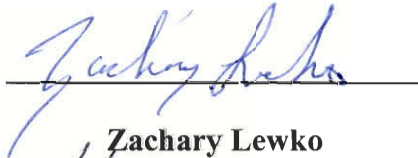


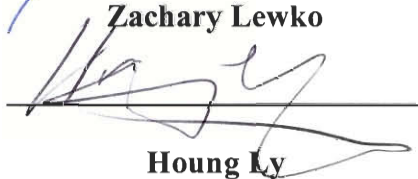
Project Number: DRB-D031-46

## DEVELOPING AN ONLINE COMMUNITY FOR NURSES

An Interactive Qualifying Project Report  
submitted to the Faculty  
of the  
WORCESTER POLYTECHNIC INSTITUTE  
in partial fulfillment of the requirements for the  
Degree of Bachelor of Science  
by



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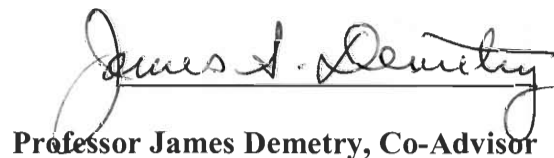
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Professor D. Richard Brown, Major Advisor

1. computers
2. community
3. marketing



Professor James Demetry, Co-Advisor

## **Abstract**

The nurses at Marie Curie Cancer Care (MCCC) are spread throughout the United Kingdom and often have little interaction with one another. The goals of our project were to develop the specification for and the implementation of an online community for the nurses at MCCC, and to ensure its success through a strong marketing campaign. To create the online community we surveyed nurses, wrote a specification documenting our implementation plan, implemented the community, and advertised the completed community. The online community we have developed has been initially deployed within the MCCC intranet, with plans to fully deploy it on the Internet in the summer of 2003.

## Executive Summary

Marie Curie Cancer Care (MCCC) employs 2,500 nurses, across the United Kingdom, that provide palliative care for cancer patients. Of these nurses, 20% are distributed across MCCC's 10 hospices and the remaining nurses, known as community nurses, provide in-home patient care. Since they work in patients' homes, community nurses typically are not in contact with many people at the hospices other than their nurse manager, which isolates them from the events at MCCC. It is understandable that the nurses in this situation, who rarely make contact with one another, have difficulty regarding each other as peers. This phenomenon has been quite problematic for MCCC, since it is trying to promote a sense of community amongst its employees, in order to boost employee morale and efficiency. MCCC has been taking steps to reduce the perceived distance between nurses, e.g. by establishing a common e-mail box at each of the hospices for all the nurses to use and by developing a newsletter, *NursingNews*, in order to inform MCCC nurses about a variety of topics and developments from the nursing field, both within and outside of MCCC. The former solution has the side-effect of precluding the community nurses that do not frequent the hospices, while the latter reaches all MCCC nurses, but provides no mechanism for them to communicate with one another. To help MCCC achieve its goal of a charity-wide nurse community, we adopted a combination approach of their previous efforts and designed an online community for the nurses at MCCC.

The online community, named *NurseLife*, allows information from the field of nursing, particularly the content of *NursingNews*, to be shared with all nurses, while also allowing nurses to discuss this information and share insights of their with each other. Our goals in creating *NurseLife* were to develop the specification for and the

implementation of an online community for the nurses at Marie Curie Cancer Care, and to help ensure its success through a targeted marketing campaign. To achieve these goals we established a number of objectives: acquire ideas and feelings about online community features from MCCC nurses, incorporate those ideas into a specification for the online community, use the specification and an Open Source Software (OSS) package develop and implement the community, use established testing techniques to verify the online community worked, get nurse feedback about the community throughout the implementation phase, and devise a marketing strategy to help ensure the adoption of the online community for its release.

We completed our first objective, to acquire the ideas and feelings of MCCC nurses about the online community, via a mailed survey. Due to the technical nature of some questions on our questionnaire, we thoroughly reviewed the document with the Caring Services division of MCCC before distributing it so that it would be well-received and understood by the nurses completing it. This questionnaire was then circulated by postal mail and e-mail to a diverse sample of nurses and care assistants. The results of this survey were our guide during the drafting of the specification for the online community.

The specification for the online community was based upon object-oriented analysis and design techniques, such as use case analyses and sequence diagrams, from the field of software engineering. Writing the specification in this manner made it immensely useful in serving as the basis for the actual implementation of the online community, since the specification was written in terms that easily translated into software code.

*NurseLife* was developed in ASP with VBScript, utilising a MS SQL Server as our database backend, in compliance with MCCC's IT infrastructure requirements. We

examined a number of OSS online communities that we could extend for development of *NurseLife*, and based upon our analysis, we decided to use MegaBBS as our foundation. We then modified and extended MegaBBS, based upon our specification, until we had completely implemented *NurseLife*.

Modifying a system that we had not initially developed presented a small number of complications, since our knowledge of its architecture was limited at first. Thus, throughout the development of *NurseLife*, we utilized white and black box testing techniques to regression and validation test the system. We validated each component of the online community before we began programming another, and then we regression tested the entire system to make sure a new component did not introduce any unforeseen side-effects.

The specification and extensive testing of the online community reasonably assured us that the implementation of *NurseLife* would be technologically sound, but it did little to assure us that we were building something the nurses truly wanted. At a higher level, the specification was based upon a survey of nurses, but its purpose was to elicit desired features, not to describe how those features were to be implemented. To make certain that the community that we were developing was in fact what the nurses would like, we performed a series of pilot tests throughout the implementation phase to acquire nurse feedback about the features and the look-and-feel of the community. The results of these tests prompted us to modify the online community marginally, removing certain features, such as an online photo album, and adding others, such as an instant messaging system.

The pilot tests also served another purpose: they were the first time we had shown the community off to any of the MCCC nurses. One of our objectives was to help ensure that the online community would be used by the MCCC nurses, and so we

designed a marketing campaign to inform MCCC nurses about the key features of new service at their disposal. This marketing campaign, developed in cooperation with MCCC's Marketing and Public Relations department, combines different media, including posters in hospices, articles in both internal and nationally syndicated nursing publications, and short messages on pay slips. The marketing campaign consists of two phases: a "teaser" campaign and a promotional campaign. The former will inform nurses of the various features of *NurseLife*, and the latter will promote the release of the community once it is deployed on a wide scale. While we were able design this campaign during the course of our project, due to time constraints, it was launched after the completion of our project.

With these tests completed and the software finalized, we had produced a full-featured online community, customized to the needs of MCCC nurses. Our online community featured: a secure registration process to restrict access to MCCC nurses, discussion forums on a variety of nursing topics, a calendar of MCCC events, as well as private calendars for individuals, a database of web site links to information pertinent to nurses, a database of job vacancies, and MCCC's quarterly nursing newsletter, *NursingNews*. We also provided MCCC with complete documentation on how to use and how to administer *NurseLife*. This documentation fills a usability gap from our other documentation (our design specification and comments in our source code files), and so leaves MCCC with a complete understanding of how to use and maintain *NurseLife*.

Complete documentation of *NurseLife* was very important because the online community was only deployed internally while we were in London; it would not be deployed on the Internet until after our project was completed. The reasons for limited deployment included the amount of time required to propose and approve

money for the hardware for the deployment on the Internet, and that prior to approval of funds, *NurseLife* would have to show its value to the organization. The documentation we have provided should make the transition from an intranet application to an Internet application a very easy one.

To further help the administration of *NurseLife*, we recommend, prior to the full launch of the community, that managers are selected for maintaining smaller areas of the online community, such as the links, newsletter, and jobs sections. The managers would be able to maintain their respective areas individually, rather than having an administrator maintain the entire system. The community should also be populated with some amount of initial content to serve as discussion starters, e.g., the first issue of *NursingNews* could be posted with a discussion forum to discuss the content of the newsletter. Additionally, we recommend that the online community be fully deployed on the Internet as soon as possible. Many of the most disconnected nurses are the community nurses, and they are the ones who could potentially benefit from the community the most. Unfortunately, they only have limited access to the MCCC internal network, and thus have limited access to the online community; a full Internet deployment would allow all MCCC nurses to access *NurseLife* from whatever location is most convenient for them.

## Acknowledgements

Throughout our project we have been extended many a helping hand by the staff of Marie Curie Cancer Care (MCCC). Other individuals have also played a role in helping this online community take shape. We would like to acknowledge each party and thank them for their help.

First, we would like to thank Martin Skeet, our liaison and the Database Administrator at MCCC, who always provided us with the information we needed. If he did not know an answer to a question we may have had, he would always research the matter immediately or direct us to someone better suited to answer it.

One of the people Martin forwarded us to was Nina Fraser, the Practice Development Coordinator at MCCC. She provided us with much information which clarified the problem of nurses being spread all over the place. She elucidated to us the role the online community would play in MCCC, and how it should work with the newly developed newsletter for nurses, *NursingNews*.

Nina introduced us to Lizz Syme, her Personal Assistant, who played a large role in our project. To her we are indebted for the laborious task of disseminating the questionnaires to a sample of nurses and then forwarding the replies to us. We also worked with her to get an article about the online community in *NursingNews*.

We would like to thank Darren Harridence, MCCC's Webmaster, who helped delineate the role of the online community with respect to MCCC's public website. He also introduced us to MCCC's new branding endeavor, and informed us of the implications the new guidelines may have on the online community.

There are several individuals from MCCC's IT department we wish to thank. Yvonne Hanson, IT Project Manager, introduced us to MCCC in Mr. Skeet's absence during our first week in London. She made sure we had everything we needed and



overall looked after us. Lee Hull, one of MCCC's Network Administrators, provided us with the computers and accounts we used to complete our project. He also granted us permission to modify the machines in whatever way was necessary for the development of the online community. Nicholas Edgar, also one of MCCC's Network Administrators, helped us out when we lost electricity early on in the project. He moved us to temporary machines so our progress would not be hindered. He also provided general comments and recommendations about the online community at various stages in its development. Jaqui McNish, a Personal Assistant, who was a great source of information. She helped us become accustomed to our positions at MCCC, and was always willing to lend our group a hand and a smile.

To the head of the MCCC IT department, Peter Crutchfield, we are also grateful. He was the individual who coordinated the project with the Worcester Polytechnic Institute (WPI). He was also in charge of all the resources (both human and computer) we were allowed to use in the IT department.

We are thankful for Christopher Dainty, the head of MCCC's Marketing & Public Relations department, who provided us with a plethora of avenues to explore during the development of our marketing campaign. He also directed us to a number of people in his department that we could gain more help from.

One such individual, Nicholas Moulton, editor of the MCCC periodical, *Marie Curie People*, interviewed us and printed an article about our project. This was the first time the online community was mentioned to the MCCC community at large and was a key step in our marketing campaign.

Another individual Mr. Dainty directed us to was Fiona Andrews, Marketing Communications and Design Manager. She helped us pick the name for the online

community, and granted us access to the marketing studio. We used the studio for the creation of the various posters to be displayed in the hospices.

We would like to thank Louise Linguard, Personnel Coordinator, was of great help when we were developing the job vacancy database. She provided us with the type of information such a database would require, and the contact of a person, Andrew Taylor, who could run the system when the online community was deployed.

Andrew Taylor, MCCC's Database Manager in the Education department, showed the MCCC Blackboard system to us. He also made clear to us the considerations we would need to make when developing the online community for the MCCC nurses. Additionally, he accepted the roles of Community Manager in managing the online community.

We would like to thank all the MCCC nurses that helped us with development of the online community. In particular, we would like to thank Lynn Batehup, an Executive Nurse, who evaluated the online community and provided us with invaluable feedback. We would also like to thank all the nurses that responded to our questionnaire, and again to those who partook in our 2 pilot tests. Without them we could not have built an online community designed for MCCC nurses.

Outside of MCCC, we are grateful to WPI, who presented us with the opportunity to work with MCCC as a school project. Particularly we extend special thanks to our primary advisor, Prof. Donald Richard Brown, and our co-advisor (and co-director of the WPI London project site), Prof. James Demetry, who dedicated much time into making sure our project made great progress. They proofread this entire report many times and critiqued is a number of areas so that we could become better students and produce a better end-product.

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# 1 Introduction

In today's society it is quite common to find an organization with employees distributed over large areas. Often these employees think of their peers as those within a locale, ones they see on a regular basis. This situation is completely natural, as people do not typically establish ties with those they do not regularly interact with. For an organization trying to promote a sense of community amongst its employees, boosting employee morale and efficiency, this phenomenon can be quite problematic. As a result, many schemes have been created to artificially reduce the distance between employees [18].

Marie Curie Cancer Care (MCCC) would like to promote a sense of community amongst its nurses. This attainment of this goal, however, is hindered by the wide distribution of MCCC nurses across the United Kingdom. Further complicating the matter, the work environments of the various types of nurses is vastly different, with hospice nurses, who work together in a single building, and community nurses, who work alone and rarely ever interact with other MCCC nurses. It is understandable that the nurses in this situation, who rarely make contact with one another, have difficulty connecting to their peers.

MCCC has 10 hospices spread across the United Kingdom and employs 2,500 nurses, but only 20% of these work in the hospices: the remainder provide in-home care for patients. As a consequence, many nurses that work for MCCC have little contact with anyone at MCCC besides their community nurses manager. This segregation has made it difficult for MCCC to create the community that it seeks.

MCCC has been taking steps to reduce the perceived distance between nurses. All the nurses working at each hospice share a common e-mail box through which the organization can disseminate important information. Likewise these nurses can send

information to others. However, the nurses that work at the hospices make up a small percentage of the total population of MCCC nurses. In an attempt to reach all nurses in the Charity, Marie Curie began the development a quarterly nurse newsletter, called *NursingNews*, in order to inform MCCC nurses about a variety of topics and developments from the nursing field, both within and outside of MCCC. While this was an important step in unifying the community of nurses, there was still no means by which nurses separated by long distances could adequately discuss the content of the newsletter or otherwise communicate with each other.

King's College Hospital had found itself in a similar situation when it was searching for a way to improve communication between families of children with liver disease. In April, 2002, it unveiled an online community, which provided “. . . information, opportunities for dialogue and support to the families of children with liver disease and for healthcare professionals [5, p.13]”, to address this issue. Having studied the use of online communities in the healthcare sector, it became apparent that an online community would provide a means for MCCC to unify its' nurses.

Our main contributions in this project were the development of the specification for and the implementation of an online community for the nurses at MCCC. In order to increase the likelihood of success, we also developed a multi-faceted marketing approach using various media outlets. The outcome of our project has provided MCCC with a powerful communication medium that MCCC can use to attain its goal of creating a community among its nurses.

## **2 Background**

The material presented in this chapter served as the foundation of our entire project. We detail the organizational structure of MCCC, both physically and technologically, and the impact this structure had on our planning. We examine online communities as a general topic and how an online community could help unify the nurses at Marie Curie. The creation of IT tools for inexperienced computer users is discussed with a focus and how these applied to our development of the MCCC online community.

### **2.1 MCCC**

While working on the project, we needed to keep several aspects of the organizational structure of MCCC in mind. We had to consider the mission and goals of the Charity, the nature of nursing in palliative care, and the IT infrastructure of Marie Curie. This section presents these concepts and how they influenced the proceedings of our project.

#### ***2.1.1 MCCC Mission and Culture***

The MCCC culture exists as the United Kingdom's largest palliative cancer care charity. The Charity directly addresses the United Kingdom's primary cause of death: cancer, which claims the lives of 150,000 Britons per year. Compounding this statistic, at any given time there are 1,000,000 people living with the disease in the United Kingdom [2]. In keeping with its purpose of being, the Charity is dedicated to the total active care of people affected by cancer and the enhancement of their quality



of life through its caring services, research at the Marie Curie Research Institute, and cancer education.

MCCC's mission statement reads:

MCCC is dedicated to the care of people affected by cancer and the enhancement of their quality of life, through its caring services, cancer research and education. The Charity provides care for today and hope for tomorrow. [12]

The culture of MCCC is focused on the patient; everything within the organization has a purpose and that purpose is to benefit the patient in some manner. As a result, all information technology systems and tools for MCCC were developed with patient care in mind.

The MCCC online community developed in this project adheres to the Marie Curie culture by augmenting the nursing services, which are the most direct form of patient-related activities in the Charity. Our project promotes a sense of community within the Marie Curie culture. By using the online community, the nurses at MCCC can share information pertaining to healthcare, access information on medical breakthroughs, and directly interact with one another, irrespective of their actual work location.

### ***2.1.2 MCCC Organizational Structure***

Our project focused on the Caring Services sector of Marie Curie, which is the sector to which all the nurses belong. The Caring Services sector is consolidated in 10 hospices located across England, Scotland, Wales, and Northern Ireland in which approximately 500 Marie Curie nurses work. However, nearly 4 times as many nurses, known as community nurses, do not work in any hospice and strictly provide in-home care for patients [11].

One of the objectives of our project is to provide a medium for the MCCC nurses to communicate with one another, regardless of where they work, and in turn, create a tight-knit community for them. This is an important task, since community nurses work in patients' homes, and typically do not interact with any other nurses, except their Area Nurse Manager. This often isolates them from the events at MCCC. These community nurses, however, play a significant part in the Marie Curie culture of superb patient care because 75% of the 150,000 terminally ill individuals affected by cancer prefer to spend the rest of their days living in their own homes and receiving the services of a Marie Curie community nurse [10, p.6].

### ***2.1.3 Nursing at MCCC***

Working so closely with dying patients and with their families is one of the most challenging areas of nursing for MCCC nurses. The nurses often work at night, allowing the family of the patient to have a rest from caring for the patient. As a result of providing care in the patient's home and working closely with the patient's family, these nurses often develop a close personal bond with the families of the patients, many times helping and comforting the family even after the patient has died. Marie Curie nurses also commonly attend the funeral of their patients, and may continue to comfort a patient's family afterwards. This level of personalized service is greatly appreciated by the families, as well as the patient; however, it does place a great amount of strain on the nurses [11].

Cindy Grundy, a nurse who has experience providing palliative care, recounts her personal experiences by stating that a great source of job satisfaction for nurses providing palliative patient care comes from improving the quality of life for the patient or aids the patient in controlling his/her pain; however the suffering of a patient has a negative impact on nurse job satisfaction [8]. Her experiences provided

us with insight about the potential feelings of Marie Curie nurses, and considerations that we needed to make when developing an online community for them.

One such consideration is the difficulty for the nurses to discuss the feelings that result from the loss of a patient with someone who has not shared the same experience. The nurses at MCCC have a natural bond with one another as a result of the nature of their work, but unfortunately have a difficult time taking advantage of it due to geographical boundaries separating them from one another. By leveraging MCCC's IT infrastructure in the form of an online community, we believed we could help link these nurses together.

### ***2.1.4 Information Technology at MCCC***

MCCC's Information Technology department is a fairly new addition to the organization. The IT department was formed 5 years ago and has been working to streamline processes and their associated costs within the Charity. It is not surprising that the IT department is so young because health care organizations are typically very focused on patient care, not the newest computer technology [13, pp.63-64].

Traditionally, MCCC's IT services have only been used to streamline costs by making work easier and employees more productive. The online community we have created marks the first time services have been offered for the sole enjoyment of Marie Curie staff. It is through this enjoyment that patient care can be improved and the Marie Curie culture further enhanced [14]. These assertions do not lend themselves much to quantifiable means of measurement, but nevertheless, their merits are easily recognizable when viewing nurses in the field interacting with one another and with the patients. In order to accomplish this, there were several considerations we needed to make, including the relationships between IT and nurses and issues surrounding the development of IT tools for users.

## **2.2 Online Communities**

An online community is an interactive web site, allowing its visitors, or community members, to interact with one another in numerous ways. While online communities often share a core set of features to facilitate communication, there are often variations between different communities due to the need for features specific to the needs of its members. Here we discuss the features and benefits of online communities in general. We then explain the specific features we implemented, the logistics surrounding those features, and benefits associated with each feature developed for the online community for the MCCC nurses.

### ***2.2.1 General Features and Benefits of Online Communities***

Computer support groups offer several benefits over support groups being offered via other media, and are thus being adopted rapidly. They allow the community members to give each other support when doing so is convenient for them. They allow the community members to interact regardless of physical location, while offering the anonymity that active users may cherish [3, p.8]. Online communities also have the benefit of archival of content in the sense that information from past discussions can be easily found.

The archival of content allows the online community to also function as a knowledgebase on special topics. The usefulness of this feature is highlighted by a study performed by Weinberg et al., where the member who logged into the online community system the most and read the most messages was found to write very few messages himself. This data suggests that one can find the online community as a

research tool equally as useful as a tool for sharing his/her personal thoughts or feelings [15].

### ***2.2.2 Specific Features and Benefits of an Online Community for Nurses at MCCC***

With nearly 2,500 nurses working in the field of palliative cancer care for patients, Marie Curie nurses collectively have accumulated a significant amount of knowledge. However, this knowledge is all but useless if separated groups of nurses only hold pieces of it, and none have access to it in its entirety. The experience of nurses at one hospice only benefits the patients at that hospice due to this lack of information sharing.

A nurse “can often learn more from a seasoned health care provider than a book, which may be the reason many health professionals seek out mentors to help them through their careers” [7]. The common desire in healthcare to seek out mentors is yet another reason to facilitate communication and interaction between nurses at different locations. With this increased communication and professional network, nurses will have much more flexibility in the mentor-student relationship, allowing mentors and students to share knowledge with someone whom they had never met in person. The fact that “many nurses are interested in developing mentoring relationships via the Internet [7]” indicates that the mentor-student relationship can certainly flourish in the environment provided by an online community. With an effective means of communication between hospices, the knowledge contained at one hospice will be able to benefit the nurses and patients at all hospices.

An online community could also function as a more traditional support group for the nurses at MCCC. Nurses involved with cancer care may be concerned about the burden they are placing on loved ones and, as a result, they may hide their stress from

family. To compensate for this, these nurses seek other emotional outlets such as support groups [8, p.28]. The users of such a group enjoy the flexibility that a computer-based support group offers in terms of meeting times, usability, and features available.

### ***2.2.3 Development Considerations***

For an online support group to be successful, a number of important design decisions need to be made. Our online community was no different, and thus there were several considerations we needed to take. The first such consideration was the development of our online community was in conjunction with another initiative that Marie Curie was taking to unify its nurses: a quarterly newsletter. The first issue of the newsletter will debut in June, 2003, and will highlight current developments and issues in palliative care to nurses at MCCC. The newsletter will prompt nurses to discuss these issues with one another, and as a result, our online community will be used as a medium to facilitate discussion between the nurses ensuing from the content of the newsletter.

We also had to consider the nurses themselves, since they were to be the end users of our system. We needed to understand the position they were in, their level of computer experience, and how we could create an online community that would bridge the gap between the two. To help us, we studied existing theory on developing IT tools for users, which made us aware of additional considerations we needed to make.

## **2.3 Social Considerations of IT Tool Development**

The online community created by King's College Hospital failed the organization because the developers of the system had made incorrect assumptions about the needs of the community users, drawing only from their non-digital interaction with these people as healthcare professionals in the NHS [5, p.16]. This unfortunate event illustrated to us a vital point about the development of online communities: the needs of the end user must be verified and not merely speculated, lest the community would be more likely to fail [5, pp.14-15]. There are a number of well-established guidelines that should be adhered to when developing any system for non-technical users, as this section will highlight. We then examine how these tenets of software design affected the online community that we developed for the nurses at MCCC.

### ***2.3.1 General Considerations***

In developing an IT solution it is important that the social factors of an organization are taken into account. An information technology solution must look at an organization's needs, as well as the needs of the individuals within the organization. When considering the social aspects of the online community we asked the question, "What do nurses at MCCC require of an online community?" The answers to this question were critical in the development of our project. We had to be cognizant not only of what nurses wanted in this community, but also how complex these features needed to be.

The single largest factor in determining the success of an IT solution is the attitudes of the end users toward the system [17, p.8]. The attitude of the end users affects not only user participation in the system, but also has an effect on user resistance to the

system. This resistance can take many forms, including: non-participation in a system, using the system in such a way that it benefits the individual rather than the organization as a whole, and intentional abuse of the system.

Aside from the user's attitude towards the system, there are four critical factors to be aware of when considering the end user of an information technology tool. The first is how easy the tool is to use. The second factor is how accessible the tool is. The third factor is how easy it is to understand the features of the tool. The final and potentially most important factor is that the tool must have a high return value for the user [17, pp.10 – 11].

### ***2.3.2 Specific Considerations for Nurses at MCCC***

To properly take the factors from Section 2.3.1 into consideration, we had to understand our target audience: MCCC nurses. The nursing profession is a specialized profession that attracts certain individuals. Nurses must be motivated, quick on their feet, and possess strong people skills [15]. Unfortunately nursing is also usually is a stressful, time-consuming profession. Since nurses traditionally do not use computers on a regular basis in their line of work, and have little time outside of their jobs to pursue such interests, there exists the possibility that some of the MCCC nurses may have little computer experience. This is an extremely important point, as the success of our project relies on nurses using computers on a regular basis as a means of communication. One way we have dealt with this problem is by making the interface to the online community as simple as possible, as can be seen in Section 3.3.4. However, we have not completely relied on technical means of attracting MCCC nurses to use the online community, but rather have tried to entice them by creating a small, friendly atmosphere within the online community.



To understand how nurses may perceive the online community, we turned to a 1996 study performed by Nancy Weinberg et al. The study consisted of a group of cancer patients and its purpose was to investigate the effectiveness of an online community as a support group [15, p.27]. While the group of patients being studied was rather small, the community continued to thrive as members shared personal experiences and encouragement. We planned to achieve the same effect with our online by making the community an open arena, where nurses can share thoughts and ideas, but at the same time keeping the community closed to third parties, so nurses would only be amongst their peers. This setting should be conducive to a friendly atmosphere.

To confirm that a friendly atmosphere was an important factor in the success of an online community, we examined a study performed by Meridith and Larry Bolster. They surveyed a number of USENet groups related to cancer care, and found that the “instillation of hope and group cohesion” were factors that would most likely attract new members to use an online community [1].

