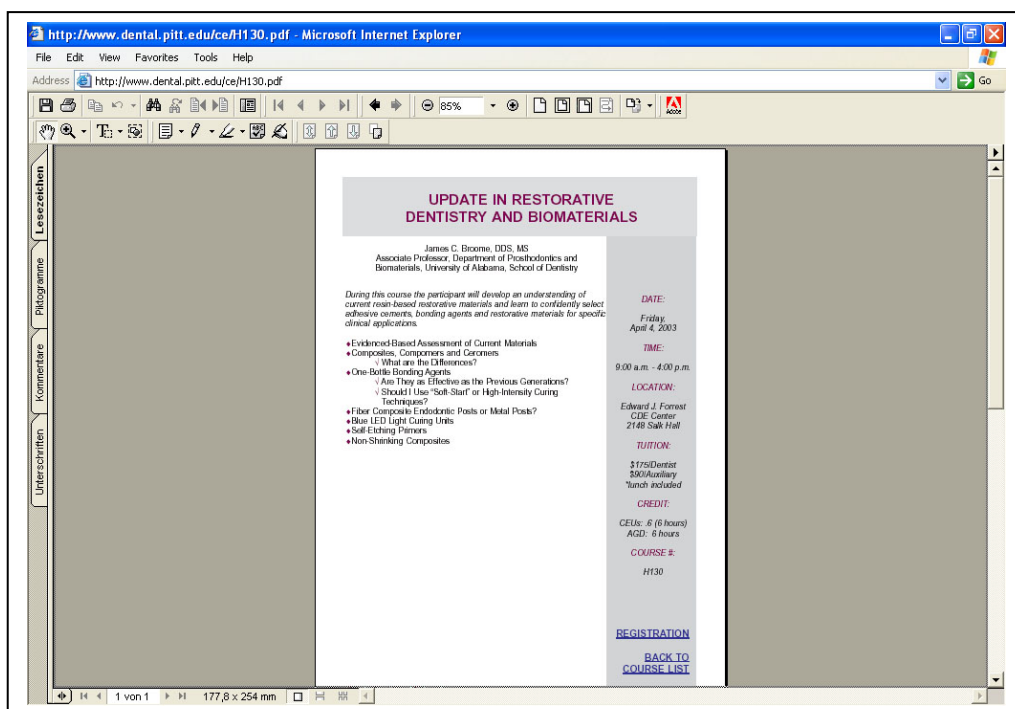
## 5. Online Documentation

**Link** <http://www.dental.pitt.edu/ce/upghcourses.htm>

The department “Continuing Education” at SDM needed to put its printed course program online. As some course application deadlines were already due, I had to find a reasonable solution in terms of time. The whole program existed in form of PageMaker documents what interfered with the last website layout of the course program. And thinking about the redesign of the whole SDM website, a big solution did not seem to make sense. Besides, the conversion from PageMaker to HTML did not produce satisfying results because they were difficult to edit with Dreamweaver. The only choice that was left, remained in the conversion into pdf files. This solution made it also possible to include links to the course overview page. The only disadvantage is that Adobe Reader is necessary to open the links.



Screenshot 8: Course Overview Page



Screenshot 9: PDF File of Course Program

## 6. Preparation of Lecture Presentations

Heiko Spallek is one of the lecturers of the post graduate program in dental informatics. For a couple of his presentations he asked me for assistance. This consisted of creating some PowerPoint slides with visualizations, online research about the development of e-learning in Germany and Europe and supporting processing of handouts.

The video-taping of the usability sequence was mainly a contribution to a lecture presentation showing the “Think-Aloud” methodology. An online research for background information about this issue revealed an basic essay with the topic: ”Keep them thinking aloud – Two ways to conduct a verbal protocol and why it matter”.

**Link** <http://www.upassoc.org/conf2001/downloads/aloud.pdf>

*See Appendix H: Essay about Think – Aloud Methodology*

## 7. Technical Support

Technical support consisted of all the problems people within SDM had with their computers and with software. A first big installation was the addition of six desktop machines for the learning resource center. This included harddisk mirroring, network configuration and connection and user profile management. Before that, a concept for the placement of these new computers in the LCR had to be discussed concerning their use for staff training.

Usually, technical support comprised of updating of software, installing of new operating systems and setting up laptops and video beamers for presentations.

## 8. Administration

Also, I had to do some “real” intern work, like the preparation of envelopes with the necessary items for a mass mailing event. But this did not take over and had been a relaxing occupation sometimes

Pittsburgh, March 17, 2003

(Heiko Spallek)

## **Appendix A: Usability Test Report**

*See 5.1 Usability*

## **Appendix B: Usability Test Script**

*See 5.1 Usability*

## Appendix C: Example of Single Test Findings

*See 5.1 Usability*

## **Appendix D: Data Field Specifications and mySQL Command**

*See 5.2.1 Project1: Dental Public Health Student Project Clearinghouse*

**Appendix E: Completed Database Specification Request Form**

*See 5.2.2 Project 2: School of Dental Medicine Research Project Database*

## Appendix F: Comparison of On-Line Help Design

*See 5.4 Online Research*

**URL** <http://www.otal.umd.edu/SHORE2001/help/>

## Appendix G: Internet Delay Effects

*See 5.4 Online Research*

**URL** <http://www.soc.staffs.ac.uk/seminars/web97/papers/johnson.html>

## **Appendix H: Essay: Think - Aloud Methodology**

*See 5.6 Preparation of Lecture Presentation*

**URL** <http://www.upassoc.org/conf2001/downloads/aloud.pdf>