## **3 Methods**

In order to achieve our goal of developing a specification for and the implementation of an online community for the nurses at MCCC, we used a variety of standard techniques to design, develop, and market the online community to ensure its adoption by nurses of the organization. We performed questionnaires to determine what features nurses wanted. We wrote a specification detailing every aspect of the online community. From the specification we were able to develop an implementation of the online community. This implementation was based on an OSS package that we had chosen based upon our research into the field of online communities. We involved nurses throughout the programming process as well, performing pilot tests with them to ensure that the community we were building met their wants and needs. The completion of the project was marked by a marketing campaign to attract the nurses to the new community.

### **3.1 Survey & Questionnaire**

The development of an online community for the nurses at MCCC has required us to work closely with the nurses from the organization to build the community suitable to their needs and wants. In order to do such, it was important for us to elicit the opinions of these nurses. Had we not considered the nurses' opinions, the online community we developed may not have been accepted by nurses, and so the likelihood of failure would be significantly higher.

#### ***3.1.1 Questionnaire Development***

The most efficient way to determine the requirements for the online community was to ask the nurses a series of targeted questions designed to extract exactly what

capabilities they wanted. To this end we conducted a survey of 40 Marie Curie nurses by means of a questionnaire. The questionnaire had several main goals, the most significant of which was to determine what features the nurses wanted the online community to have. The other goals were to determine the level of computer expertise among Marie Curie nurses and to determine how interested the nurses would be in this online community.

Based upon our research of existing online communities (see Appendix B), we had developed a comprehensive list of features being implemented in various online communities worldwide. We were then able to simplify this list into two categories: features standard to online communities (e.g. discussion boards), and features that were less common yet potentially useful to nurses (e.g. poll/survey capability). Recognizing that the standard features would be included in the community innately, we were able to target the questionnaire to determine which optional features were required; nurses were given the opportunity to rate each in terms of personal preferences.

Our group developed the questionnaire (see Appendix C) prior to our arrival in London. These were crafted in such a way as to reveal information about how the nurses at MCCC regarded the notion of an online community and what they wished to see in such a community. Our intent was to make the questionnaire comprehensible and simple to complete by all nurses, regardless of whatever background they may have. This was accomplished by asking simple short answer questions or questions supplied with a range of predefined answer choices, for example asking nurses to rate potential features on a scale of 1 to 5. While making this questionnaire simple to complete using these types of questions also reduced the amount of time the

questionnaire would take to complete, thus reducing the burden to the respondents and increasing the likelihood that the questionnaire was completed.

Simple questions with predefined answer choices may be easy to complete and to analyze (quantitatively), however they do not give the nurses the flexibility they may need to completely express their ideas on the subject. Westrup states, in a paper edited by DeGross et al., that “Calls for the use of qualitative research in information systems research have appeal, not least in a common recognition of shortcomings in a simple reliance on quantitative techniques [6, p.183].” For these reasons we must also take a qualitative approach to our data collection and so, we have included several open-ended questions in our questionnaire.

In one open-ended question we asked nurses how they think any of the features we have listed elsewhere in the questionnaire may be useful. This question’s purpose is two-fold: first it gives us information about how this community will be used, and is a method of early promotion on a small scale. By requiring nurses to think about how they would use the online community, the questionnaire forced nurses to imagine themselves using the features that are most useful to them. This is likely to generate additional interest in the community.

We also asked two questions that together provided some valuable information regarding eventual usage. One question asks how interested the respondent is in the online community, which gave us an idea of the amount of marketing needed to make the online community reach a critical mass, where it would attract additional users by its own reputation. This question, when combined with a question regarding age, provided us with information that could show trends between the Internet usage levels of different aged nurses. This information was taken so that we would know which

group of nurses we might have to advertise the benefits of the community more aggressively.

To clarify our questionnaire, we discussed the online community and the questionnaire with the Practice Development Facilitator (and former Nurse Manager) Nina Fraser. From this discussion we were able to determine what terminology was likely to be understood by the majority of nurses and which phrases to avoid. From this knowledge we modified our questionnaire to include simple descriptions of potential features, and placed each feature into context of how it could be used, allowing nurses to visualize what they may accomplish through its use.

Whenever a survey is conducted there is a tendency for the target audience to have some reservations about participating due to uncertainty about how the information collected will be used. To avert nurses from being apprehensive about completing the questionnaire, we have informed them that their responses to the survey and interview questions will be kept private and will be used for research purposes only. It is unlikely that privacy or information usage would be a concern, due to the non-personal nature of the questions asked.

Following the development of the questionnaire, it was necessary for our group to address the issue of distributing the questionnaire, and receiving a response representative of all the nurses of MCCC. The distribution of the questionnaire and its analysis are discussed in the subsequent sections.

### ***3.1.2 Questionnaire Distribution***

Since Marie Curie employs over 2,500 nurses in several locations throughout the UK, our group cannot, out of practical limitations of resources, ask each of these nurses to complete a questionnaire. As a result, our group has chosen our survey subjects using stratified random sampling. Random sampling allowed us to select a

group of nurses that would hopefully yield a representative population, thereby providing us with data that could be generalized to the larger whole.

The choice of nurses to survey was greatly assisted by MCCC's previous experience in surveying nurses during the development of NursingNews. The distribution was a semi-random stratified sample with five randomly selected nurses in each of the following strata: centre nurses, centre care assistants, centre sisters, clinical services managers or equivalent, Marie Curie Nursing Services (MCNS) care assistants, MCNS Registered Nurses, MCNS team leaders, and Community nurses Managers. This sample included nurses from multiple centers as well as Marie Curie's community nurses service.

The choice of strata did pose a validity threat to our results, since we were sampling a relatively small number of nurses compared to the number we wished to represent. This turned out to be a relatively minor issue, since the purpose of the questionnaire was to determine features desired by nurses at MCCC and did not need to be a perfectly statistically valid sample.

### ***3.1.3 Analysis Techniques of Survey Results***

As the questionnaire uses mostly quantitative measures, analysis of the results was performed using methods of statistical analysis. Several questions containing possible features provided our group with quantitative information ranking the nurses' desires for these features. With potential responses ranging from 1 to 5, with 1 being an undesired feature and 5 being a greatly desired feature, we easily distinguished which features were most wanted by the nurses at Marie Curie by a simple averaging of the responses for each feature.

It was our expectation that data from the questionnaire would most likely be homogenous in nature and therefore any further breakdown in demographics would most likely be unnecessary. However, if the data had varied greatly, the demographic data would have allowed us to determine the nature of these discrepancies.

It is possible that nurses without much computer experience may have had difficulty communicating the features that they wanted. By identifying this as a possibility, we were ready to evaluate the responses with this in mind and account for it if necessary. For example, if a nurse lacking computer experience described a feature in an open-ended question response that was already defined in a closed-response question, yet did not express interest in the closed-response section, then we could possibly disregard the lack of interest in the closed-response question. We had to be prepared to handle possible misunderstandings when dealing with nurses whether it is a result of limited online experience, language barriers, or any other possibilities causing confusion.

### **3.3 Web Site Component Specification & Design**

Upon completion of the analysis of the survey (see Chapter 4.1), we had a much clearer picture of the features that the Marie Curie nurses wanted, as well as their level of expertise with computers. We then had to determine how these desired features related to one another and how they could be combined with a common framework to yield the online community we wanted to build. The purpose of this phase of the project was to develop a functional specification that precisely stated what this application must do, defined the functionality of each feature, and specified detail about the user interface. The specification of the online community was based primarily on the responses to the questionnaire and interview responses, with other

data coming from our research into standard online community features (see Appendix B).

### **3.3.1 Determination of Features**

As mentioned in Section 3.1 of this chapter, our questionnaire prompted nurses with a number of pre-defined feature choices for the online community. These choices were specifically chosen as they were feasible to develop during the time allotted for implementation. However, we had no control over the responses to the open-ended questions about additional features nurses may want on the questionnaire. For these we had to consider the technical feasibility of each such desired feature, as well as its cost in terms of time and maintainability compared to the benefit offered by the feature. Certain requested features such as the chat room was not rated high enough in the survey and therefore that feature was not included as it was not possible to code it during the time allotted. Furthermore, whilst a suggested feature may have been greatly useful, if it could not be maintained by the existing staff at MCCC after we left, it would have been useless to the organization.

### **3.3.2 Selection of Open Source Software**

The features that nurses wanted had greatly affected our approach to a software solution. The amount of code writing involved in creating a full featured online community is indeed quite substantial, and to implement it in its entirety would have certainly exceeded the time we had available while in London. For this reason we decided to use pre-existing work and build upon it. This pre-existing work is in the form of Open Source Software (OSS): software available freely and with complete source code. Additionally the licensing of such software is often very flexible allowing the software to be used and modified free of cost.



OSS solutions exist for a wide variety of applications. This includes software for discussion forums and online communities, and is commonly available on the Internet. The benefits of expanding an OSS, in accordance with its licensing agreement, provided our group with substantial base functionality in little time.

Our group had decided to use an ASP and VBScript based OSS system with a MS SQL database back-end. This choice was due to MCCC's IT department's extensive experience with the technology. By using a technology that the MCCC IT Department was familiar with, long-term maintenance of the system was possible.

There are many online community implementations that are freely available on the Internet. These implementations are typically designed to be "off-the-shelf" solutions, offering a broad range of features that may or may not be useful to a particular organization. Of the free online communities, there also exists a smaller subset of communities for which the source code is freely available to modify. With these communities it is then possible to modify the online community to contain only the features that are useful to the organization.

Our group searched for an existing open source online community that we could use as the basis of our own community, something that would present us with a means of easily implementing the features the nurses desired. We found 3 packages that provided the features we needed. To decide which of these we would ultimately use, we performed a value analysis of each and compared the results (see Appendix A). It was decided that MegaBBS would offer us the most in terms of features and extensibility. Once we had selected an OSS, our group had the necessary information to begin the development of the functional specification.

### **3.3.3 Development of Functional Specification**

An online community is a non-trivial software system, thus it was imperative that our specification was complete, concise, and cohesive. This functional specification was our guide and provided the design for the final online community. It provided us a high level view of all the work that was necessary for the code to function properly.

A technical specification of the online community provided our group with a clear programming plan. By including already developed features provided by MegaBBS into the specification, we were able to formulate a comprehensive plan for the integration of components designed by our group into the already defined software structure provided by MegaBBS. Beginning with an informal lexical analysis<sup>1</sup> of a description of our problem domain, we were able to represent each feature as a component of the software system and then detailed how the various components interacted with one another, and with the end user. This work was accomplished by use case analyses, sequence diagrams and class diagrams: techniques drawn from the domain of object oriented analysis and design which are greatly useful in detailing the aspects of a system [4,9].

A thorough use case analysis detailed every state of the software system, as can be seen in Appendix D.2 including information detailing how that state was reached, what actors<sup>2</sup> were involved in such, and the sequence of events that would advance the system to another state. At a high level, this documented all the relationships between the various components and at a more local level, what actions each

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<sup>1</sup> In object oriented design and analysis, the goal is to accurately and efficiently model the problem domain in software. One technique for doing this is a lexical analysis of a description of the domain, where different grammar forms are mapped to different parts of the system (e.g., nouns map to software components, verbs map to methods of the component, etc.)

<sup>2</sup> An actor is anything that can interact with the system, including the components with the system, an end user, or even another external software system.

component was committed to perform. We divided up the use cases for the entire online community by the major components (e.g. chat forum, instant messenger, etc.) so it was easy to view a particular component at a glance. The use cases, while rather simplistic in and of themselves, paved the way for the sequence and class diagrams.

The sequence diagrams provided a software time flow, as can be seen in Appendix D.3 showing graphically the message passing<sup>3</sup> between actors with relative time frames. While the use case analyses shows how the various components are related, the details of these interactions were not well-defined; sequence diagrams fill this gap. The sequence diagrams completely documented the message passing between the various components. With a lexical analysis of our use cases, we were able to give names to the methods by which messages are passed, give names and types to the parameters representing the information being passed, and to time order (where time progresses linearly downward) the communication between the various components.

We had identified four major subsidiary components of the online community: relationships between community features, the community user interface, the community manager interface, and the software backend. Each of these components was examined in turn, in the order presented, using the three mentioned analysis and design tools. By focusing on these smaller components, we were able to better understand the whole.

### ***3.3.4 Development of Interface Specification***

To ensure that the community in development could be used effectively, while maintaining a sense of MCCC's identity, we developed an interface specification. The interface specification would identify the users of the system, the tasks they

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<sup>3</sup> "Message passing" is the terminology used when discussing how the different components of the software system interact. A "message" can be as simple as one component requesting information of another, or it can be more complex and contain that requested information in a response.

wished to complete, and the goals we wished to achieve. We used several Human Computer Interaction methods to develop the interface specification.

We examined the aesthetics and the general look-and-feel of the public MCCC web site (<http://www.mariecurie.org.uk/>) and designed the interface of the online community to be consistent with the existing system. To measure the look-and-feel we examined color schemes, fonts used, and the general architecture of the aesthetics. If specific text styles were being used in different areas of the web site, we researched what the requirements were for acceptable style usage in these various sections. A precise description for aesthetics is very important to our final web site component implementation, as we wished to remain consistent in terms of look-and-feel with the existing web site.

Once the detailed specification was created, our group began the implementation. With the framework for the coding completed, the actual coding was simplified and allowed our group to develop several separate systems in parallel.

### **3.4 Web Site Implementation**

Coding was the means by which we realized our web site component implementation and finalized our project. Our web site utilized appropriate programming conventions (such as integrating error checks and error reporting) that resulted in robust and efficient code. The implementation was designed to be consistent with MegaBBS's coding style. This allowed those who maintain the system to not have to examine several different styles of coding. Included within the code were comments and programming notes were provided. These forms of

documentation will help those maintaining the system to understand the underlying code. This complete documentation is provided in Appendices E - H.

As stated in section 3.3.2, our group used ASP for the implementation of the online community. This technology allows dynamic web pages to be created, compared to conventional HTML (hyper text markup language) web pages which are static (i.e., their content does not change unless a programmer changes the actual HTML file). This technology allows the creation of websites which blend programs with HTML, which is essential to a communication medium, such as an online community. The language we used with ASP was VBScript, which is similar to Microsoft's Visual Basic language in terms of syntax.

MegaBBS provided the functionality of discussion forums, user management, private messaging and calendars. Given the modular structure of MegaBBS and its full Application Programming Interface (API), there were not any serious limitations encountered. Using MegaBBS's API we could easily extend this functionality and use it in our online community. These features formed a powerful framework for our online community.

Although MegaBBS's design allows our group to easily add functionality to the system, there were instances where we had decided to remove some of the built-in functionality of MegaBBS. Features such as the photo album and advanced details displayed in the forum were not desired by the nurses and were removed.

Removing features was a simple task. Since each feature in MegaBBS was contained in a separate ASP web page file, the file containing the feature was deleted along with all links to the web page from the other pages. To remove details in individual web pages, it was necessary for our group to modify the code in each web

page. Since content was generated through calls to various functions, to remove certain content the calls to these functions were deleted.

At times it was necessary to modify the API, which was located at the relative path “include\includes.asp”, to add or remove functionality. This file contains all the main functions of MegaBBS. Modifications to this file can affect many features at once. To ensure that no unwanted side effects were present after modifications, it was necessary for our group to perform validation and regression testing.

### **3.5 Validation & Regression Testing**

Validation testing was performed by our group on a regular basis to ensure that all features of the system were in working order after system modifications. Validation testing was performed by all group members using both white box and black box testing procedures.

White box testing was performed by providing each group member with the source code and the expected output of each component. After careful analysis of the code, each group member would trace the input as it is evaluated to ensure that it is properly being computed. The output is compared to the expected output. This method was used in instances where ASP pages were created or modified.

Black box testing is a procedure in which the tester is provided with known input and its corresponding output. The tester then tests the system by inputting information and ensuring that the output is as expected. This was used for testing in situations where thorough examination of the source code provides no major benefit to the tester. This method was used when components were being connected to the system through HTML links. Black box testing was used to ensure that each link on every page led to a valid page.

Regression testing was also performed after major modifications to the system, or modifications to the API. This method required the thorough testing of every function in the system. Regression testing detects the unwanted side-effects of some components on others.

The purpose of validation and regression testing is to test the functionality of the system; however, with data from the surveys revealing nurses were not very active with computers it became important to perform pilot tests to ensure that the interface was simple and intuitive for the nurses.

### **3.6 Pilot Testing**

Pilot testing has proven itself to be a useful tool for our group as a method of receiving feedback in a controlled environment. To maximize feedback validity we had to make our pilot testing as scientific as possible. This would ensure that problems encountered were valid issues and not specific to any single person or subset of the MCCC nurse population.

During development our group performed two pilot tests, the first on 11 April 2003, and the second on 17 April 2003. Each test was performed on MCCC administered terminals at the charity headquarters in the IT Training Room. The first test was performed with two community nurses while the second test was performed with a care assistant. The nurses were given a pilot test form (Appendix D) where they provided information detailing their computer experience followed by a series of tasks to complete. Following each task they were instructed to rate each task on a scale of one to ten in terms of difficulty with one being the least difficult and ten being the most difficult. At the end of each pilot test the nurses were asked for a general opinion of the system they had just used. These questions were open-ended

asking whether or not they would use the system, if they found it to be intuitive, and if they would use such a system in the future when it became available. The purpose for the open-ended questions at the end was to elicit information that the other portions of the pilot test may not reveal.

The main goal of the pilot tests was to test the usability and basic functionality of the system. The pilot tests were not designed to be an exhaustive test for bugs or security threats, but rather a basic test for nurses designed to see how nurses approached and completed each task and to determine any failures in the interface design. In order to detect security threats and bugs, large-scale testing was needed.

### **3.7 Initial Deployment & Beta Testing**

With pilot testing focusing on interface issues, beta testing was necessary to detect potential security threats, and bugs in the software. The community was deployed on the MCCC internal network where computer usage was monitored and security threats were limited. This allowed the MCCC IT Department to thoroughly test the software and generate usage statistics before investing in additional hardware to place the community on the Internet. Usage statistics could be determined through both the analyzation of server logs, and through MegaBBS's statistical logs.

MegaBBS's statistics contains useful information that includes such things as the number of users, forum activity (e.g. the number of posts and replies), and login tracking.

The placement of the online community on the Marie Curie internal network allowed nurses at each hospice to access the community while preventing potential hackers and crackers from reaching the system. This phase was conducted following the departure of our group. Issues and changes to the system resulting from this



testing phase were addressed by the MCCC IT Department. Following this exhaustive testing phase, it is with MCCC's intention to place the community on the Internet where it then becomes available to all nurses.

### **3.8 Marketing**

As with almost any project, the success of this software product is not only measured by its usability, or how well it was tested, but also by the number of users that have adopted the system. With 2,500 nurses employed by MCCC, the task of informing nurses of the availability of the online community is as large as the task of developing the system itself.

Since each member of our group lacks a background in marketing, we worked closely with the MCCC Marketing and Public Relations Department to develop a marketing strategy that would effectively inform and attract nurses to the online community (Appendix H). The marketing director Chris Dainty developed a marketing plan that was based on repetition. The goal of the plan was to repeatedly promote the community to nurses through a variety of avenues. This strategy would be conducted in two phases: a "teaser" phase followed by a promotional phase.

The "teaser" phase was developed to provide basic information about the community in an attempt to draw interest about it (Appendix H.3). This phase is called a teaser phase because it effectively 'teases' the target audience about an upcoming product that is not yet available. During this phase a series of posters describing certain features of the online community were distributed to hospices. Articles were distributed in *NursingNews* and *Marie Curie People* announcing the upcoming availability of the online community while describing its features and

potential uses. Brief messages announcing the upcoming availability of the online community were also distributed to every nurses' pay slip.

When the online community is deployed on the Internet, the promotional phase will begin (Appendix H.4). This phase focuses on informing nurses where they can access the community and how they can use it. This is accomplished through another series of articles in *Marie Curie People* and *NursingNews* along with articles in *Nursing Weekly* and *Nursing Standard*. *Nursing Weekly* and *Nursing Standard* are widely available nursing magazines that all nurses through the United Kingdom have access to. A series of posters will be distributed to Marie Curie hospices detailing access information, and messages in pay slips will advertise the Internet address of the online community.

Before marketing materials for the community could be distributed, it was important to develop a name for the community, dubbed "The Nurselator" by our group. The change in name was needed to effectively advertise the community. An effective name was catchy, and described the product or made it easy to associate the product with the name. The name change was chosen following a 30 minute brainstorm with the marketing department. It was decided to call the online community *NurseLife*.

The timetable for the full deployment of the community was still being decided at the completion of our project; as a result, the advertising materials will not be distributed immediately. To address this situation, our group developed the necessary marketing materials of the promotional phase and delivered them to the marketing team to be distributed at the beginning of each phase.

### **3.8 Administrative Training and Transition Plan**

Since our group will not be managing the system in the future, we provided administrative training to those who will be. We identified four areas of the system that could be managed through the filling of four positions: Forum Manager, Community Manager, Job Vacancy Administrator, and Webmaster.

The forum manager position requires a person with knowledge of both nursing and computers. This position would manage the forum, newsletter, links, calendars, and provide updates to the homepage. Following meetings with Nina Fraser and Lynn Batehup (Executive Nurse of MCCC), we were able to fill the Forum Manager position with Andrew Taylor, who is currently Database Manager in the Education Department. Andrew has worked extensively with nurses in the field of Nurse Education, and currently administers the online education system, Blackboard, for MCCC. We provided Andrew with an administrative account and showed him how to use the necessary web forms to manage the forum.

We were able to fill the Job Vacancy Administrator after speaking with the MCCC Personnel Manager Helen Sands. Helen directed us to Louise Lingard the current Personnel Coordinator. The Job Vacancy Administrator will manage the job vacancy listings, updating the list as necessary and reviewing incoming applications. Since Louise performs a similar function as Personnel Coordinator, she was our first choice to manage the job vacancy database. Louis will work with Andrew Taylor, the Forum Manager, to maintain the job vacancy database.

Our liaison, Martin Skeet, has the most knowledge about the technical and design aspects of the online community. He has aided our group in filling the two most important positions: Community Manager and Webmaster. Martin is currently the Database Administrator in the IT Department, and he will assume the role of

Community Manager. His role will be the day-to-day management of the community, the maintenance of the actual server, and the appointment of new management positions as necessary. For the Webmaster position, Martin has recruited Darren Harridence, who is the current Webmaster of the MCCC website. Darren was an appropriate choice as he is very knowledgeable in ASP with VBScript, the language used to construct the community. Darren's role will be to maintain the code, and to possibly add-on to the community in the future. We provided Darren with documentation and discussed with him in a meeting specific code created or modified by our group along with code in MegaBBS.

## 4. Results & Analysis

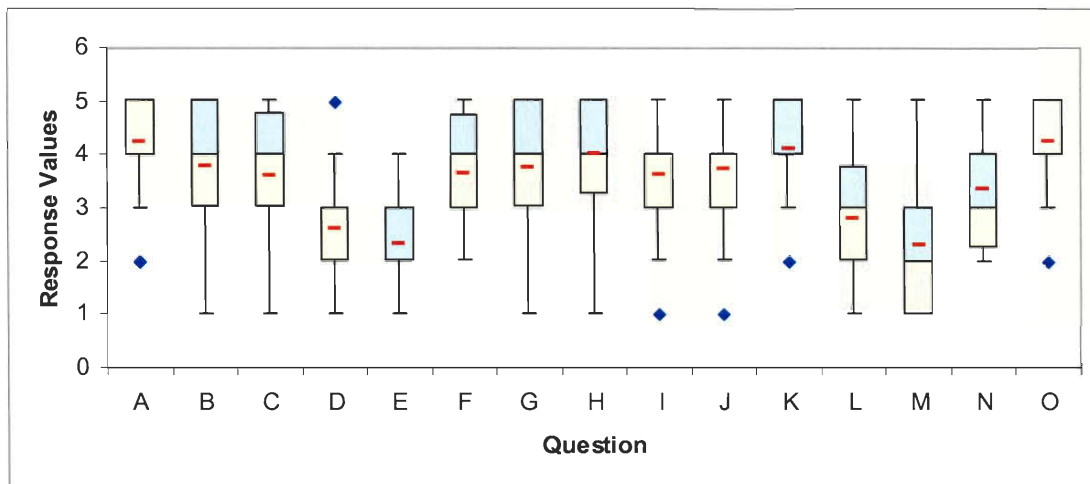
During the development of the online community it was necessary to employ various data gathering methods to learn what we needed to make decisions about the development of the online community. The questionnaire responses provided us with the data necessary to decide what features to implement. The pilot tests allowed nurses to give feedback on the community's functionality and interface. Results of the pilot tests provided our group with specific problems correct and areas to improve. The following chapter presents specific results and their analysis, giving the reason for the decisions we made during the communities development.

### 4.1 Survey Results

Based on MCCC's previous experience with surveying nurses, we expected a survey response rate of approximately 60%. When our survey was complete we had received 26 responses out of the 40 questionnaires delivered, which correlates to a 65% response rate. The results of analyzing these 26 questionnaires are presented below.

#### 4.1.1 Survey Quantitative Analysis

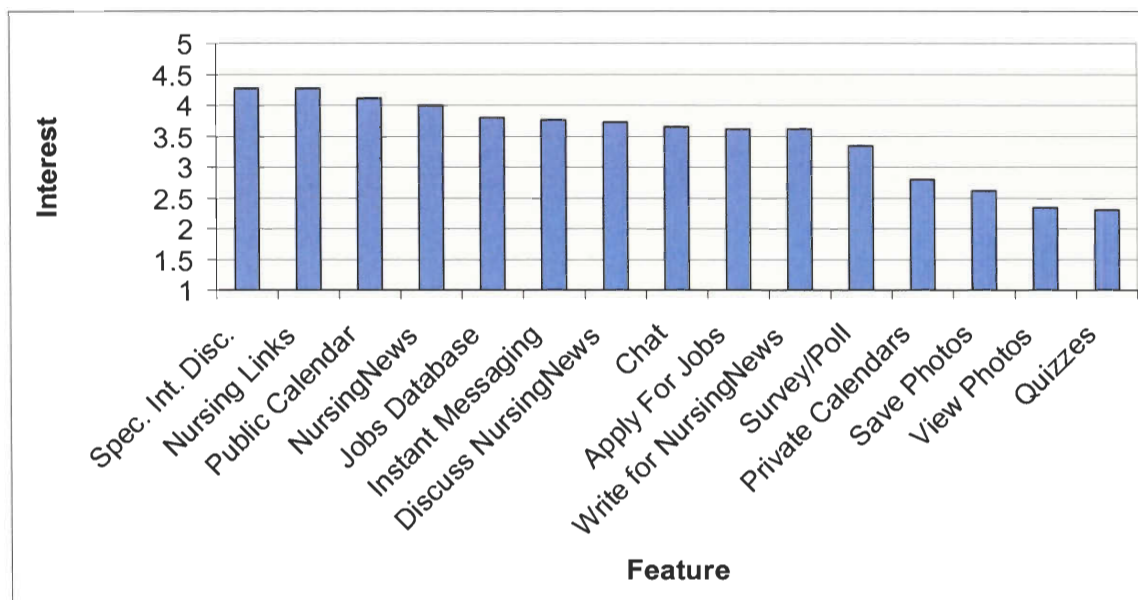
Initially we had hypothesized that the responses from the survey would be homogenous in nature, and as such, there would be overwhelming support for certain features of the community whilst others would be shunned. By the end of the data collection period, the responses were largely homogeneous, with an average standard deviation of only 1.08 (with questions being on a scale of 1 to 5) for the questions pertaining to the features of an online community desired by the nurses. The distribution of responses for each question, presented as a box-and-whisker plot, can be seen in Figure 1. The same data is ordered by mean and presented as a bar graph in Figure 2. This data is how we prioritized the development of *NurseLife*.



**Legend for Questionnaire Responses Graph -- Features on Questionnaire**

- A) Development of special interest discussion boards
- B) Viewing available nursing roles within Marie Curie
- C) Submitting curriculum vitae/applications for available nursing roles
- D) Saving photos to an online photo album
- E) Viewing the photo albums of other nurses
- F) Having the ability to instantly chat with a group of nurses using the online community
- G) An instant messaging system built into the online community
- H) Online access to a newsletter for Marie Curie nurses
- I) Contribute to a newsletter for Marie Curie nurses
- J) Ability to discuss newsletter content in a discussion board
- K) A calendar of events for Marie Curie nurses
- L) Private calendars for individual nurses
- M) Compose quizzes and take quizzes composed by others
- N) Create a survey and view survey results
- O) Links to information pertinent to nurses (e.g., an online medical dictionary or encyclopaedia)

**Figure 1 – Box and whisker plot of responses to questions pertaining to desired features.**



Priority	Mean	Question
High	4.269231	A) Development of special interest discussion boards
.	4.269231	O) Links to information pertinent to nurses (e.g., an online medical dictionary or encyclopaedia)
.	4.115385	K) A calendar of events for Marie Curie nurses
.	4	H) Online access to a newsletter for Marie Curie nurses
.	3.807692	B) Viewing available nursing roles within Marie Curie
Medium	3.769231	G) An instant messaging system built into the online community
.	3.730769	J) Ability to discuss newsletter content in a discussion board
.	3.653846	F) Having the ability to instantly chat with a group of nurses using the online community
.	3.615385	C) Submitting curriculum vitae/applications for available nursing roles
.	3.615385	I) Contribute to a newsletter for Marie Curie nurses
.	3.346154	N) Create a survey and view survey results
Low	2.807692	L) Private calendars for individual nurses
.	2.615385	D) Saving photos to an online photo album
.	2.346154	E) Viewing the photo albums of other nurses
.	2.307692	M) Compose quizzes and take quizzes composed by others

**Figure 2—Ordering of features rated by nurses (highest preference is at the top of the list and lowest preference at the bottom)**

Most of the responses to the question about Internet usage were less than 1 hour per week and between 1 and 5 hours per week, which suggests that these nurses have limited Internet experience. This is presented graphically in Figure 5 below.

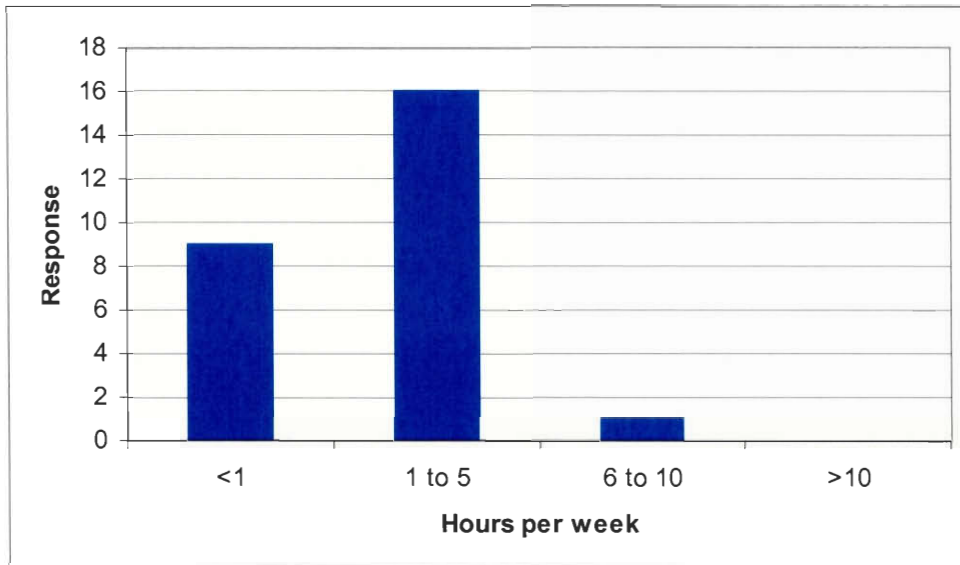


Figure 3 - Histogram representing the distribution of internet usage by MCCC nurses.

This lack of experience however has not prevented nurses from being enthusiastic about this online community; on a scale of 1 to 5, on average nurses rated their interest in this online community as a 4 (the median was also 4, verifying the validity of this average). This distribution can be seen below in the histogram in Figure 4.

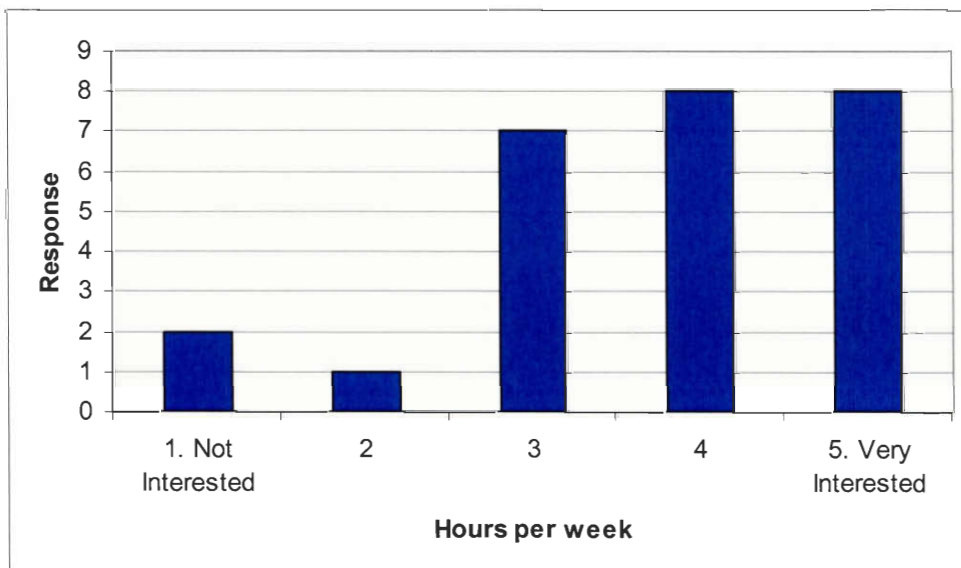


Figure 4 - Histogram representing the distribution of interest in the online community by MCCC nurses.



### **4.1.2 Qualitative Analysis**

Responses to the open-ended questions regarding additional features in the online community were homogeneous among the nurses who gave responses to these questions. In their responses nurses were interested in: clinical practices, models of care, sharing of good practices, new treatments of care patients (such as tissue viability), discussion of ethical issues, scenarios of difficult cases, own experiences, and complimentary therapies in cancer care. Nurses also see the online community as a tool for gathering information, listing particular uses such as receiving updates on the MCCC organization, getting nurse opinions on various subjects, giving feedback in development of new policies, getting other nurses' ideas and experiences on nursing projects, and receiving aide when their nursing assignments are due.

Nurses generally have shown an interest in educational opportunities, particularly computer training. One respondent would have liked to see counseling information and opportunities on caring for one's self while handling stress and emotionally difficult situations. The 3 nurses who filled in the comments section agree that the online community would be beneficial to nurses and would improve communication. They believe it will make community nurses feel more of a part of the organization.

Most of these suggestions relate to content and as a result were not directly addressed by our online community development. However the framework was developed in our online community to address these issues by easily adding content at a later time. The links area could prove useful in addressing many of these issues by providing links to outside information. The discussion forum is also very useful in meeting these needs, as it provide a medium for nurses to discuss these topics amongst themselves.

## 4.2 Modification to the Feature Set Based on Survey Results

Since the survey results were obtained late into our project schedule, we had to make certain decisions about the direction of the community without the availability of the nurse feedback. These decisions were guided by our interaction with various people at Marie Curie Cancer Care, most notably Nina Fraser. The impact of these decisions was later realized when we were able to perform an analysis of all the survey responses and when we had the results of our first pilot test.

Features from MegaBBS's implementation provided support for discussion forums (general and special interest), a private messaging system, a photo album, and public & private calendars of events. The results of our survey confirmed that many of these features should be included in the final product, while others needed to be removed and new features needed to be added.

Based on our survey results we kept the user management, discussion forums, private messaging, and parts of the calendar from the original MegaBBS feature set. The user management features of MegaBBS also applied to the features that we added. MegaBBS's header and menus were kept but heavily modified.

However not all of MegaBBS's features were demanded by nurses. In fact, the surveyed nurses were uninterested in several areas of MegaBBS. The online photo albums were removed from our implementation since the results of the survey indicated that the nurses felt this feature would detract from the professionalism of the online community. Surprisingly, the ability to contribute to *NursingNews* was a feature that nurses did not want either, and so it was not included in the framework of the community, however an e-mail link and a discussion forum where *NursingNews* could be discussed and where contributions could be made

The remaining features that nurses wanted were never originally addressed in MegaBBS. These features were added to the online community by us. A links database, a job vacancy database, an online newsletter interface, and an instant messaging system all were developed and added to the community.

### **4.3 Pilot Tests**

The initial pilot test of our modification and additions to MegaBBS was composed of two nurses and resulted in insufficient data for statistical analysis; however it did give us an idea of how difficult nurses found the community to use. More importantly, with such a small population, we were able closely watch the way that the nurses used of the community and observe the areas that created the most problems for them. Using our notes taken during the tests, we made a number of changes to the interface to make the community easier to use. Despite some interface issues, both nurses in this first pilot test, who had quite clearly had different computer backgrounds, rated most of the online community as being fairly easy to use.

One week after the first pilot test, with most of the issues discovered by the first pilot resolved, a second pilot test was conducted with one nurse. This pilot test was conducted in the same way; however the complete registration system was available for this test. From the test we discovered that nurses needed only a small amount of help with the registration process, and we were able to address this issue by providing additional onscreen instruction during the registration process.

The pilot tests also allowed us to uncover some previously hidden deficiencies in the system, which we were then able to fix. The areas that gave the most trouble were generally interface issues and specifics were corrected as needed. One such example was to make the entire block for a date in the calendar a clickable link, rather than just

the small number in the upper left-hand corner of that block. Another one of the more common problems encountered was that the “Submit” button for a form was below the rest of the form’s contents and not visible without scrolling down the page. The pilot test subjects did not scroll all the way down to the page to see it. Our solution to this problem was to move the button further up the page so it would be more visible.

## **4.4 Online Community**

The primary deliverable for this project is the online community; the software itself and the documentation needed to maintain it (Appendix E - H). To accomplish this goal we began by modifying MegaBBS (see Appendix G) and then adding new features. The final result of these modifications and additions is described below.

### ***4.4.1 Registration System***

One of the primary concerns for this community was to make it accessible only to MCCC nurses. To address this concern, users must register themselves as a user to use the community, with the exception of the Job Vacancies page and the Links Database, which are publicly accessible. During this registration process nurses must enter their last name and their employee ID number (Figure 5). These are then checked for validity against data from a human resources database. A user will only be granted a login account after a valid name and employee ID number have been submitted (Figure 6).

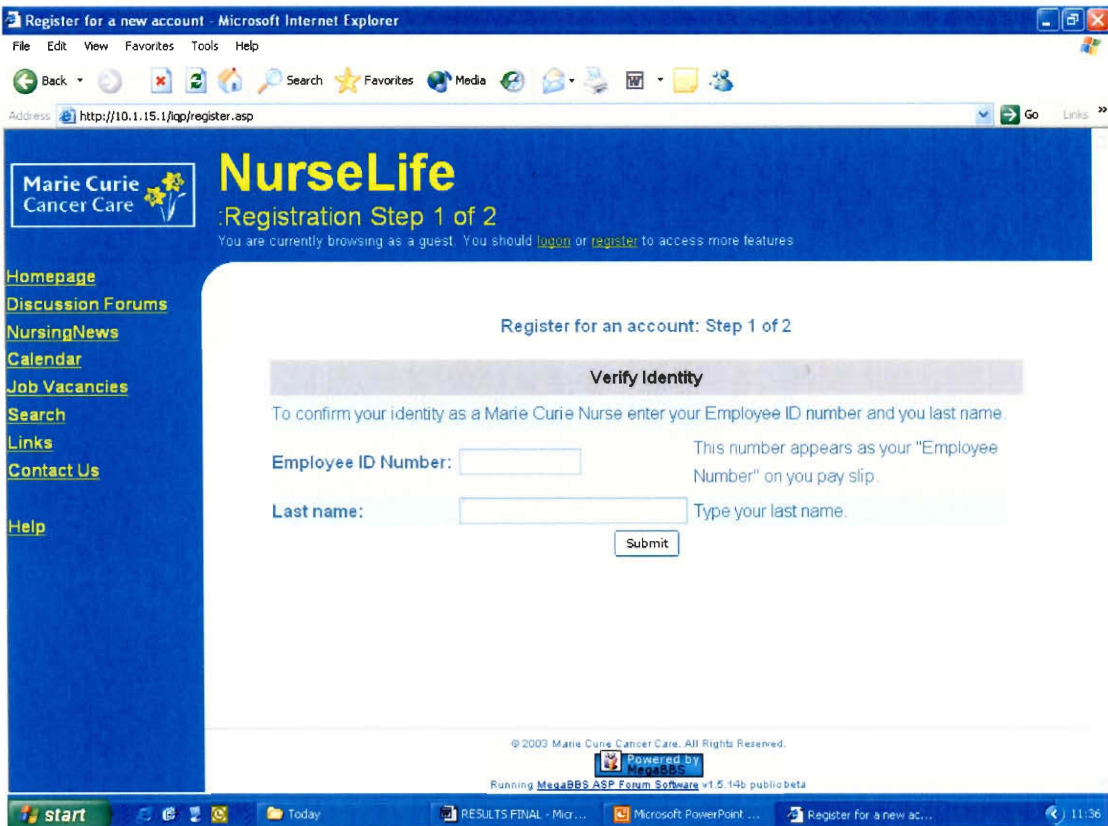


Figure 5– Screenshot of the first step of the registration process.

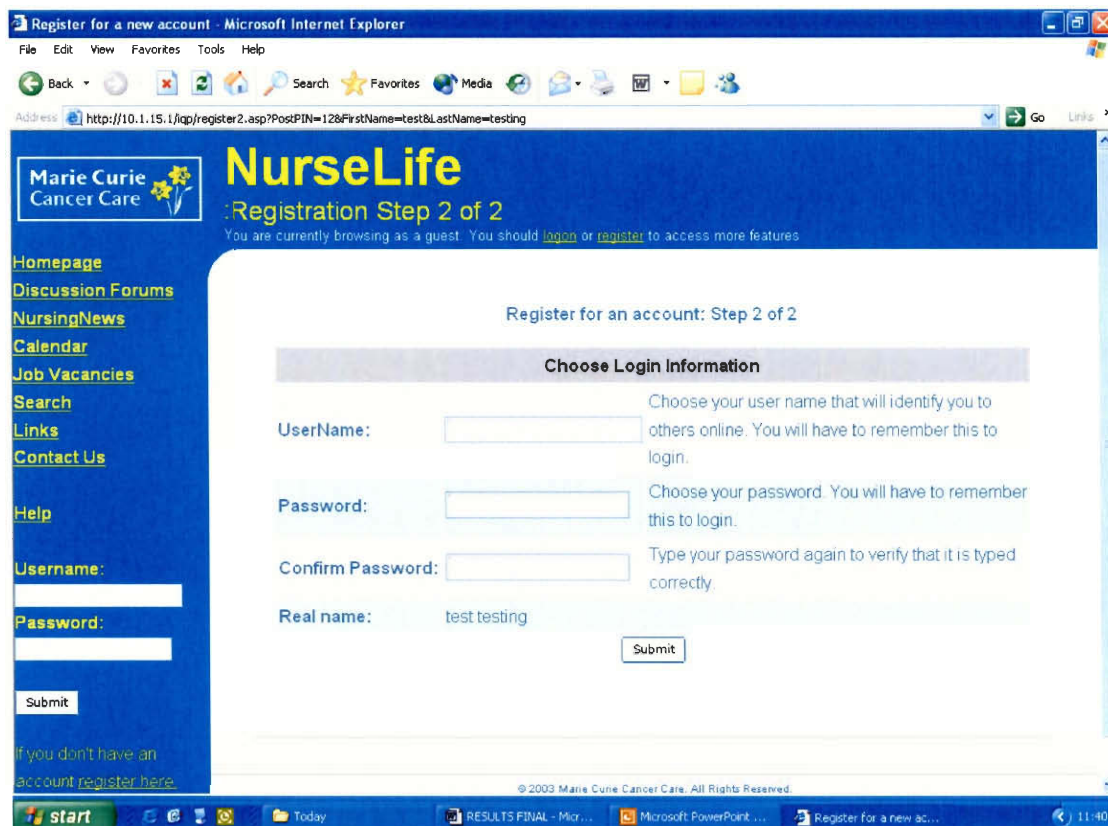


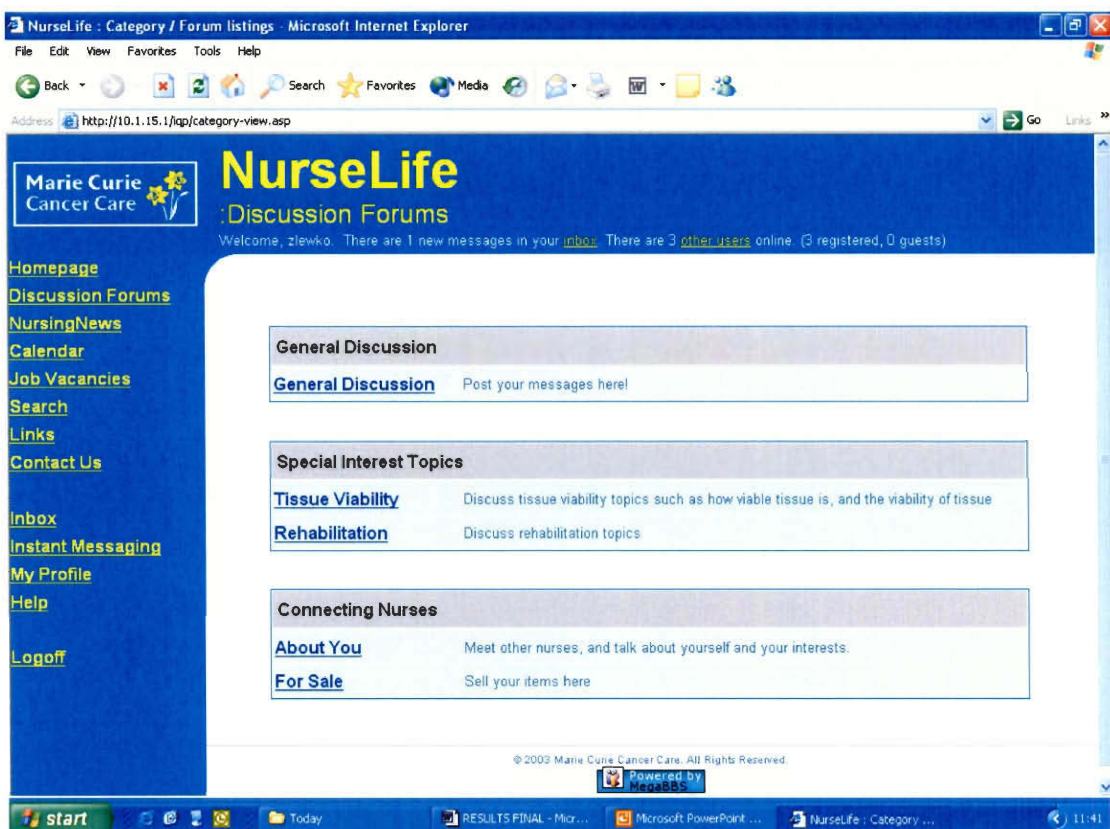
Figure 6 – Screenshot of the second step of the registration process.

#### **4.4.2 Menus**

One of the first modifications to MegaBBS was the replacement of MegaBBS's header toolbar with the new menu bar on the left hand side of the screen. This menu and header can be seen in any of the screenshots of the community. This menu bar featured Marie Curie colours and was dynamic, as it changed based on a number of factors. Additional links, such as inbox and instant messenger, only appear if a user has logged into the online community. Also hierarchies are used in the calendar and discussion boards. This hierarchy expands beneath the calendar or discussion forums links in the menu bar and shows what page the user is currently viewing, while also providing links to pages near in the hierarchy. Note the links appearing in the menu bar change throughout the screenshots, based on the user's login status and location within the community.

#### **4.4.3 Discussion Forum System**

This area has multiple discussions forums (Figure 7) which can be created or removed by an administrator. Each discussion is grouped into categories such as "General Discussion", "Connecting Nurses", or "Special Interest Topics". These serve to better organize this page and make it easier to navigate. The look of this page is an example of using common interfaces throughout the community in that its layout is similar to the job vacancies, links, and newsletter pages.



**Figure 7 – This is the category view of the discussion forums.**

Each of these forums contains multiple threads of discussion (Figure 8). A thread is simply a chain of messages that begins with a new message and contains all replies to that message and the replies to the replies. The forums contain functionality to write new messages, reply to messages, and create a special type of message containing a poll/survey. A number of other features are available in the discussion forums, including semi-anonymous posting (the user identity is known only to administrators and moderators), including signatures in posts, and attaching files to posts. Notice in Figure 8 the navigation links beneath “Discussion Forums” in the menu bar, these links show the category, forum, and thread names.

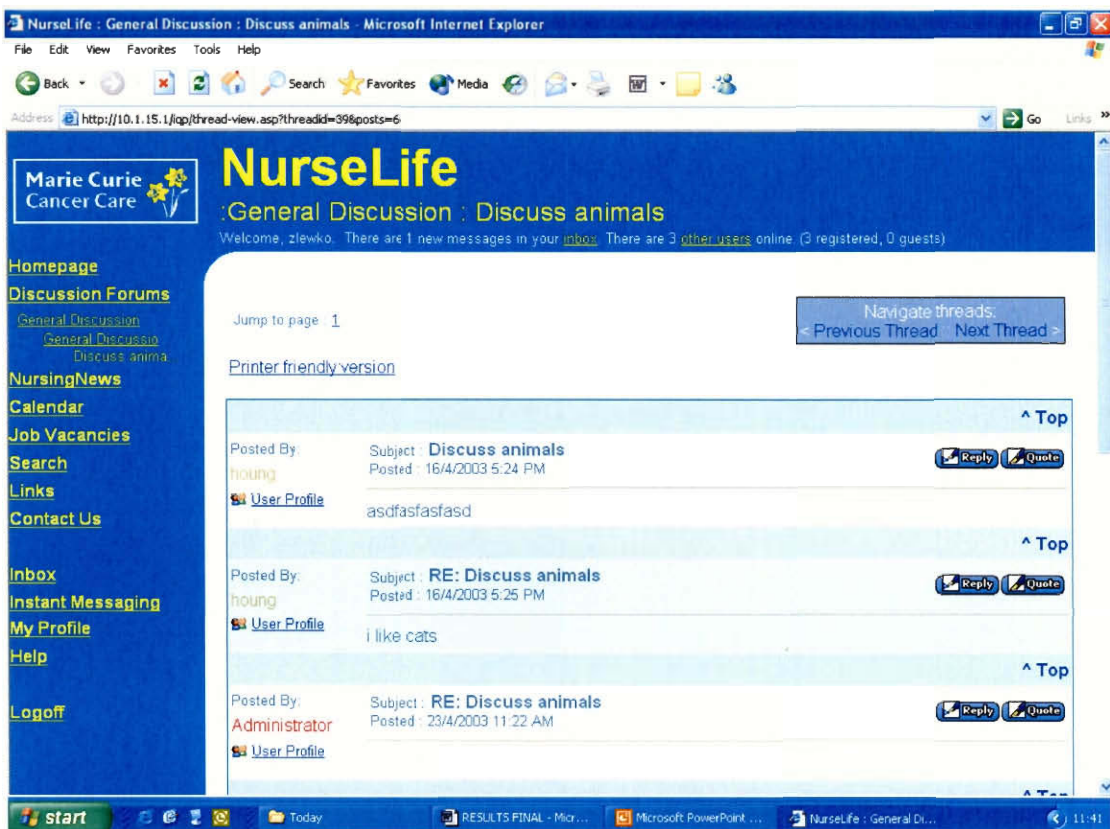


Figure 8 – Screenshot of the thread view page.

Certain features will only appear for administrators and moderators, these features include deleting and editing posted messages and viewing more advanced user information to the left of the message (Figure 9). These features were originally shown to all users in MegaBBS however we have decided to show them only to administrators because they confuse new users and offer little benefit to anyone other than the administrator or moderator.



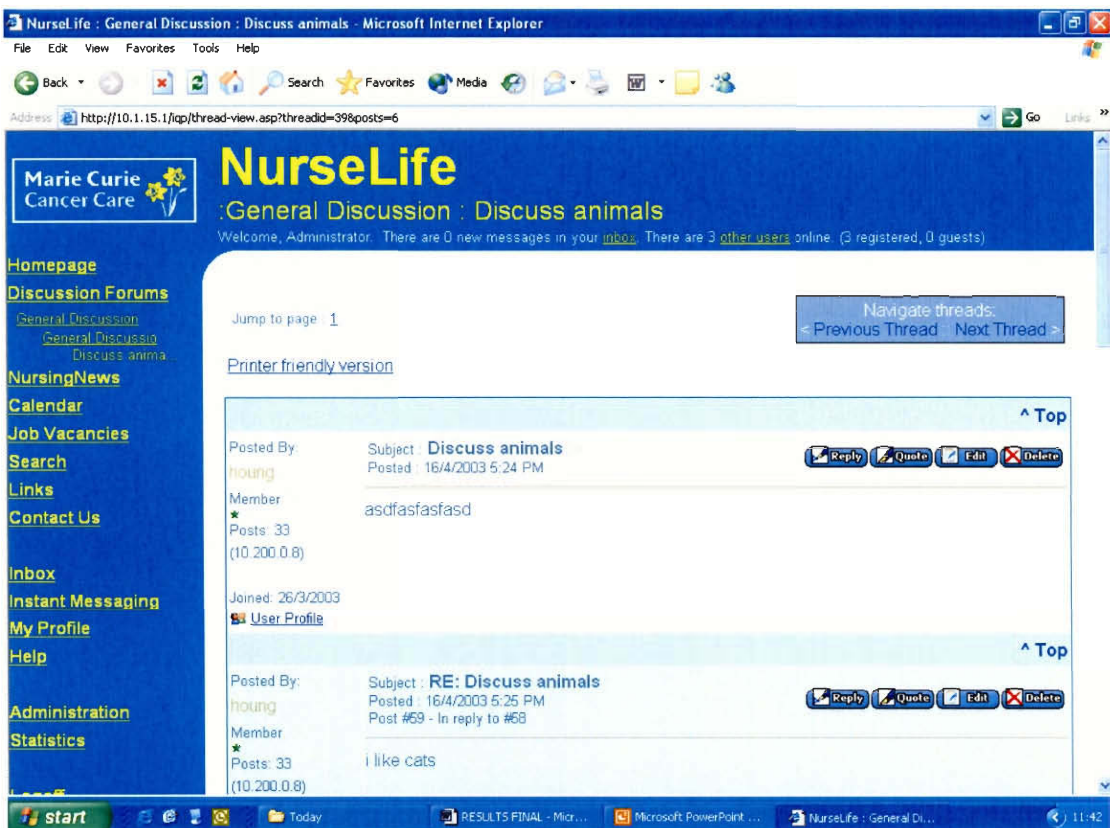


Figure 9 – Screenshot of administrator’s/moderator’s view of thread.

#### 4.4.4 Calendar System

The calendar system provides both a private and public calendar (Figure 10). The public calendar contains events pertinent to all MCCC nurses and is modifiable only by the administrator and moderators. The private calendar is unique to each nurse and works similar to a paper calendar in that nurses can add their own events and reminders. These events and reminders are only viewable to the person who created them, and can be added to any day by clicking the date. The details of each event can be viewed by clicking the event link in the calendar. There is also a filtering mechanism available in this calendar; when the user first goes to the calendar all events are shown, however the user can chose to go to another page which only displays private or public events. Notice the filter links for “My Events” and “MCCC Events” beneath “Calendar” in the menu bar in Figure 10.

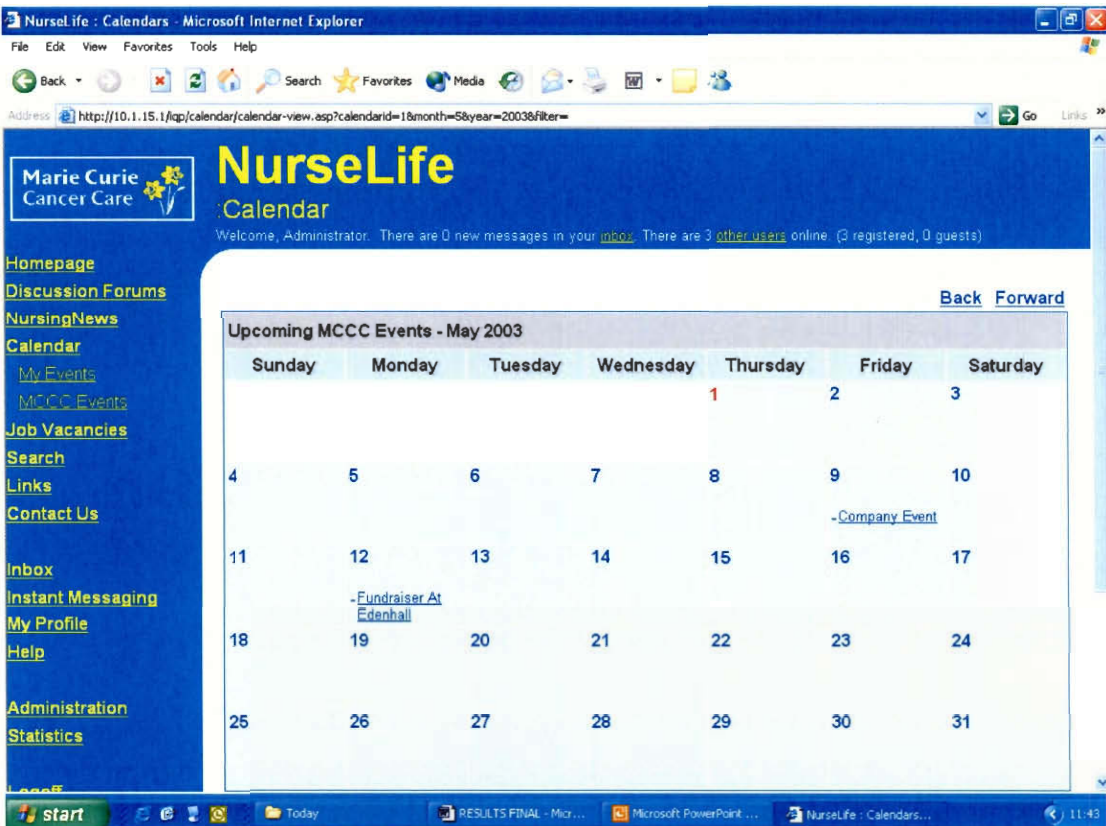


Figure 10 – Screenshot of the main calendar page.

The interface via which an event is added to the calendar is shown below in Figure 11. Using this interface the user can enter a description and the date and time of the event and the event and it to the calendar. There are also more advanced options, accessible by the advanced features link shown in Figure 11. These more advanced features, shown in Figure 12, allow users to create regularly occurring events automatically and allow other users to sign up for the event.

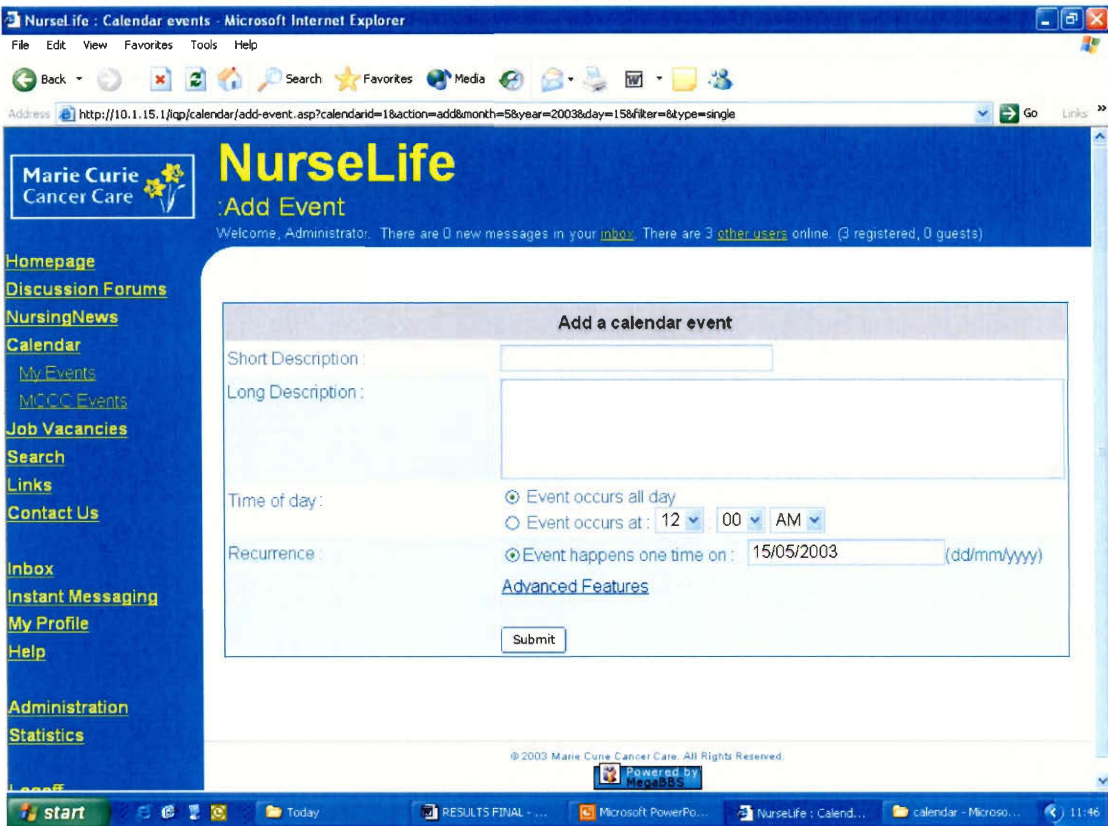


Figure 11 – Screenshot of adding an event to the calendar.

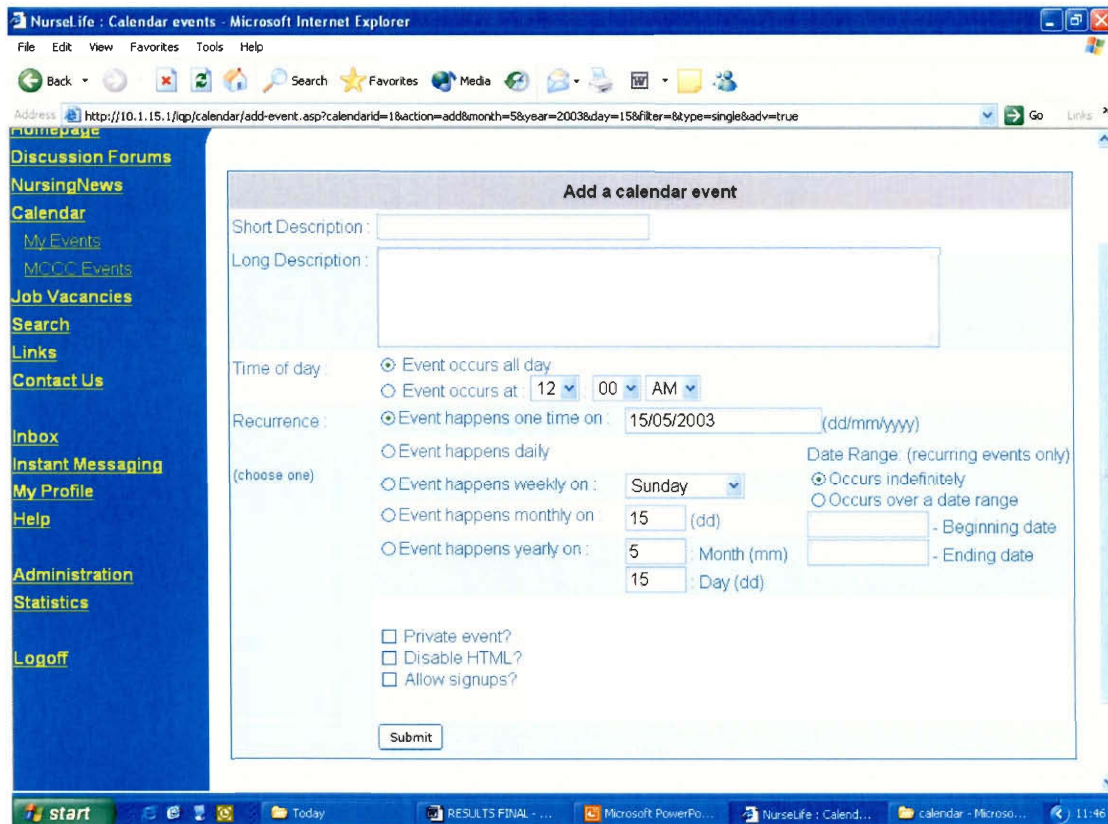


Figure 12 – Screen shot of advanced features for adding calendar events.

## 4.4.5 Links Database System

This area of the online community contains links and descriptions of those links organized into categories (Figure 13). The layout of this page is similar to the “Discussion Forum” page and the “Job Vacancy Database” page. All users, registered or not, may view these links or suggest new links to the links area manager.

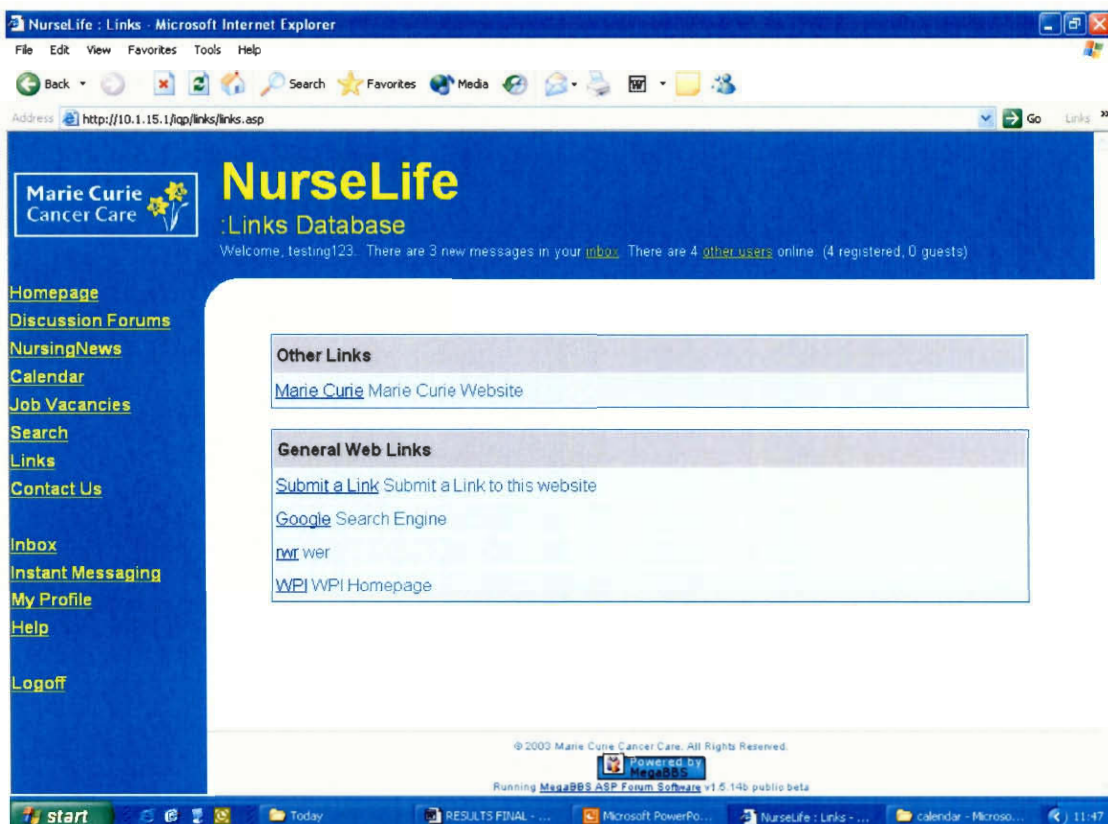


Figure 13 – Screenshot of users view of links page.

These links can only be created, modified, or deleted by the administrator or the links area manager. Links to edit or delete links in the database are presented in the administrator or managers view only (Figure 14). The administrator or moderator can fill out the form below the links to add a new link. When the “edit” link is clicked this form is used to modify an existing link. There is also a similar page to edit the links categories (Figure 15).

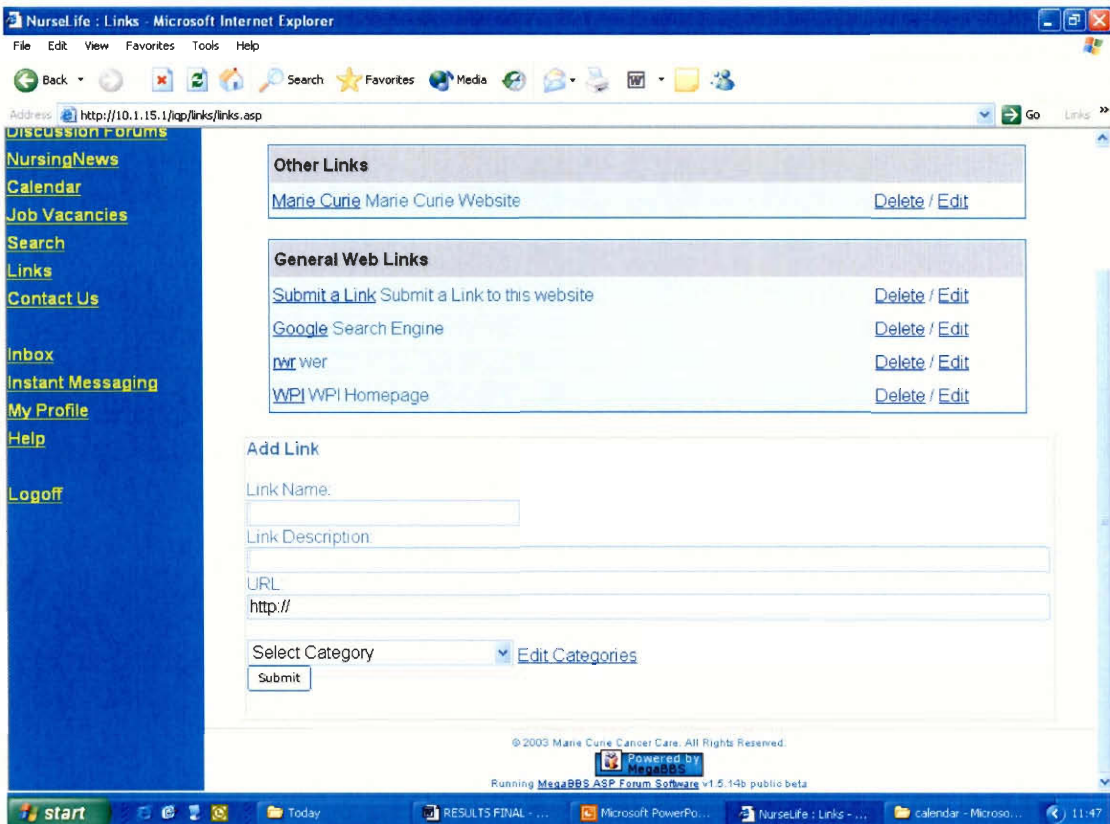


Figure 14 – Screenshot of the administrator’s/manager’s of the links database.

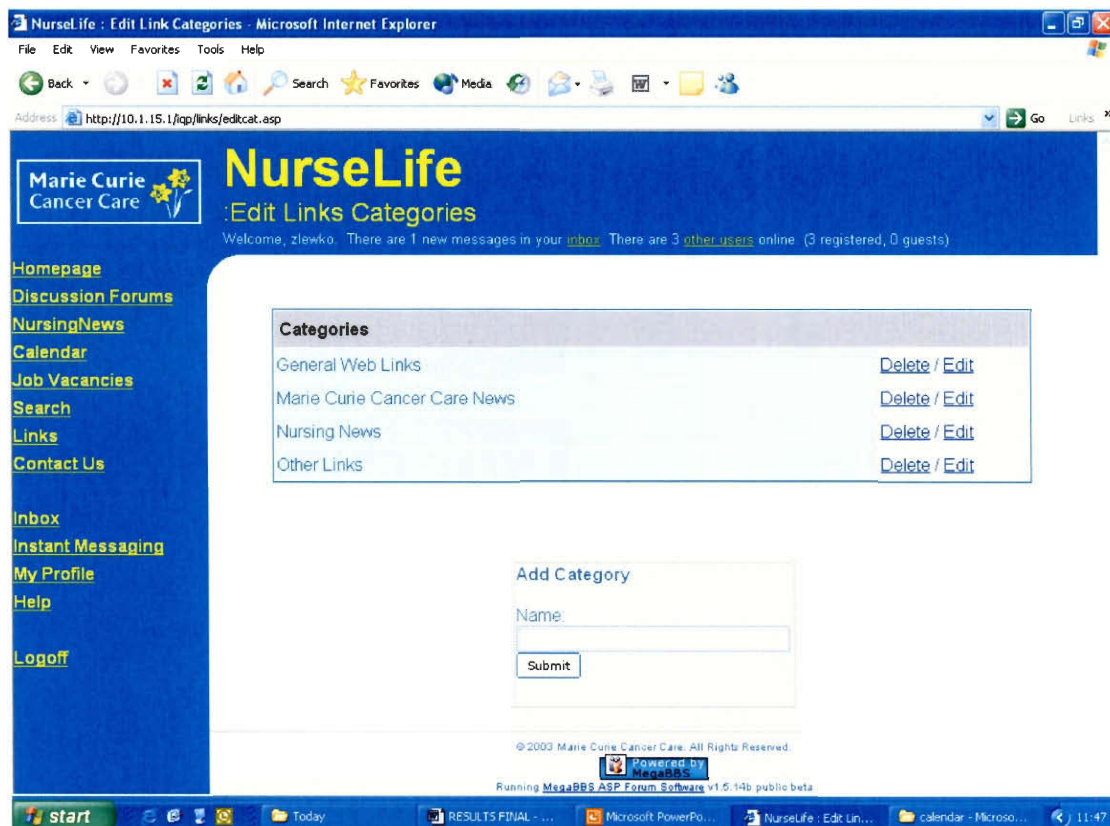


Figure 15 – Screenshot of the add/edit link category page.

## 4.4.6 Jobs Vacancy System

The job vacancy viewing area, shown in Figure 16, contains a listing of available jobs at MCCC. Each job listing contains the full information describing the job and can be viewed by anyone, whether a registered user or not. The layout of this page is similar to the links database and discussion forum category view pages.

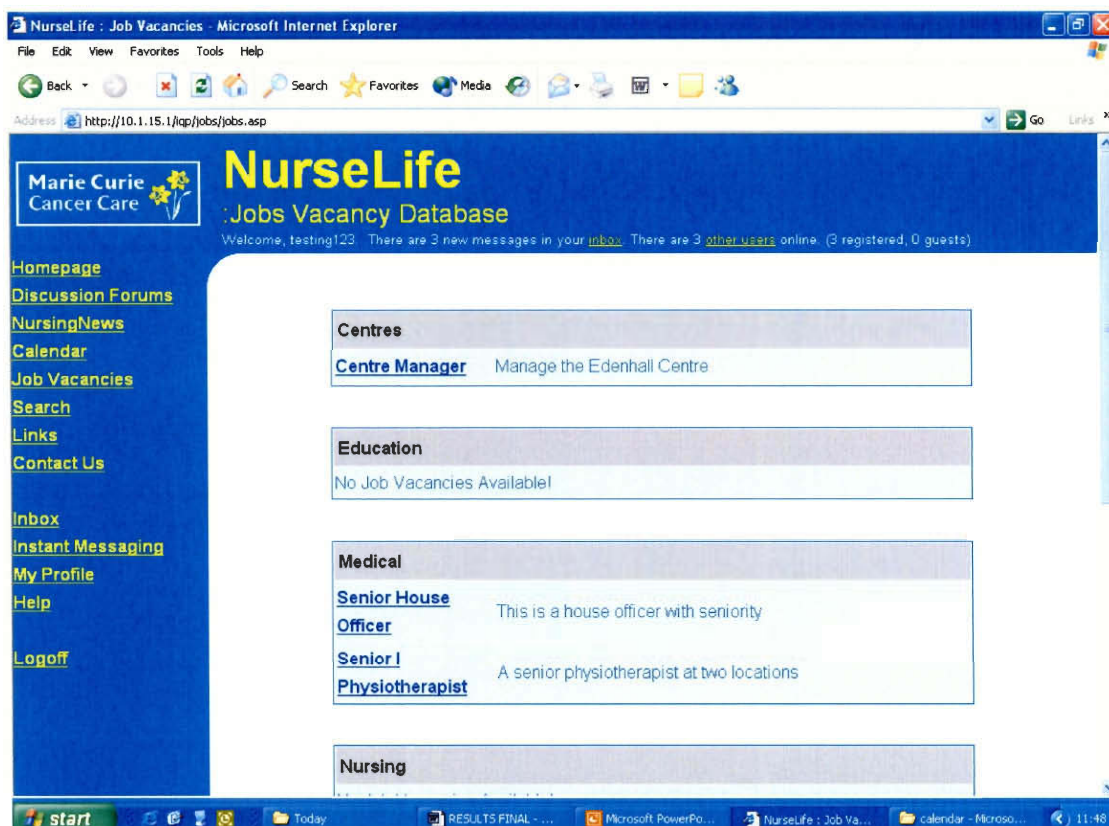


Figure 16 – Screenshot of the jobs vacancy viewing page.

As in the links area, jobs can only be added, modified, or deleted by the jobs area manager or the administrator. This area is shown in Figure 17. There is also a categories administration page for the jobs, where the categories in which jobs are organized can be created, edited or deleted. This interface is similar to the one for the links shown in Figure 14 above .

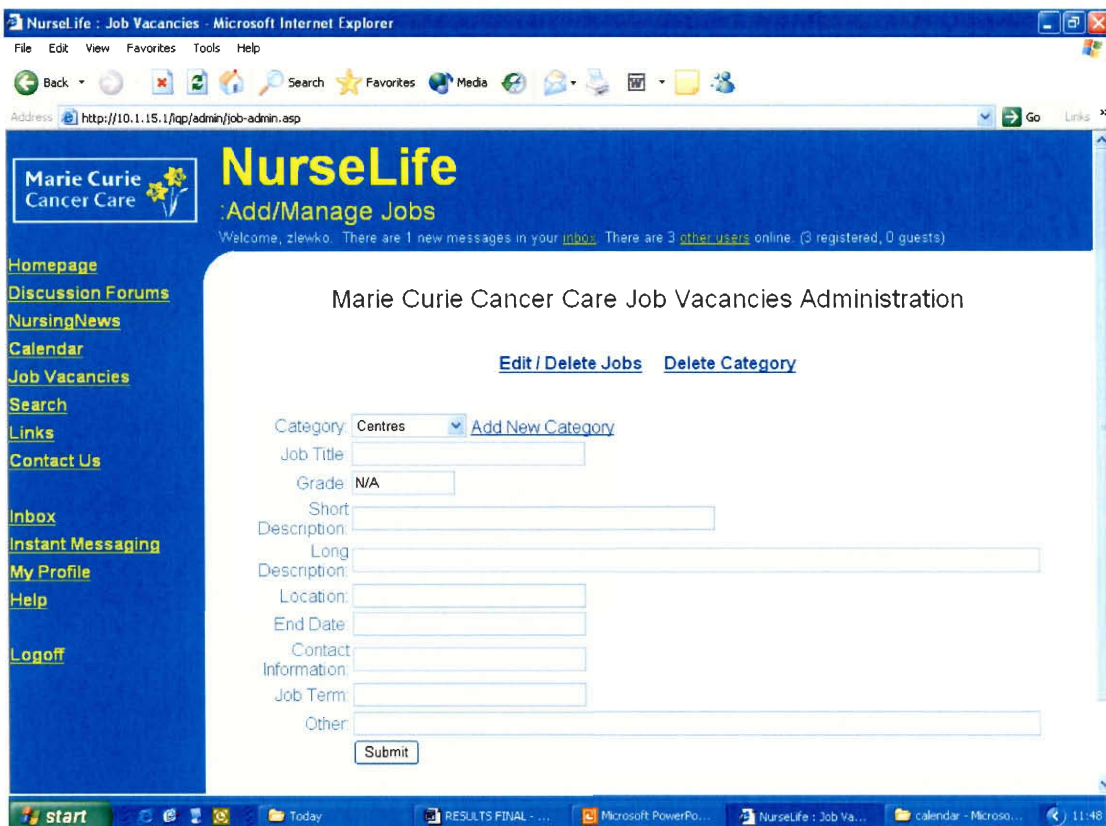


Figure 17 – Screenshot of the administration page for the job vacancy database.

#### 4.4.7 Instant Messenger

This part of the online community is an instant messaging system where two users can chat instantly with one another (Figure 18). When the link is clicked a pop-up window appears where the user can select the recipient of the message and a box where the message can be typed. This will cause a similar pop-up window to appear on the recipient's computer where the recipient can then reply. The two users can then chat back and forth using their respective pop-up windows. Multiple pop-up windows can be opened for different users and using them the user can hold multiple conversations with multiple users simultaneously. This feature is very similar to the commonly used AOL instant messaging system, which can be found at <http://www.aim.com/index.adp>.

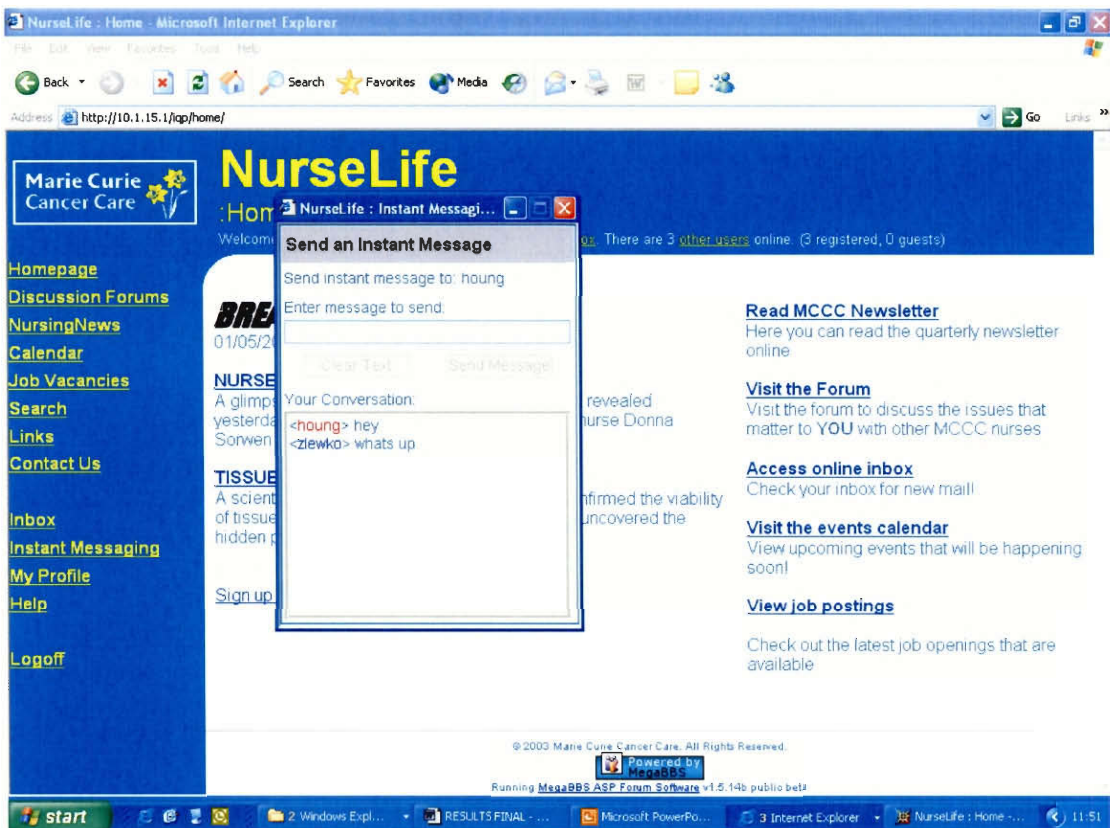


Figure 18 – Screenshot of instant messaging system.

#### 4.4.8 NursingNews Interface

The *NursingNews* area of the website (Figure 19) is similar to the links section in implementation. It is designed so that files containing the *NursingNews* (possibly in PDF format) can be uploaded to the website and linked to using an interface similar to the links section. This design was chosen because it provided MCCC maximum flexibility in formatting the newsletter as the newsletter's structure and format would be completely independent of the online community. Uploading newsletter files and organizing them is accomplished in the administration section, show in Figure 20.



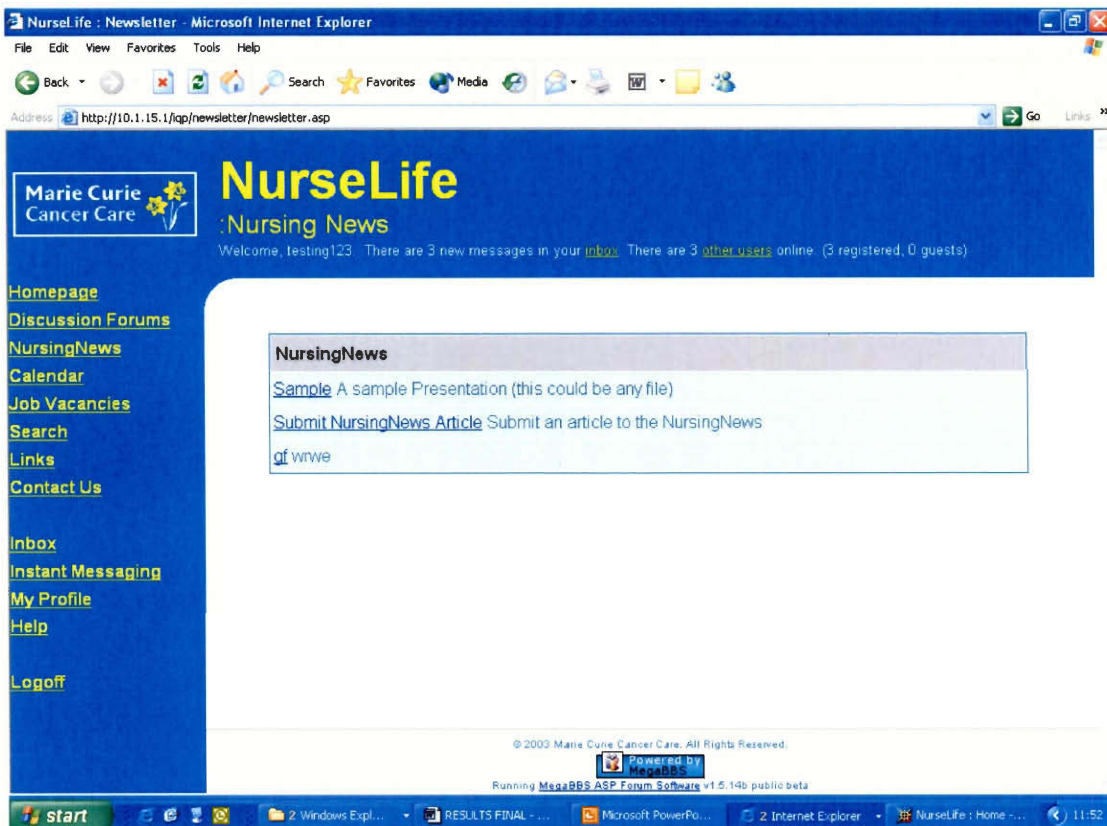


Figure 19 – Screenshot of the NursingNews page.

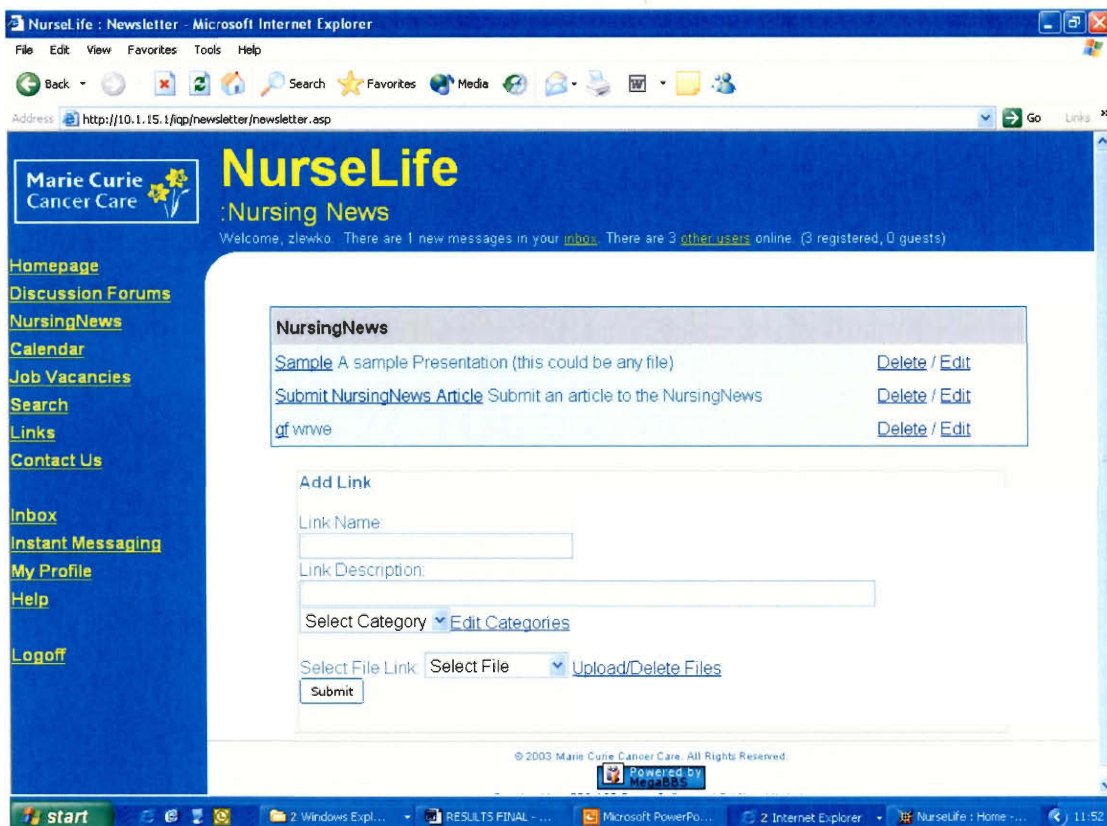


Figure 20 – Screenshot of administrator's/moderators' view of the NursingNews page.

## 4.4.9 Administration

There are also significant areas of the website that are only available to administrators. These administration sections are where almost all aspects of the website are controlled from. Discussion forums can be created, deleted, or modified using this interface. Moderators for the forums as well as managers for the links data base, jobs vacancies data base, and newsletter links page can be appointed using this interface. Also users can be removed or certain IP addresses or domains banned from connecting to the site. Links to the jobs database administration page, the links administration page, and the newsletter administration page are provided via this interface.

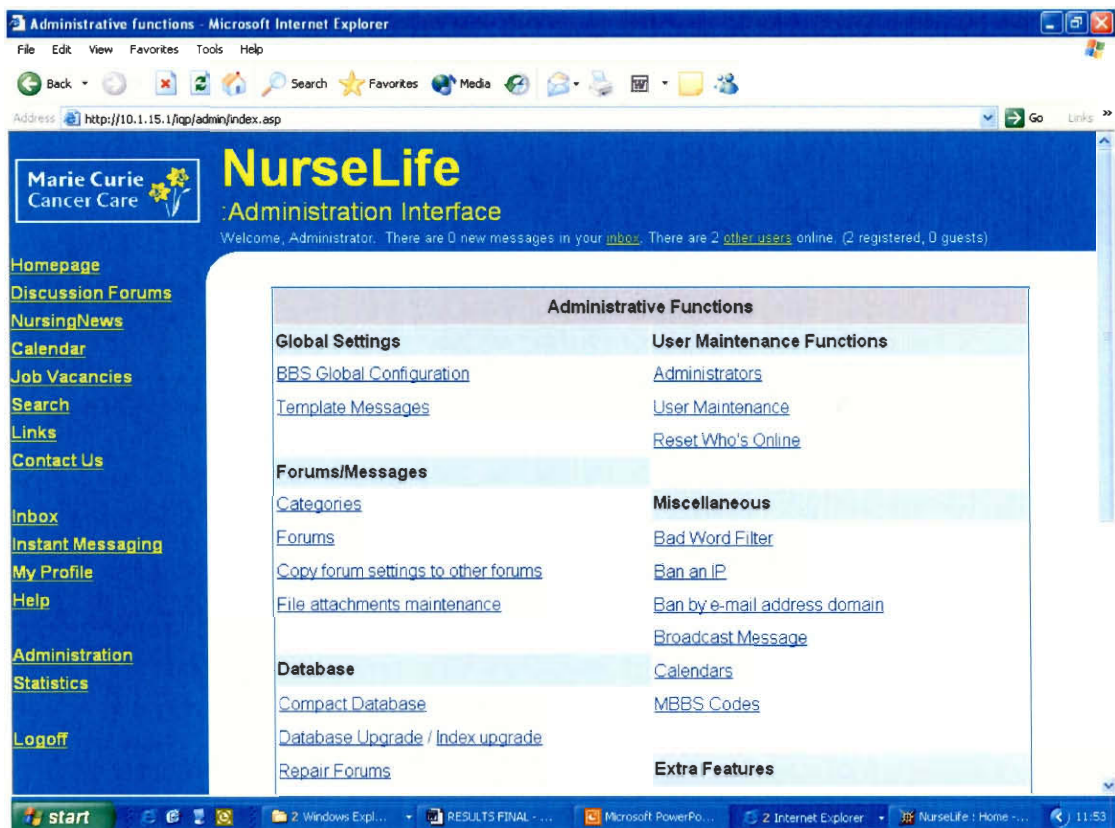


Figure 21 – Screenshot of main administration page.

Shown in Figure 22 is an example of one of the administration functions. This page controls the forums and how they are presented on the “Forum Category View” page. Via this page, the administrator can access additional pages to create and edit forums. Similar pages are available to administer all areas of the online community. They are all accessible from the main administration page.

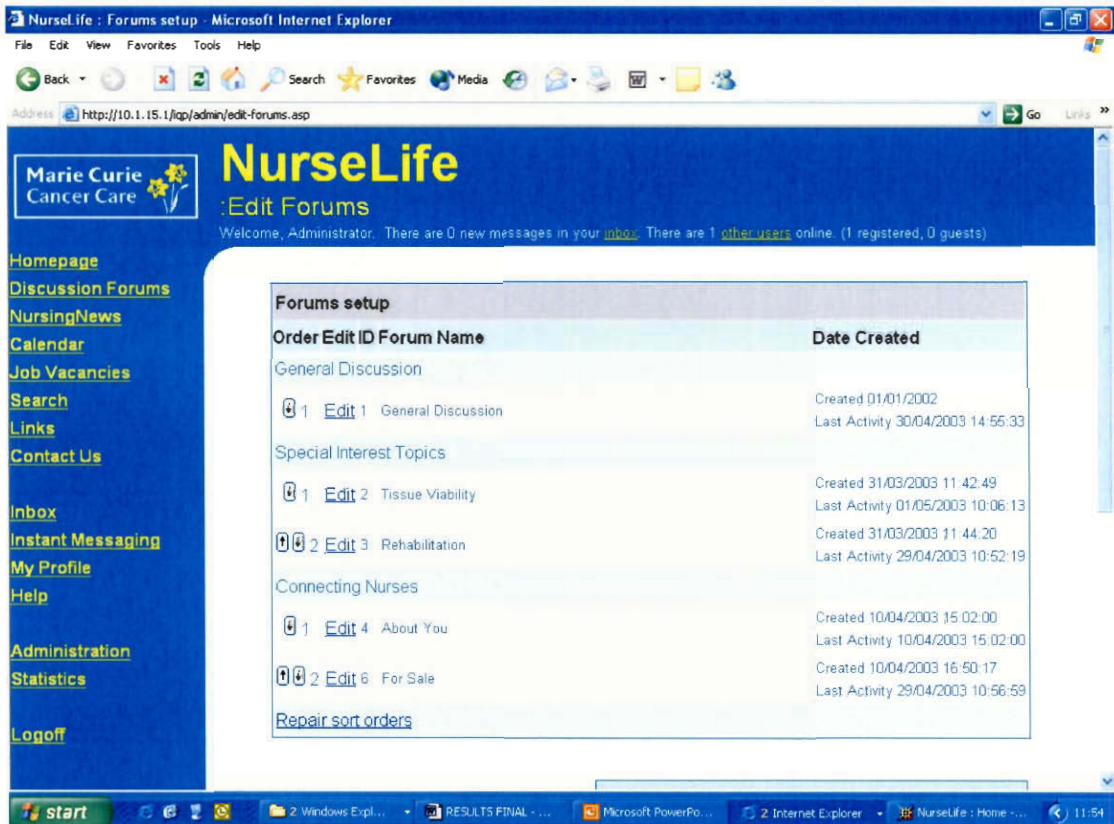


Figure 22 – Screenshot of forums category view administration page.

## 4.5 Documentation

In order for the community to be maintained by MCCC, the administrative staff would require documentation to use the system effectively. To aid in the transition of the community from our group to the MCCC IT staff, we created manuals documenting administrative features and code details. This documentation is provided in the manual (Appendix E - H).

## 5 Conclusion and Recommendations

This section will present information concluding this report. It will outline the key findings from the data our group has gathered throughout the project and describe the final outcome of the project. This section will also provide recommendations that may further improve the project outcome. Lastly we will provide our conclusions placing the outcome of this project into context of the Marie Curie Cancer Care goal.

### 5.1 Key Findings and Outcomes

The data from the nurses surveyed supported our hypothesis that the most desired feature of the online community would be the discussion forums. This was to be expected, since the discussion forums contain the most dynamic content, and are the simplest methods of facilitating communication between nurses at MCCC. The surveys also indicated that features that did not seem to have direct benefits to the nursing profession (e.g., online quizzes and photo albums) did not interest nurses and, subsequently, were removed from the final implementation of community.

Based on the results of the surveys, our group implemented the following features:

- A discussion forum
- An online version of *NursingNews* (the newsletter for Marie Curie nurses)
- A personal calendar and a MCCC organizational calendar
- A job vacancy database
- An instant messaging system
- A page containing web site links to information pertinent to Marie Curie nurses
- A messaging center, something akin to e-mail.

The results of the pilot tests provided our group with insights into some difficulties that nurses may encounter while navigating through the web site. Consequently, our group modified the user interface and removed features and information from web

pages that were unnecessary for the basic operation of the web site. The result was a simplified community that was functional and intuitive.

In market the online community, we also a multi-staged marketing plan that consisted of a “teaser” phase followed by a promotional marketing campaign. During both phases, posters will be placed in each hospice with “teaser” posters informing nurses of the potential uses of the community, and promotional posters advertising the availability of the community. The promotional campaign continues with a series of articles in the MCCC publications *Marie Curie People* and *NursingNews*, along with articles in the national nursing magazines *Nursing Standard* and *Nursing Weekly*. We also produced a series of messages advertising the availability of the online community to be distributed on the pay slips of all employees. The marketing materials were delivered to MCCC marketing staff and are to be distributed to the appropriate parties at the beginning of each phase.

During the development of the project there were several suggestions and ideas that were presented to our group that were not developed for certain reasons. There also continues to be many possible improvements to both the implementation of the community and how the organization supports the community. New software innovations and marketing campaigns could maintain the initial excitement of the community. In section 5.2 we list several options that may aid the community in achieving its goals.

## **5.2 Future Recommendations**

Although the online community is completed from our standpoint, there still exist several barriers that may prevent the online community from becoming as successful

as it can be. To address these issues our group has developed a series of recommendations that can help the online community with future success.

First our group recommends that MCCC institutes a training program for computer basics, and possibly in the specific use of this online community. Computer training would be necessary in order for some nurses to be able to use the community.

Although we made every effort to simplify the interface, our pilot test results suggest that basic computer training may be necessary in order to reach all nurses at MCCC.

We also recommend that the online community eventually move to the Internet to reach its largest possible audience. The current deployment on the internal network makes the online community accessible only to those with access to terminals administered by MCCC. This poses a large problem since roughly 1500 nurses (approximately 75%) do not work in hospices and will be unable to access *NurseLife*. By moving the online community to the Internet, all MCCC nurses will be able to access it at any hour from any computer with Internet connectivity.

We hope that MCCC will continue to advertise the online community even after its initial deployment. Although our group has provided initial marketing materials to promote the online community, the marketing department should continue to actively promote the community to nurses on a year round basis to continually attract nurses, and to inform newly hired nurses.

From a software development view, our group has several recommendations that could prove beneficial to the online community and the MCCC organization as a whole. During development of the online community, it was necessary for our group to stick to the chosen features in order to meet our project deadlines. Nevertheless, we were approached with a couple suggestions and possible features that could be worthwhile to implement at some point in the future.

Automation of the job vacancy database could be possible, and worthwhile, to implement in the future. The Human Resources Department is currently developing a database of job vacancies within the organization. By connecting the online job vacancy database to the Human Resource Department's internal database, job vacancy information could be updated automatically and administrative work could be lessened.

A common feature in many online communities that was not included in the MCCC online community is a real-time chat room. We recommend the implementation of an online chat room to complement the instant messenger service, and discussion forums. The chat room was a feature that received moderate ratings in the survey that we were unable to implement within our time constraints. We feel it is a worthwhile feature to implement at some point in the future.

### **5.3 Conclusions**

The online community was developed with the intention of making nurses feel more a part of the MCCC organization. Having an online community dedicated to nurses now provides an avenue for approximately 2,500 nurses to gather, interact and share information.

The methods of this project could be eventually applied to other areas of MCCC possibly linking the marketing department, or doctors, and even the entire organization at some point. The concept of an online community provides an array of potential benefits to its users. It is clear that online communities no longer are simply discussion forums but can become centers of communication with this project serving as a prime example of its possible uses. Utilizing online communities in this way may

have a significant affect on MCCC, helping the charity provide “care for today and hope for tomorrow. [12]”

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## Appendix A – Value Analysis of Existing Open Source Online Communities

### Value Analysis

#### Criteria

Language		
ASP		5
Other		0
Data Base		
MS SQL support		5
Other		1
Discussion Board		
Full Featured		2
Overly Simplistic		1
Administration		
Full Featured Admin Pages		3
Partial Admin Pages		2
No Admin Pages		1
Calendar System		
Full Featured Calendar		3
Partial Calendar		2
No Calendar		1
API (Application Programming Interface)		
Full API		3
Partial API		2
No API		1
Ease Of Use/Interface		
Easy To Use		3
Complex		1
Additional Features		
Many Additional Features		2
Few Additional Features		1
Ease of Modification		
Easy		5
Moderate		3
Hard		1

## Evaluation of Products

### **MegaBBS**

Language	5
Data Base	5
Discussion Board	5
Administration	3
Calendar System	3
API	3
Ease of use/interface	1
Additional Features	3
Ease of Modification	5
<b>Total</b>	<b>33</b>

### **Snitz 2000**

Language	5
Data Base	5
Discussion Board	5
Administration	3
Calendar System	1
API	1
Ease of use/interface	3
Additional Features	1
Ease of Modification	3
<b>Total</b>	<b>27</b>

### **Speedy ASP Discussion Forum**

Language	5
Data Base	1
Discussion Board	2
Administration	1
Calendar System	1
API	1
Ease of use/interface	1
Additional Features	1
Ease of Modification	5
<b>Total</b>	<b>18</b>

## **Appendix B– Feature Comparison of Existing Online Communities**

### Yahoo! Groups ([groups.yahoo.com](http://groups.yahoo.com)):

- Registration required
- Public or member only access
- File sharing
- Photo sharing
- Links page
- Member listing
- Calendar
- Message Board
- Message Archive
- User profile listing
- E-mail alias for group

### groups@AOL ([groups.aol.com](http://groups.aol.com)):

- E-mail list
- Searchable group listings

### MSN Member Directory ([members.msn.com](http://members.msn.com)):

- Online directory of members
- Personal user pages with biographical and/or interesting information
- Photos
- Sorting by interest

### Smart Groups ([www.smartgroups.com](http://www.smartgroups.com)):

- Group creation
- Homepage w/ description
- Event calendar
- Message area
- File area
- Picture album
- Classified Ads
- Online voting
- Management area for group administrators

## Appendix C– Online Community Questionnaire for MCCC Nurses



### Online Community for Nurses Questionnaire

*All information collected will remain anonymous and will be used for research purposes only.*

1) How many hours a week do you use the Internet at the moment (please tick):

- < 1       1-5       6 – 10       > 10

2) We would like your opinion on a range of different features that an online community could provide. For each feature we have explained what it is.

**Discussion Board:** Areas where nurses can place messages which other nurses may read and reply to, much like a notice board where people pin messages.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1    2    3    4    5

- Development of special interest discussion boards (some examples may be nurse prescribing, tissue viability, rehabilitation, development of the role of care assistants)

**Job vacancies:** This is an area where job vacancies are listed. This feature is designed to inform Marie Curie nurses and nurses worldwide of available nursing vacancies within MCCC.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1    2    3    4    5

- Viewing available nursing roles within Marie Curie

Submitting curriculum vitae/applications for available nursing roles

**Online Photo Album:** An online photo album which will allow you to save digital pictures on the Internet so they can be shared with other nurses and/or friends.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1   2   3   4   5

Saving photos to an online photo album

Viewing the photo albums of other nurses

**Chat:** This is an instant means of two way communication in which two or more users can send and receive messages instantly. This allows users to communicate in real time, much like a face to face conversation.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1   2   3   4   5

Having the ability to instantly chat with a group of nurses using the online community

**Instant Messaging:** An instant messaging system allows a user to send a message to another user. The message pops up on the other user's screen instantly, and that user can then reply. This provides a way for two users to communicate rapidly, similar to a telephone call, except with typing instead.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1   2   3   4   5

An instant messaging system built into the online community

Newsletter: This would be an online edition of the paper-copy Marie Curie nursing newsletter that is currently in development. The online edition may also include links within the articles to discussion forums where nurses may discuss the topics addressed within the newsletter.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1    2    3    4    5

Online access to a newsletter for Marie Curie nurses

Contribute to a newsletter for Marie Curie nurses

Ability to discuss newsletter content in a discussion board

Calendar: A public events calendar will inform nurses of important Charity-wide events that are taking place. A private calendar will aid nurses in keeping track of personal dates of importance. It can be viewed via any computer connected to the Internet.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1    2    3    4    5

A calendar of events for Marie Curie nurses

Private calendars for individual nurses

Miscellaneous Features: This could include an online quiz feature which will allow nurses to compose quizzes and allow other nurses to complete the quizzes and receive a score for their answers. Quizzes can contain anything at all! A survey feature would allow nurses to ask a question and see statistics based upon the responses.

Links to nursing information would allow you to learn new things while using the online community.

**On a scale of 1 to 5 (1 being least important and 5 being most important) rate the importance of the following features by ticking the appropriate box.**

1    2    3    4    5

Compose quizzes and take quizzes composed by others

Create a survey and view survey results

Links to information pertinent to nurses (e.g., an online medical dictionary or encyclopaedia)

3) Can you think of any examples where these features would be useful?

4) What additional features would you like incorporated into the online community?

5) How interested are you in an online community for MCCC nurses? 1 being not interested and 5 being very interested (tick one):

1	2	3	4	5
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6) Do you have any other comments or ideas that you would like to make?

7) Please tell us your job title and grade .....

8) Where do you work?

Marie Curie hospice

Marie Curie Community nursing service

9) Age:

<input type="checkbox"/>	<20	<input type="checkbox"/>	20-24	<input type="checkbox"/>	25-29	<input type="checkbox"/>	30-34	<input type="checkbox"/>	35-39
<input type="checkbox"/>	40-44	<input type="checkbox"/>	45-49	<input type="checkbox"/>	50-54	<input type="checkbox"/>	55-59	<input type="checkbox"/>	>60



## Appendix D – Pilot Test Questionnaire

### Pilot Test

This is a pilot test to evaluate the usability of the online community for Marie Curie Cancer Care nurses.

During this pilot test you will be asked to use certain areas of the online community and rate how intuitive it was to use. You will also be asked to describe any difficulties in using the system. If you have any comments or suggestions regarding this online community please write it down or tell us.

Note - All of the content in this community now, such as discussions and calendar events, are sample data only. None of the discussions or events are real.

**Please provide us with some basic information about yourself (circle one):**

Do you own a computer: YES / NO

If yes, do you have access to the Internet: YES / NO

How many hours per week are you on the Internet: \_\_\_\_\_

On a scale of 1 – 10 how would you rate your computer skills with 1 being no skills, 5 being a competent user, and 10 being proficient:

1      2      3      4      5      6      7      8      9      10

**Directions:** Please complete the following tasks described below. Following the completion of each task, please rate the difficulty of accomplishing each task on the 1 – 10 scale with **1 being easiest** and **10 being the hardest**.

**Task:** Open Internet Explorer

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Create an account and log in to the system.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** View the public events calendar and view the details of an upcoming MCCC event.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Visit the forum and find an interesting discussion.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Respond to a message.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Create a new topic of discussion.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Check your private messages.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Send a private message to the Administrator.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

**Task:** Go to your private calendar and schedule an event for tomorrow.

Rate Difficulty:

1      2      3      4      5      6      7      8      9      10

## QUESTIONS

Would you use the online community on a regular basis? Why?

What features do you find most interesting?

What were some of the difficulties in accomplishing the above tasks?

How do you feel about the look of the web site? How can it be improved?

How else can we improve the community?

Any other comments/suggestions?

## **Appendix E– Design Specification for *NurseLife***

Design Specification  
for

*NurseLife*

Marie Curie Cancer Care  
April 2003

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# 1. Introduction

This document presents the specification for the *NurseLife* online community for the nurses at Marie Curie Cancer Care. It consists of use case analyses and sequence diagrams in Unified Modeling Language (UML) form<sup>1</sup>. The former describes the various components of the system and how they interact with each other and with the user. The latter graphically shows the time-ordered communication between the various components. Together, these describe the basis of the code we wrote for the online community.

The document also contains the design documentation for the interface of the online community. The images contained in this section show the “flow of execution” between the various web pages in the online community. These fill a gap between the use case analyses and the sequence diagrams by providing a visualization of the various components of the online community without great detail; they describe the layout rather than the inner structure.

---

<sup>1</sup> The use case analyses are presented in a simplified non-graphical form, but which still presents all the information a UML form would.



## 2. Use Case Analyses

The use case analyses detail every state the online community can be in, how that state was entered, how it changes to another state, and what impact the state change has on the remainder of the system. They identify key components of the online community and how these various components interact with one another. Complete analyses for the components provided by MegaBBS are not provided. In some cases however, the MegaBBS components are treated a high level; these cases are identified in the subsequent sections.

### 2.1 Registration System

#### 2.1.1 Check ID

**Name:** Check ID

**Actors:** End User

**Supporting Actors:** Web System, Registration System, Database System

**Entry Conditions:** User has clicked the “Register Now” link.

**Sequence of Events:**

- Nurse enters her ID & password.
- Nurse clicks the “Submit” Button.
- Registration System checks that the nurse has indeed entered both an ID and password.
  - If nurse has not, enter “Invalid Credentials” use case.
- Registration System taint checks the ID & password.
  - If taint check fails, enter “Invalid Credentials” use case.
- Registration System checks validity of credentials.
  - If user has entered invalid credentials, enter “Invalid Credentials” use case, modified to show a short error message.
- Registration System checks that the nurse has not registered before.
  - If nurse has, enter “User Already Registered” use case.
- Web System redirects user to a web page form for signing up an account.
- Start “Register User” use case.

**Exit Conditions:** Either an error page is shown if the user entered invalid credentials, or the “Register User” use case is initiated if the credentials were valid.

## 2.1.2 Register User

**Name:** Register User

**Actors:** End User

**Supporting Actors:** Web System, Registration System, Database System

**Entry Conditions:** User has clicked the “Submit” button from the user registration web page.

**Sequence of Events:**

- Nurse enters a username & password for the community.
- Nurse clicks “Submit” button.
- Registration System checks that the nurse has indeed entered both a username and password.
  - If nurse has not, enter “Invalid Credentials” use case.
- Registration System taint checks the username and password.
  - If taint check fails, enter “Invalid Credentials” use case.
- Registration System checks that the selected username has not been chosen by someone else.
  - If username has been chosen by someone else, restart the “Initial Registration” use case.
- Registration System asks the Database System to add new username and password to the database.
  - If username fails to add, Web System redirects user to an “Unknown Error” page.
- Web System redirects user to main web page.

**Exit Conditions:** Either the system has entered the “User Already Registered” use case if the user has already registered, the “Initial Registration” use case has been entered again if the desired username has been chosen by someone else, or the nurse now has a username and password to authenticate with the online community.

## 2.1.3 User Already Registered

**Name:** User Already Registered

**Actors:** Registration System

**Supporting Actors:** Web System, End User

**Entry Conditions:** Registration System determines that the nurse has already registered once before.

**Sequence of Events:**

- Web System redirects user to an error page indicating user has already registered once before.

**Exit Conditions:** The end user sees an error message. At this point he can either close the browser, or one of the standard items in the web page template to navigate back to the beginning page.

## **2.2 Authentication System**

### **2.2.1 Login**

**Name:** Login

**Actors:** End User

**Supporting Actors:** Web System, Authentication System, Database System

**Entry Conditions:** User has entered his login name and password on the menu bar and then pressed the “Submit” button.

**Sequence of Events:**

- Authentication System checks that the nurse has indeed entered both a username and password.
  - If nurse has not, enter “Invalid Credentials” use case.
- Authentication System taint checks the username and password.
  - If taint check fails, enter “Invalid Credentials” use case.
- Authentication System asks Database System to query username and password so Authentication System can check end user credentials.
  - If credentials are invalid, enter “Invalid Credentials” use case.
- Authentication System tells Web System to note that the user has been authenticated.
- Web System redirects end user to main web page, which now has links to protected content.

**Exit Conditions:** Either the nurse has been shown an error page if invalid credentials have been entered, or the system successfully authenticates the user and redirects him to the main web page, where he can then navigate to protected content.

### **2.2.2 Invalid Credentials**

**Name:** Invalid Credentials

**Actors:** Authentication System

**Supporting Actors:** Web System, End User

**Entry Conditions:** Authentication System determines that invalid end user credentials have been submitted.

**Sequence of Events:**

- Web System redirects user to an error page indicating invalid credentials have been submitted.

**Exit Conditions:** The end user sees an error message. At this point he can either close the browser, or one of the standard items in the web page template to navigate back to the beginning page.

## **2.3 Help System**

### **2.3.1 View Help**

**Name:** View Help

**Actors:** End User

**Supporting Actors:** Web System, Help System

**Entry Conditions:** User has clicked the “Help” button.

**Sequence of Events:**

- Web System redirects user to the help web page, listing help for each function of the web site.

**Exit Conditions:** User can now find help for each function of the web site.

### **2.3.2 Contact Administrator**

**Name:** Contact Administrator

**Actors:** End User

**Supporting Actors:** Web System, Help System

**Entry Conditions:** User has clicked the “Contact Administrator” button.

**Sequence of Events:**

- Web System redirects user to a web page form for contacting the Administrator.
- User types in question/message & information on how the Administrator can respond.
- User clicks the “Send” button.
- Help System sends message to Administrator.
- Help System starts “View Help” use case.

**Exit Conditions:** Message has been sent to Administrator so he can address the question and respond to the user.

## 2.4 Calendar System

*Details of how the public content is generated, modified, removed, etc. are handled by MegaBBS, and as such, we do not bother to provide design documentation for them here, other than how these tasks may interact with other components of the online community. Also, while implementation details are not appropriate for this section, the public and private calendar system will be one in the same, with filtering mechanisms used to display events of each type. We will have to provide the logic for this filtering, but the core functionality is still handled by MegaBBS and is not documented further.*

### 2.4.1 View Public Calendar

**Name:** View Public Calendar

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Calendar System

**Entry Conditions:** User has clicked the “Public Calendar” link from the menu bar.

**Sequence of Events:**

- Web System redirects user to the public calendar web page.

**Exit Conditions:** The user has been shown the main page of the public calendar and may view any events in the calendar.

### 2.4.2 View Private Calendar

**Name:** View Private Calendar

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Calendar System

**Entry Conditions:** User has clicked the “Private Calendar” link from the menu bar.

**Sequence of Events:**

- Start “View Public Calendar” use case.
  - Filter out public events.

**Exit Conditions:** The user has been shown the main page of the private calendar and may view any events in the calendar.

## **2.5 Discussion Forum System**

*Details of how the discussion forum topics & threads are accessed, created, deleted, modified, etc. are handled by MegaBBS, and as such, we do not bother to provide design documentation for them here, other than how these tasks may interact with other components of the online community.*

### **2.5.1 View Discussion Forum**

**Name:** View Discussion Forum

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Discussion Forum System

**Entry Conditions:** User has clicked a “Visit Forum” link.

**Sequence of Events:**

- Web System redirects user to the main discussion forum (MegaBBS category view) page.
- Discussion Forum System populates the web page with content.

**Exit Conditions:** The user is now at the main page of the forum and may browse the discussion forums.

## **2.6 Newsletter System**

### **2.6.1 View Newsletter**

**Name:** View Newsletter

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Newsletter System

**Entry Conditions:** User has clicked the “Newsletter” link.

**Sequence of Events:**

- Web System redirects user to newsletter web page.
- Newsletter System populates the web page with content.

**Exit Conditions:** The end user is now able to view the newsletter.

### **2.6.2 Discuss Newsletter**

**Name:** Discuss Newsletter

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Newsletter System

**Entry Conditions:** User has clicked the “Discuss Newsletter” link.

**Sequence of Events:**

- Web System redirects user to forum to discuss the newsletter.
- Newsletter System populates the web page with content.

**Exit Conditions:** The end user has been redirected to the special forum to discuss the newsletter.

## **2.7 Administration System**

*Many of the actions the Administrator can make on a given system are mentioned within the use cases for that system.*

### **2.7.1 Access Administration Page**

**Name:** Access Administration Page

**Actors:** Administrator

**Supporting Actors:** Web System, Administration System

**Entry Conditions:** Administrator has logged onto the system.

**Sequence of Events:**

- Web System redirects Administrator to special Administrator web page.
- Administration System populates the web page with content.

**Exit Conditions:** Administrator is now able to edit system content.

## **2.8 Job Vacancy System**

### **2.8.1 View Job Vacancies**

**Name:** View Job Vacancies

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Job Vacancy System, Database System

**Entry Conditions:** User has clicked on the “Job Vacancies” link.

**Sequence of Events:**

- Web System redirects user to a web page to show open job vacancies.
- Job Vacancy System queries the Database System for job vacancies.
- Job Vacancy System updates web page listing available job vacancies.

**Exit Conditions:** The user is able to view available job vacancies within Marie Curie Cancer Care.

## 2.8.2 Add Job Vacancy

**Name:** Add Job Vacancy

**Actors:** Administrator

**Supporting Actors:** Web System, Job Vacancy System, Administration System, Database System

**Entry Conditions:** Administrator has clicked on the “Add Job Vacancy” link from the “Job Vacancies” web page.

**Sequence of Events:**

- Web System redirects Administrator to a web page form to enter a new job posting.
- Administrator fills in appropriate fields pertaining to job posting.
- Administrator clicks the “Submit” button.
- Job Vacancy System asks the Database System to add the posting information to the database

**Exit Conditions:** The posting has been added to the job posting database and is now viewable when users start the “View Job Vacancies” use case.

## 2.8.3 Remove Job Vacancies

**Name:** Remove Job Vacancies

**Actors:** Administrator

**Supporting Actors:** Web System, Job Vacancy System, Administration System, Database System

**Entry Conditions:** Administrator has clicked on the “Remove Job Vacancies” link from the “Job Vacancies” web page.

**Sequence of Events:**

- Web System redirects Administrator to a web page to show open job vacancies.
- Job Vacancy System queries the Database System for job vacancies.
- Job Vacancy System updates web page listing available job vacancies.
- Administrator checks the check box for each posting to be deleted.
- Administrator clicks the “Submit” button.
- Job Vacancy System asks the Database System to remove the selected vacancies from the job database

**Exit Conditions:** The posting has been removed from the job posting database and is no longer viewable when users start the “View Job Vacancies” use case.



## 2.8.4 Modify Job Vacancy

**Name:** Modify Job Vacancy

**Actors:** Administrator

**Supporting Actors:** Web System, Job Vacancy System, Administration System, Database System

**Entry Conditions:** Administrator has clicked on the “Edit Job Vacancy” link from the “Job Vacancies” web page.

**Sequence of Events:**

- Web System redirects Administrator to a web page to show open job vacancies.
- Job Vacancy System queries the Database System for job vacancies.
- Job Vacancy System updates web page listing available job vacancies.
- Administrator selects the posting to be modified.
- Administrator clicks the “Submit” button.
- Web System redirects Administrator to a web page form to modify the contents of the selected job posting.
- Administrator clicks the “Submit” button.
- Job Vacancy System asks the Database System to update the modified entry.

**Exit Conditions:** The posting has been updated in the job posting database and its new content is now viewable when users start the “View Job Vacancies” use case.

## 2.9 Private Message System

*Details of how the private messages are viewed, sent, stored, modified, etc. are handled by MegaBBS, and as such, we do not bother to provide design documentation for them here, other than how these tasks may interact with other components of the online community.*

### 2.9.1 Access Private Message System

**Name:** Access Private Message System

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Private Message System, Database System

**Entry Conditions:** User has selected to access private messaging system

**Sequence of Events:**

- Web System redirects user to private message system web page.
- Private Message System queries Database System for user’s messages.
- Private Message System updates web page with user’s messages.

**Exit Conditions:** User is now able to view private messages, send private messages, and manage private messages

## **2.10 Instant Message System**

### **2.10.1 Access Instant Message System**

**Name:** Access Instant Message System

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Instant Message System, Database System

**Entry Conditions:** User has selected to access instant messaging system

**Sequence of Events:**

- Web System creates a new instant messaging window.
- Instant Message System queries Database System for available online users.
  - The available users are presented as a list to the user to select who to send a message to.

**Exit Conditions:** User is now able to send an instant message to another user.

### **2.10.2 Send Instant Message**

**Name:** Send Instant Message

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Instant Message System, Database System

**Entry Conditions:** User has clicked the “Send Message” button.

**Sequence of Events:**

- Web System posts form to the Instant Message System.
- Instant Message System checks if a user was selected to send a message to.
  - If not, Web System presents the user with the instant message window again.
- Instant Message System requests the Database System to add the instant message to the database.
- Web System presents the user with instant message window again.

**Exit Conditions:** User’s message has been added to the message database where it can be retrieved by its intended target. User is now presented with the window to send another message to the same user.

### 2.10.3 Retrieve Instant Messages

**Name:** Retrieve Instant Messages

**Actors:** Authenticated End User

**Supporting Actors:** Web System, Instant Message System, Database System

**Entry Conditions:** User has an instant message in the message database.

**Sequence of Events:**

- Instant Message System requests the Database System for all messages for the current user.
- Web System checks if instant message window is open for the conversation with the sender.
  - If not, a new window is opened with the sender's message.
  - If so, the instant message window for the conversation with the sender is updated with the sender's message.
- Instant Message System requests the Database System to remove all old messages for the current user from the database.
- Web System presents the user with the updated instant message window.

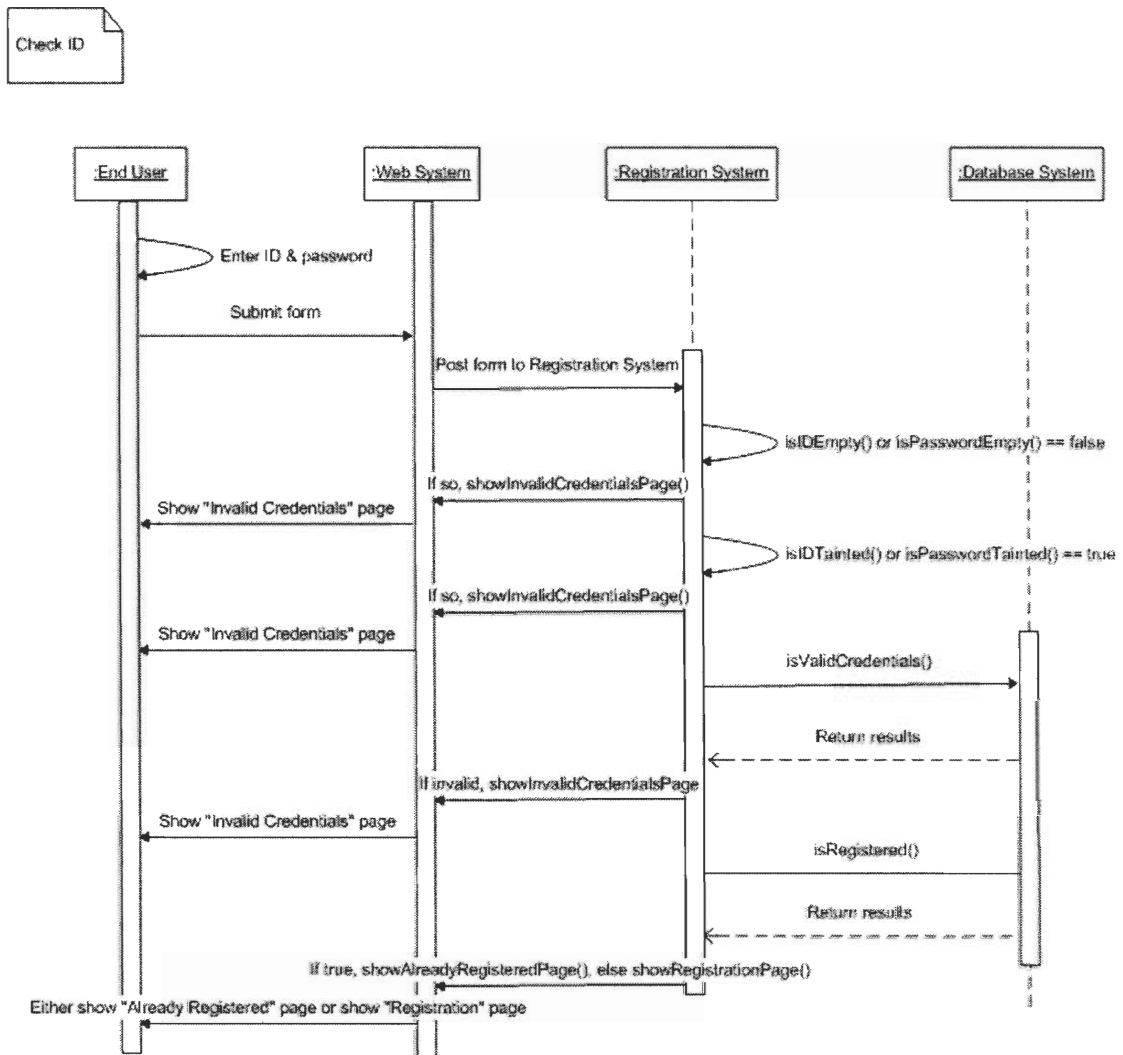
**Exit Conditions:** All messages for the user have been displayed in appropriate windows and the messages database has been cleaned up after.

### 3. Sequence Diagrams

The sequence diagrams detail the time-ordered interaction between the various components in the online community. The arrows with text indicate messages being passed between the components, as time progresses downward. For these diagrams, the user's interaction with the web browser is represented by the "End User" and "Web System" relationship. The "Web System" is not an actual component of the online community, since it is just the user's web browser, but it makes for cleaner delineation between what the user must do and what the browser will do on his behalf. Sequence diagrams for the components provided by MegaBBS are not provided.

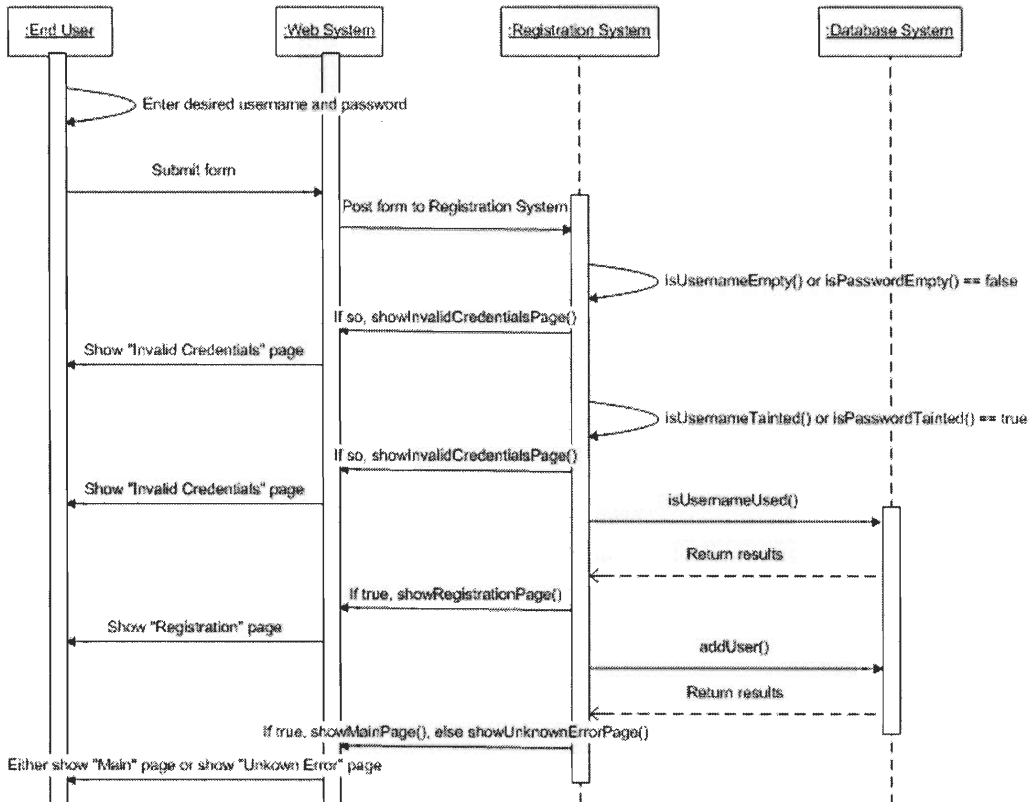
#### 3.1 Registration System

##### 3.1.1 Check ID



### 3.1.2 User Registration

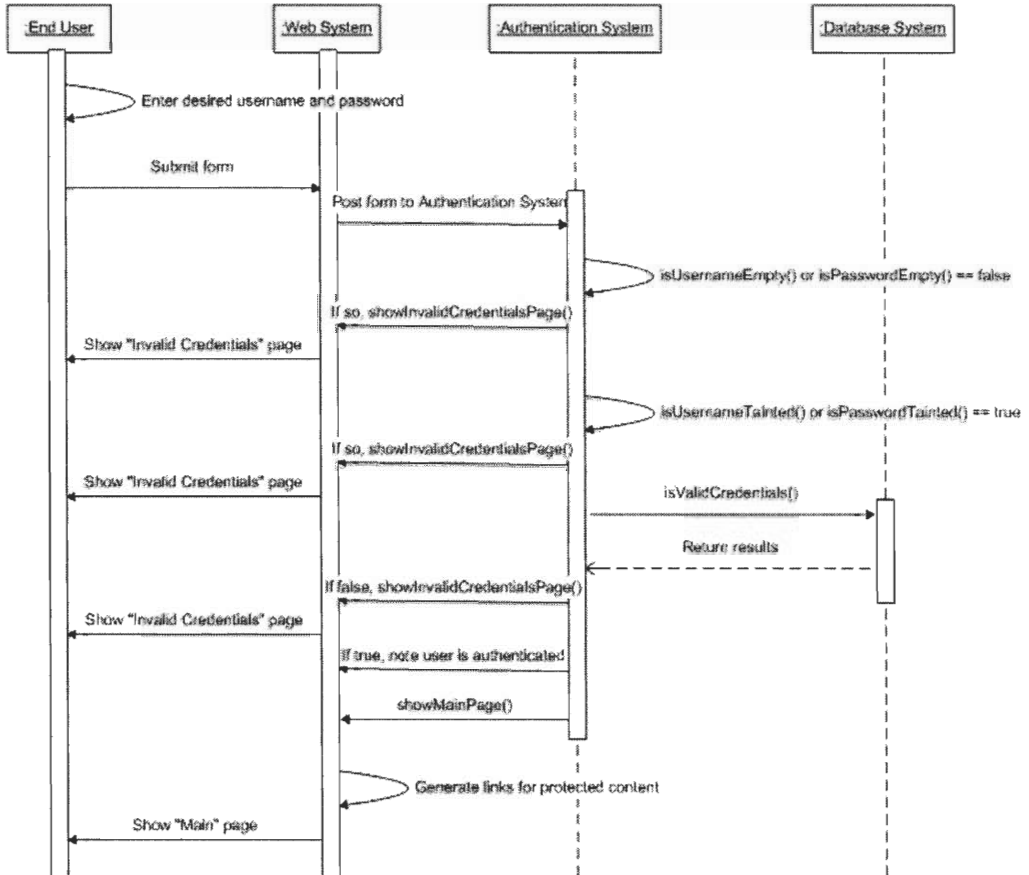
User Registration



## 3.2 Authentication System

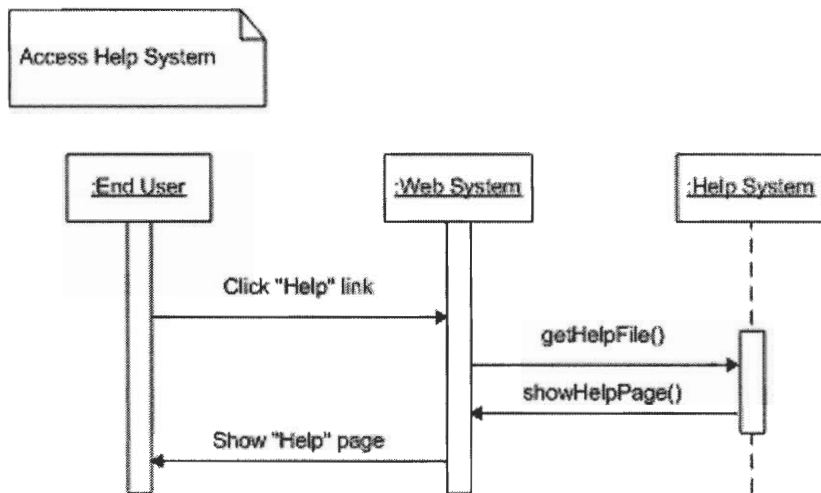
### 3.2.1 User Authentication

User Authentication



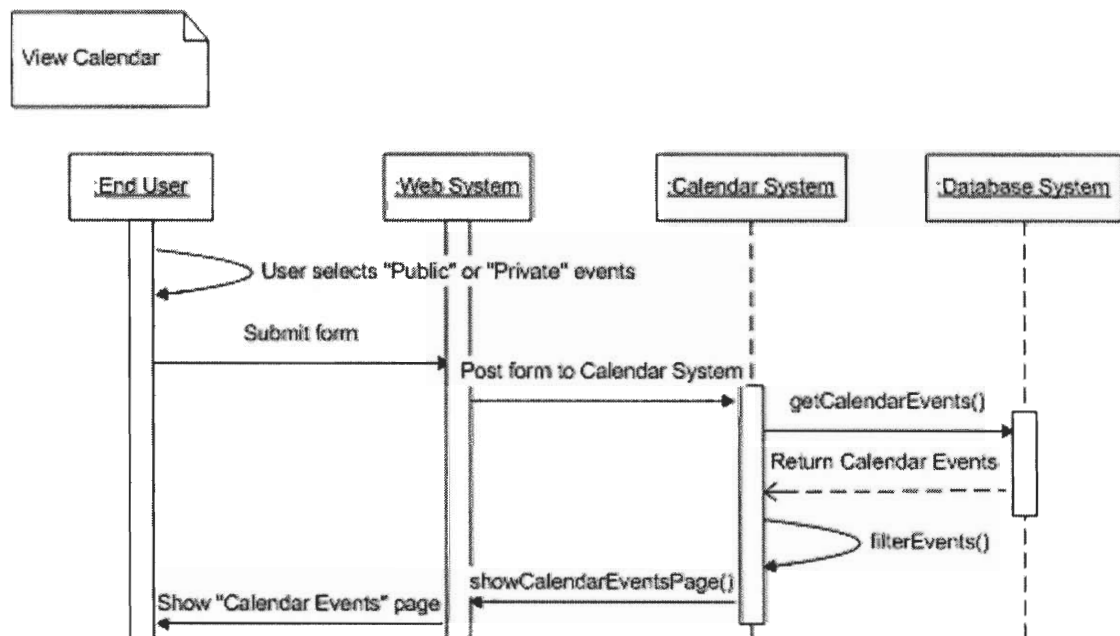
### 3.3 Help System

#### 3.3.1 Access Help System



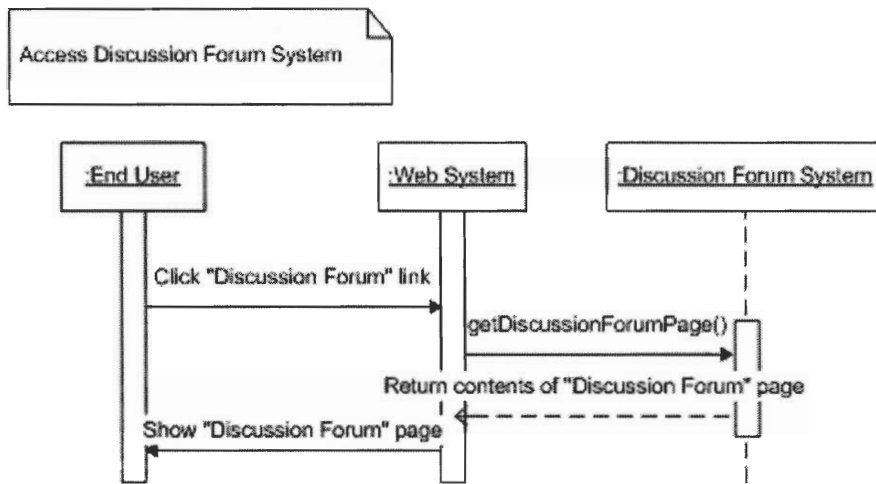
### 3.5 Calendar System

#### 3.5.1 View Calendar



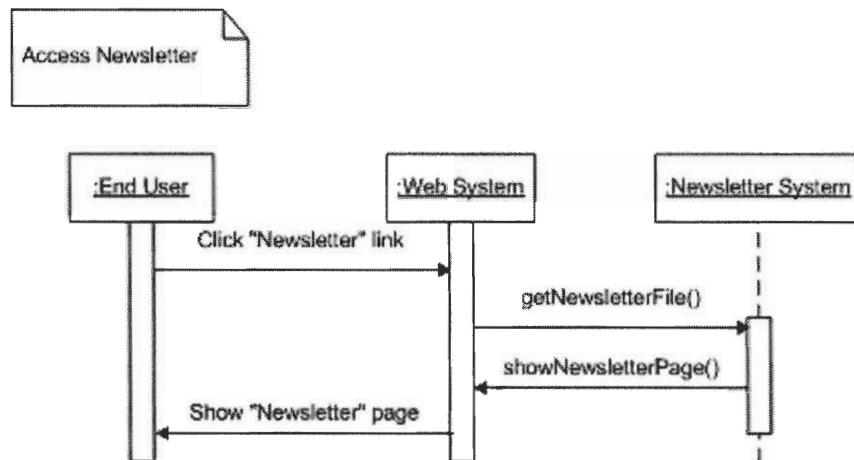
## 3.6 Discussion Forum System

### 3.6.1 Access Discussion Forum



## 3.7 Newsletter System

### 3.7.1 Access Newsletter

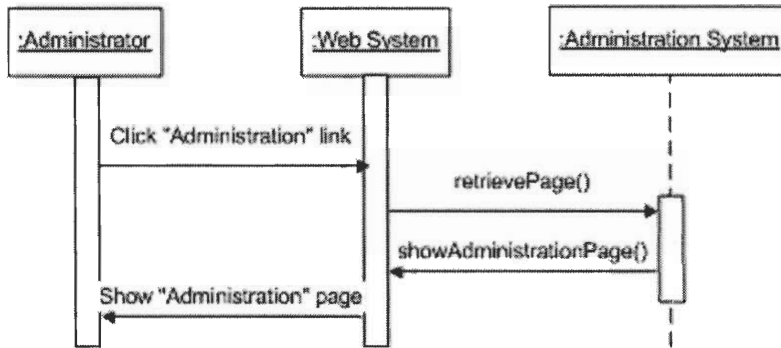




### 3.8 Administration System

#### 3.8.1 Access Administrator Page

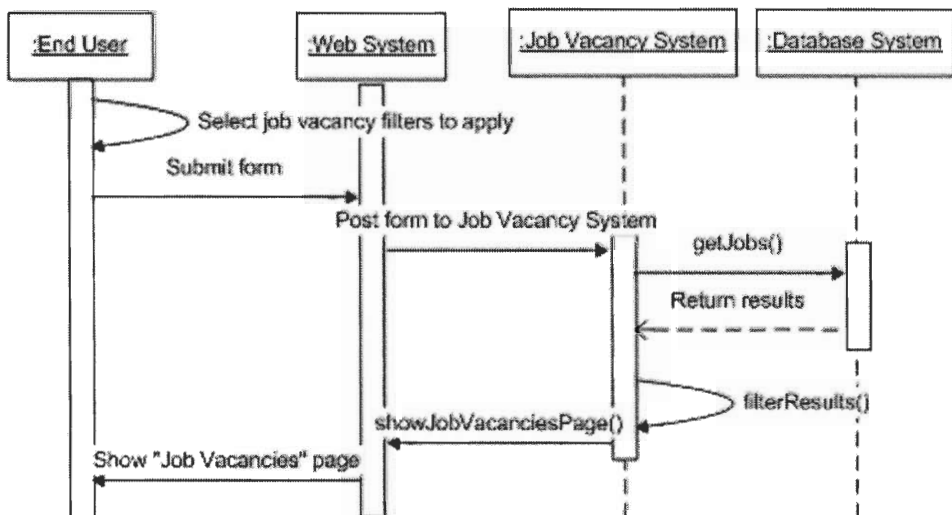
Access Administrator Page



### 3.9 Job Vacancy System

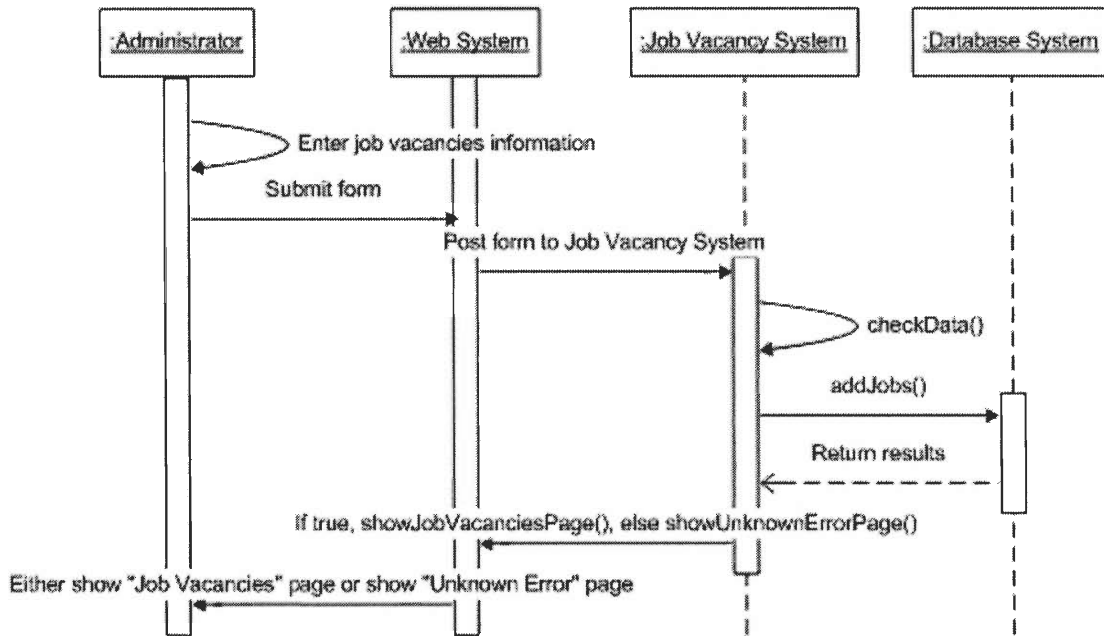
#### 3.9.1 View Job Vacancies

View Job Vacancies



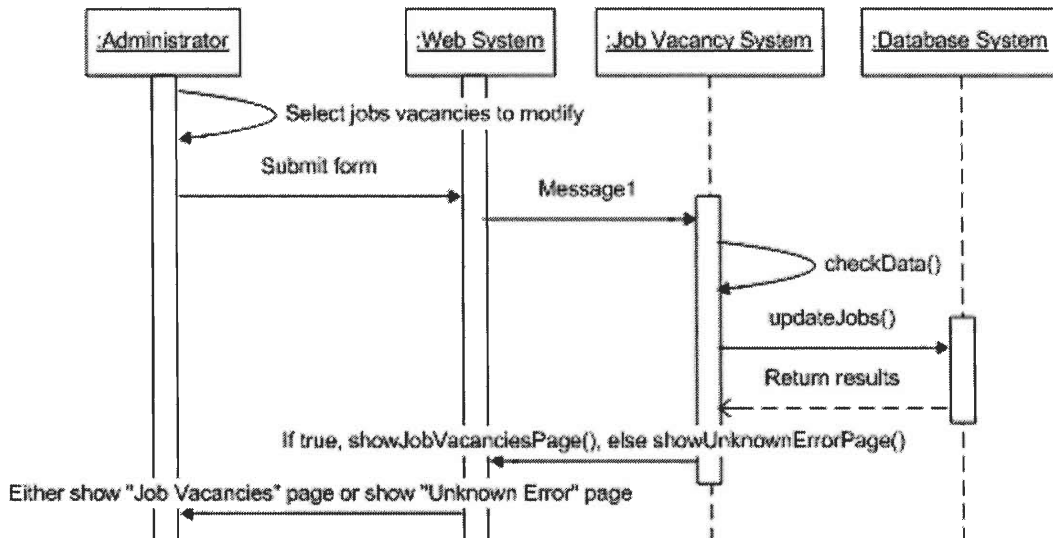
### 3.9.2 Add Job Vacancies

Add Job Vacancies



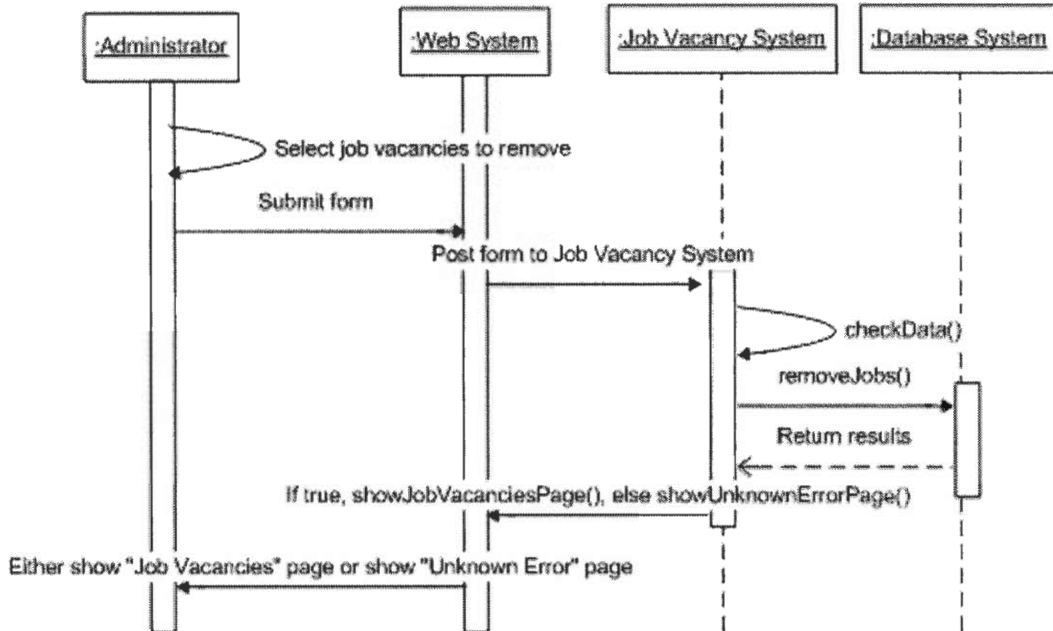
### 3.9.3 Modify Job Vacancies

Modify Job Vacancies



### 3.9.4 Remove Job Vacancies

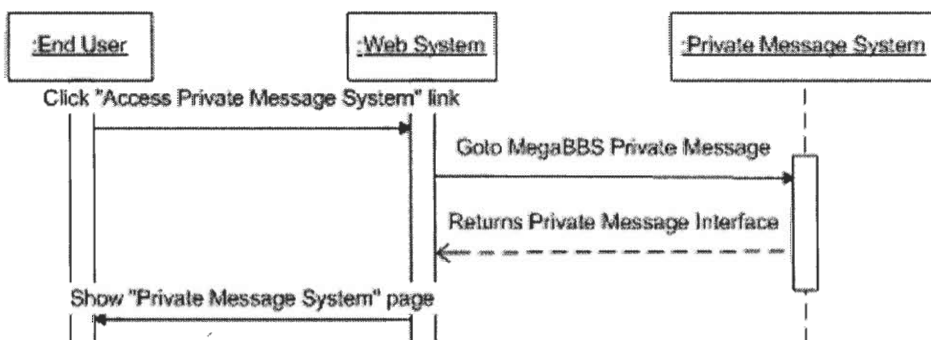
Remove Job Vacancies



### 3.10 Private Message System

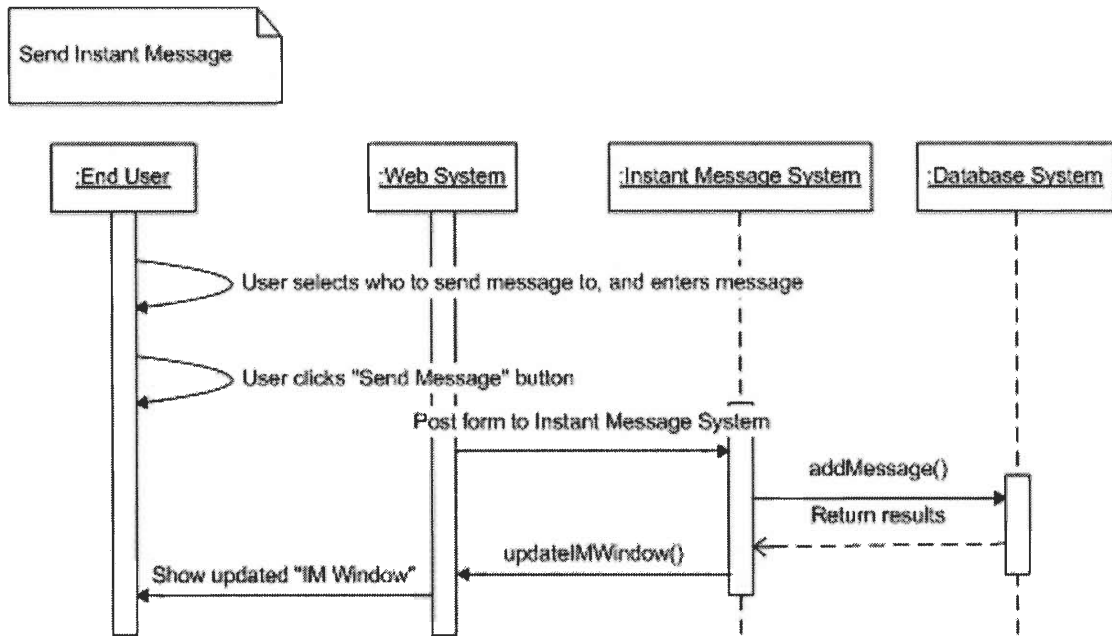
#### 3.10.1 Access Private Message System

Access Private Message System

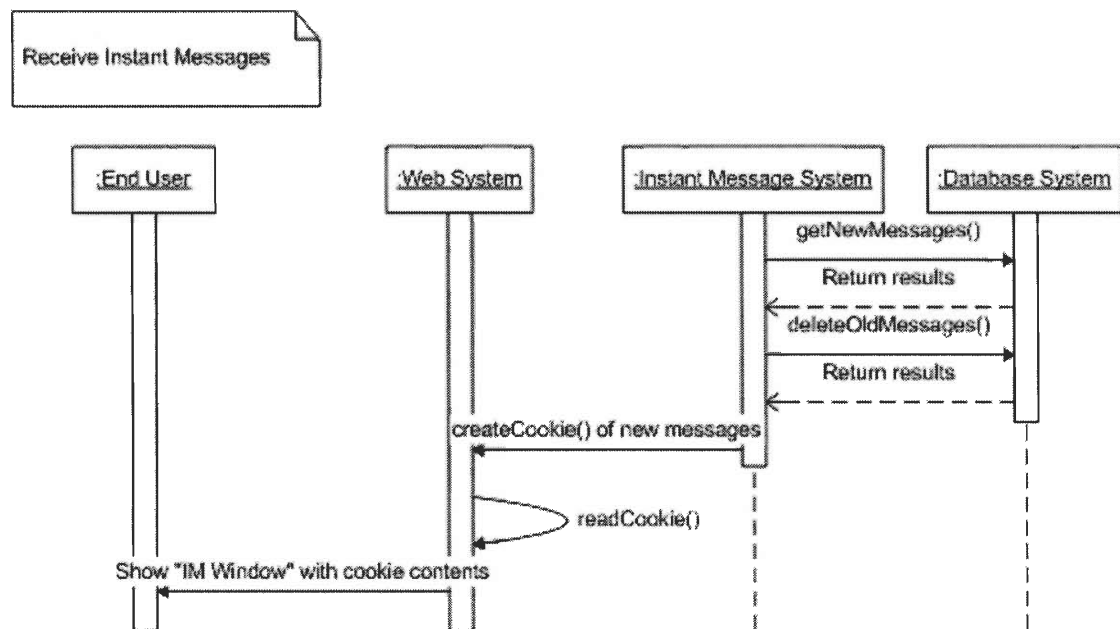


### 3.11 Instant Message System

#### 3.11.1 Send Instant Message



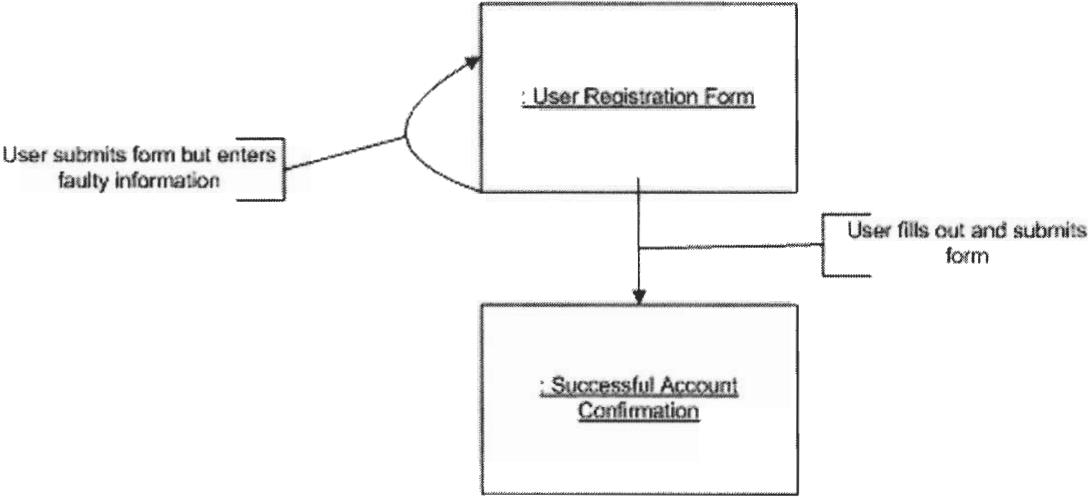
#### 3.11.2 Receive Instant Messages



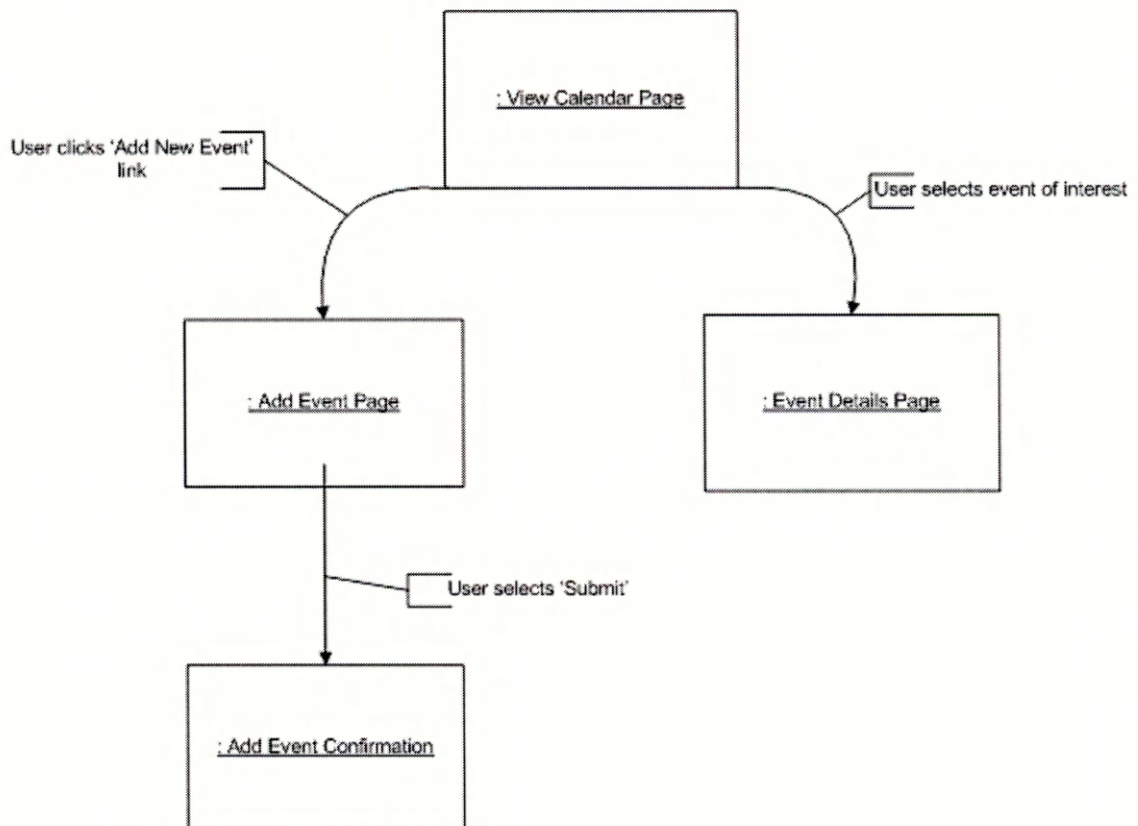
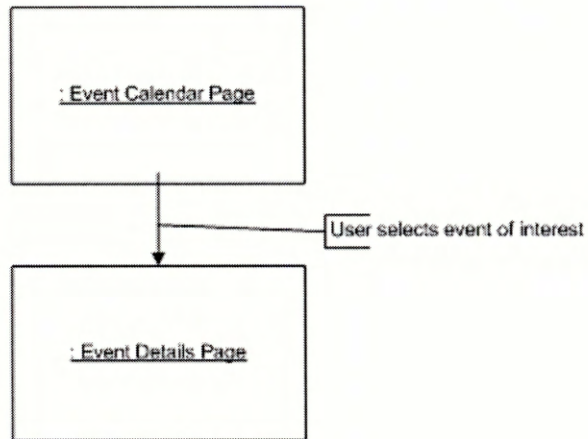
If the cookie has no content, the IM Window will not be updated, but rather just displayed.

# 4. Interface Design

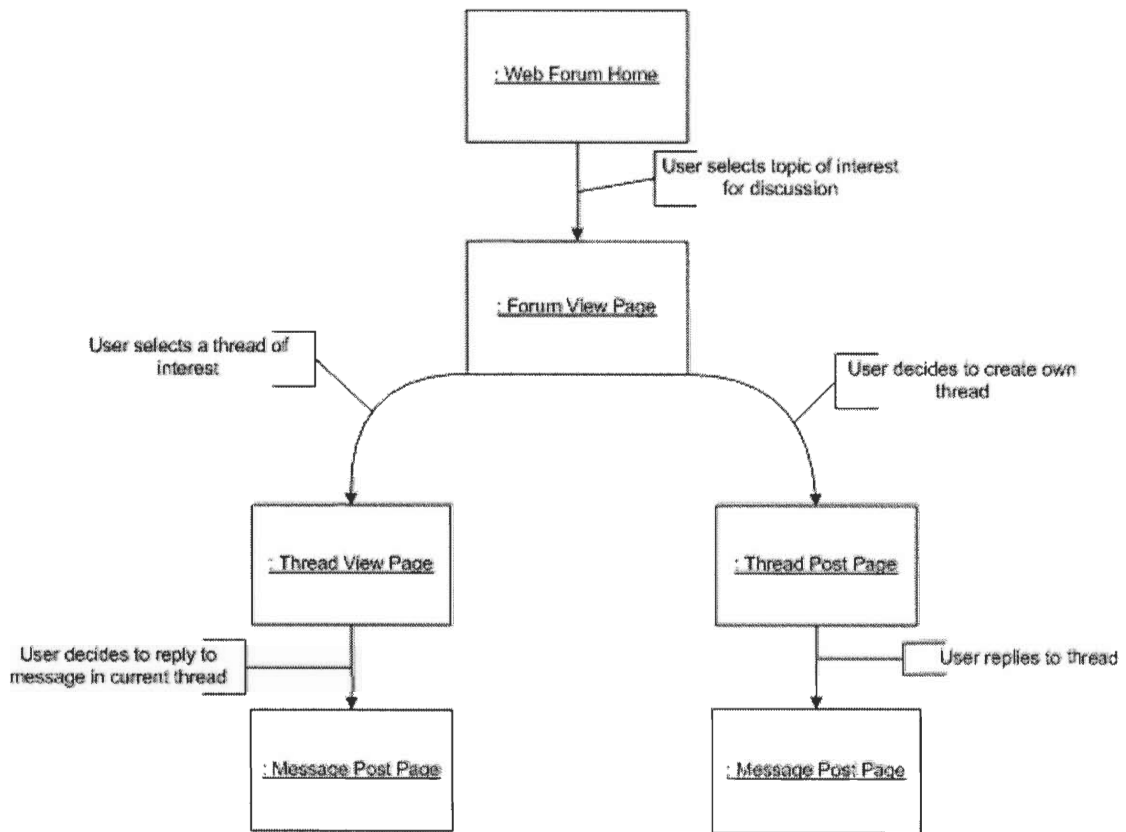
## 4.1 Registration System



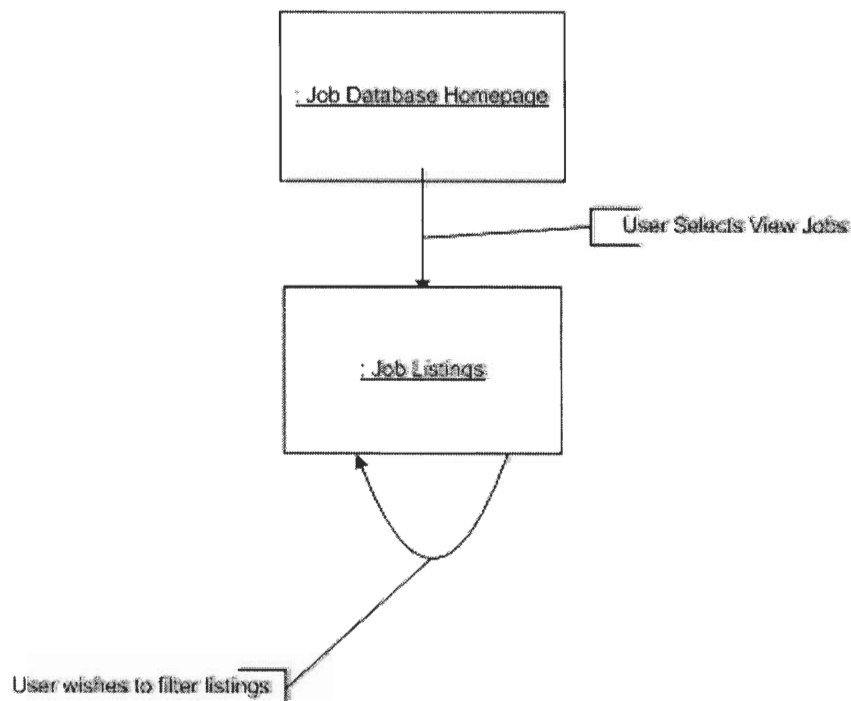
## 4.2 Calendar System



### 4.3 Discussion Forum System



### 4.4 Job Vacancies System



## **Appendix F– Marketing Materials and Plan for *NurseLife***



Marketing Materials and Plan  
for

*NurseLife*

Marie Curie Cancer Care  
April 2003

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# 1 Introduction

This manual will detail the proposed marketing plan and materials to market *NurseLife* to the nurses at Marie Curie Cancer Care (MCCC). *NurseLife* is an online community designed purely for nurses at MCCC. The materials were designed specifically to reach all MCCC nursing positions at the hospice, and in their homes. The purpose of this marketing plan is to inform nurses of the availability and uses of *NurseLife* and to generate curiosity of the community. This will be accomplished through a two stage marketing plan consisting of a “Teaser” and “Promotional” phase.

## 2 “Teaser” Phase Plan & Materials

This phase will provide enough information to inform nurses of the various features of *NurseLife* while hiding certain aspects to keep nurses guessing at what exactly *NurseLife* is. The strategy of this plan is to be repetitious and hype the product. The nurses need to believe that *NurseLife* will make them better nurses and make their lives easier. Nurses should feel excited that this online community is coming and they cannot wait to see it and use it.

### 2.1 Hospice Posters

There are three posters designed to be distributed to hospices. These posters are intended to inform nurses of the variety of features that are contained within *NurseLife*. These posters voice common concerns from nurses using both serious and humorous approaches. They continue to say how *NurseLife* have solved those problems.

**“Alone?”** (Figure 1) – This poster addresses the common issue that nurses have no one to talk to about nursing issues. This is particularly true about community nurses. However, the problem is solved with the introduction of *NurseLife*. Nurses will be eager to be “connected” and the “Coming Soon” will hopefully excite nurses.

**“Forgetting Dates”** (Figure 2) – This poster shows a helpful feature of *NurseLife* – the online calendar. Nurses are undoubtedly busy. Why not let *NurseLife* take care of the little things? Again the “Coming Soon” brings a bit of hype to the product.

**“Something to Say?”** (Figure 3) – This poster gives nurses a sneak peak at what *NurseLife* is. With a screenshot of the product, nurses will see someone (a fellow nurse) is writing a message about Tissue Viability. With Tissue Viability a hot topic, many nurses may see themselves discussing this issue.

# Nobody To Talk To?



NurseLife connects you to 2,500 Marie Curie Cancer Care nurses that are all ready to listen.

*NurseLife*

COMING SOON



Figure 1 "Teaser" poster titled "Alone?"

# Forgetting Dates?



Stop forgetting your important dates. NurseLife will keep track of your dates so you can focus on the more important issues.



*NurseLife*  
COMING SOON



Figure 2 “Teaser” poster titled “Forgetting Dates?”

# Have Something To Say?

**Post a new thread in Tissue Viability**

**Subject :** Important information about Tissue Viability

**Message :** Tissue Viability ha|

Discuss your favorite topics with other Marie Curie Cancer Care nurses, 24/7 all year round.

*NurseLife*

**COMING SOON**



Figure 3 “Teaser” poster titled “Something to Say?”

## **2.2 Articles in Marie Curie People & NursingNews**

*Marie Curie People* reaches the entire MCCC organization and *NursingNews* reaches every nurse at MCCC. Articles in both these periodicals will reach most MCCC nurses. Teaser articles will describe *NurseLife*, and hint at its potential uses. Again, hype is very important. Nurses must feel they need to see and use *NurseLife*.

### **2.2.1 Article in Marie Curie People**

#### **NurseLife to Benefit MCCC Nurses**

**Marie Curie is set to launch a new project, one geared towards Marie Curie nurses.** The project titled *NurseLife* will take on the task of connecting all 2,500 nurses at Marie Curie Cancer Care. The project resembles a fully featured online community with discussion boards, a messaging centre, instant messaging capabilities, and much more including a job vacancy database. It is through *NurseLife* that MCCC nurses throughout the UK will be able to communicate. Only MCCC nurses will be allowed access onto the system with all content dedicated to nursing and palliative care. Posters advertising the upcoming project have been placed in hospices throughout the organization. The release date of this project has yet to be announced.

### **2.2.2 Article in NursingNews**

#### ***NurseLife* Coming Soon**

Marie Curie Cancer Care has developed a nurse-only community that will soon be accessible on the Internet. This community is currently undergoing extensive testing but promises to connect all 2,500 MCCC nurses throughout the UK. In addition to providing news articles and nursing content, it will also provide an area for nurses to share, discuss, and debate on any topic. *NurseLife* promises to be the leading world's resource on palliative care.

## **2.3 Pay Slip Messages**

Pay slip messages will reach every employee throughout the organization. In order to reach community nurses, pay slip messages will be used.

Message #1: "Be a Better Nurse. *NurseLife*. Coming Soon."

Message #2: "*NurseLife*: Made for and by MCCC nurses."

Message #3: "Fish & Chips. Salt & Pepper. Nursing & *NurseLife*."



### 3 Promotional Phase & Materials

This phase combines both the goal of the teaser phase of informing nurses of what *NurseLife* is, and the goal of promoting the availability of *NurseLife*. At this point of the marketing plan, nurses should have a basic knowledge of *NurseLife*. This phase will introduce nurses to how and where they can reach *NurseLife*.

#### 3.1 Hospice Posters

There are two posters designed to be distributed to hospices. These posters intent to both inform nurses of what *NurseLife* can do and where they can access it. At this point nurses may tire of the posters for *NurseLife*. This phase will use different looking posters evoking humour to interest nurses.

**“Promises”** (Figure 4) – This poster both humours the audience and hypes the product. It describes that it won’t help nurses in certain aspects of their lives, but helping them become better nurses is a possibility. The bottom of the poster advertises the Internet address.

**“News”** (Figure 5) – This poster draws the audience through humor. It then informs the audience of how *NurseLife* can benefit the nurses. The Internet address appears at the bottom.

**OK, so it may not save you thousands of £s or help you find  
the perfect mate, but it may help you become a better nurse.**

*NurseLife*

<http://www.address.com>



**Figure 4 Promotional poster titled “Promises”.**

# Missing Important News?



Don't fall behind the times again. Read the latest on nursing news and developments.

*NurseLife*

<http://www.address.com>



Figure 5 Promotional poster titled "News".

## **3.2 Articles in Marie Curie People, NursingNews, Nursing Standard & Nursing Weekly**

Promotional articles in both *Marie Curie People* and *NursingNews* will both inform the target audience (MCCC nurses) while articles in “Nursing Standard” and “Nursing Weekly” can reach both MCCC nurses and potential job seekers. This provides two benefits: MCCC nurses will hear about *NurseLife* and outside job seekers may visit the page to seek nursing positions within MCCC.

### **3.2.1 Article in Nursing Standard & Nursing Weekly**

#### **Marie Curie Cancer Care Nurses Go Online**

London, England – Marie Curie Cancer Care nurses now have a place on the Internet that they can call home.

With the launch of the Marie Curie Cancer Care Online Community the nurses will be able to gather, chat, discuss, and debate on almost any topic imaginable. Topics ranging from ‘Nurse Prescribing’ to ‘Tissue Viability’ are already some of the hot topics of discussion.

Job seekers around the world will be able to view job vacancies at Marie Curie Cancer Care with the Online Job Vacancy Database, and apply online. With an ever growing need for nurses, Marie Curie Cancer Care hopes to fill much needed nursing roles with qualified applicants reached online.

With approximately 1,500 MCCC nurses working in the homes of patients, the online community combined with a nursing newsletter titled “NursingNews” hopes to bring these nurses closer to the organization. The online community can be reached at <http://www.address.com>.

Marie Curie Cancer Care is dedicated to the care of people affected by cancer and the enhancement of their quality of life, through its caring services, cancer research and education. The Charity provides care for today and hope for tomorrow.

### **3.2.2 Article in Marie Curie People**

#### ***NurseLife* Has Arrived!**

**The long awaited *NurseLife* has arrived to much anticipation and fanfare.** The project developed by Marie Curie Cancer Care promises to link all 2,500 nurses together through the Internet. Nurses have already used the system in limited tests on the Marie Curie Cancer Care internal network that proved very successful.

*NurseLife* is an appropriate title for a system that could become an integral part of MCCC nursing life. With the latest news and developments along with thousands of

expert opinions at every nurses' disposal, no nurse should overlook this powerful system.

This product will change how nurses communicate with each other, and who they communicate with. *NurseLife* was developed in conjunction with Worcester Polytechnic Institute in Worcester, Massachusetts, USA and can be accessed at <http://www.address.com>.

### **3.2.3 Article in NursingNews**

#### ***NurseLife* Delivers on Big Promises**

Nurses throughout Marie Curie Cancer Care will be able to chat and share valuable ideas with each other through a project called *NurseLife*. The project has been under development and tested for the greater part of the past year and has finally been released to the MCCC nursing community.

This system provides an outlet for all nurses at Marie Curie Cancer Care. An online job database aids in the recruitment efforts in finding more nurses. One feature called "Instant Messaging" allows for instant communication between two nurses on the system. "Instant Messaging" is a faster way of communicating than email.

*NurseLife* was developed in conjunction with Worcester Polytechnic Institute in Worcester, Massachusetts, USA and can be accessed at <http://www.address.com>.

### **3.3 Messages in Pay Slips**

Promotional message in pay slips will reach all Marie Curie Cancer Care employees. The following messages should be distributed immediately after the launch of *NurseLife*.

Message #1: "NurseLife is now available: <http://www.address.com>"

Message #2: "Be a better nurse. NurseLife: <http://www.address.com>"

Message #3: "Money is nothing. NurseLife is everything. <http://www.address.com>"

## **Appendix G – Implementation Documentation for *NurseLife***

Implementation Documentation  
for

*NurseLife*

Marie Curie Cancer Care  
April 2003

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# 1. Introduction

This document presents the implementation of the *NurseLife* online community for the nurses at Marie Curie Cancer Care (MCCC). It details the purpose of the various files in the online community. We do not describe the files provided by MegaBBS<sup>1</sup>, since the documentation for those can be found at <http://www.pd9soft.com/megabbs-support/index.asp>, except for those that we modified. The unmodified files, whilst important to the functioning of the online community, should be inconsequential to the maintenance of the online community; if there are defects found in these files, they are defects in MegaBBS itself and should be reported to PD9 Software (<http://www.pd9soft.com/>).

We explain the motivation for and the impact of the changes made to the various files provided by MegaBBS. We then explain in detail the additional components that we wrote for the online community. This information will provide MCCC with all the information it needs to navigate through the code of *NurseLife* and should be useful if MCCC needs to modify the online community.

---

<sup>1</sup> All of our work was completed with MegaBBS version 1.5.14b. Newer versions may change the file system structure, and thus this documentation may fall out of date.

## **2. Modifications to MegaBBS**

This section describes the changes and the motivations for those changes to various files provided with MegaBBS. The modifications made were done so for a variety of reasons, such as for the simplification of the user interface for the MCCC nurses and to remove features that the nurses did not wish to have in their community. NB: All file system paths are given relative to the root of the online community.

### **2.1 Common Functionality**

#### **2.1.1 Header**

`\includes\header.asp`

The original MegaBBS header was replaced with a new header and side menu bar. The header now displays the “pageTitle” variable that all pages have, so the user knows where in the community he is.

#### **2.1.2 Menu bar**

`\includes\menu.asp`

The menu bar was written to support a tree structure of web site links, so that as the user descends through the “Discussion Forum” and “Calendar” sections, a branch would be appear, showing where the user is located with in the community.

#### **2.1.3 Footer**

`\include\footer.asp`

The footer of the page was modified to be less obtrusive and to reference MCCC. This footer also contains the code to check for new instant messages and updates the instant message windows if messages for the user exist.

#### **2.1.4 Ability to Check Manager Status**

`\includes\include.asp`

The function `isManager()` is used by the Job Vacancy System, the Links Database System, and the Newsletter System. The function checks a database of managers to verify that a username and password pair has manager permissions to access protected resources.

## **2.1.5 Style Sheet Modification**

\schemes\files\1.css

The style sheet was modified so that Marie Curie Cancer Care colours and fonts would be used.

## **2.2 Registration System**

### **2.2.1 Registration Process**

\register.asp

\register2.asp

\register3.asp

These 3 pages represent the entire registration process. Most of the fields on these pages that nurses were unlikely to fill out were removed to simplify the registration process. Fields such as email address, AIM screen name, ICQ number, personal web page, and some other advanced options were removed from this page. This information, however, can still be accessed and changed in the “My Preferences” page. Also, several other pages were added to the Registration System in order to query the employee ID database before allowing the user to register.

## **2.3 Authentication System**

### **2.3.1 Logon**

\logon.asp

This page was modified so after a user was successfully logged on this page would not be redirected back to itself and falsely give the impression that the login was unsuccessful. Also this page was modified so that it would never redirect to the logoff page as this would create a cycle where a user would logon and be immediately logged off the system

## **2.4 Discussion Forums**

### **2.4.1 Category-View**

\category-view.asp

This is the page that lists the forums. It was greatly simplified to show only the category, forum name and forum description. Also, a gap in the table is also shown between categories to further show separation between them. The number of threads, posts, views and other information was removed from the user view; this information will only be displayed for an administrator.

## **2.4.2 Thread-View**

`\thread-view.asp`

This page was significantly modified. The upper and lower toolbars were condensed into the lower toolbar only. In the process the moderators listing, thread information, current location, and legend were removed. The “now viewing page #” text, the “Back” button, and the “Reply” button at the top and bottom of the page have been removed. These items were removed because they had little practical value for nurses who were unfamiliar with discussion forums and because they gave the forum an unnecessarily complicated look.

## **2.4.3 Thread-Post**

`\thread-post.asp`

This is the page where a user can post a new message. The text boxes to enter the username and password have been removed since in order to access this page, the user would have had to have been already authenticated. Several of the tick boxes were removed at the bottom the page due to the fact that the nurses, with limited computer experience, would be unlikely to use them. The options these tick boxes represented included disabling HTML in the current post, disable auto-emoticons, and preview before posting. The remaining options were organized by placing the more advanced options, under the “Advanced Options” heading.

## **2.4.4 Display Posts**

`\includes\include.asp`

The “Edit” and “Delete” buttons that used to appear for each message are no longer displayed, unless the user is an administrator or a forum moderator. The user information that appeared for each message’s author are now also only available to an administrator or a forum moderator. The text regarding the post number and reply number was removed from the area just below the subject; this was done to improve the usability by only showing the information that the nurses would be interested in.

## **2.4.5 Create-Poll**

`\pollbooth\create-poll.asp`

This page had the username and password fields removed from it since the user would have had to have been authenticated to access this page. Some of the more advanced options were removed from this page since they unnecessarily complicated the page’s appearance, and nurses were not apt to use the features anyway.

## **2.5 Calendar System**

### **2.5.1 Calendar View**

`\calendar\calendar-view.asp`

There was a variable added to the page called “filter”. This variable is set in the query string. If the variable is set to “private”, only the user’s own private events will be shown. If the variable is set to “public”, only MCCC public events will be shown. If the variable is not set or is set to any other value, all events, both public and private, will be shown. This page was also modified so that if an event was added while the user was looking at his private calendar, the event would automatically default to be “private”, and likewise an event created while viewing the public calendar would default to public.

### **2.5.2 Add-Event**

`\calendar\add-event.asp`

This is the page where a user may add an event to the calendar. The username and password were removed from this page as a user would have had to have been authenticated before accessing this page.

## 3. Additional Components

This section describes the additional components we added to the base functionality provided by MegaBBS. The file system structure is described for each component, as well as what functionality each file provides.

### 3.1 Registration System

The Registration System provides the mechanisms through which users register to use the system. The first stage of the process involves verifying that a user is indeed a MCCC nurse, via their employee ID number. The second step involves creating a username and password for the user, if he authenticated properly. The final step is simply displaying a welcome message and logging the user in for the first time. Each of the files in this system will be examined below:

#### 3.1.1 \register.asp

The registration process begins when a user clicks on a “register” link and is brought to register.asp. This file prompts the user for his employee ID number and surname. When the user submits the form (sAction = "newregistration"), the database is queried and checked to verify that the employee ID and surname are a valid combination. If it is, then the members table in MegaBBS is checked to make sure the user has not already registered before. If either of these tests fail, the page is redisplayed with an appropriate error message. Otherwise, the user is redirected to register2.asp with the employee ID and surname passed in a query string, so the user doesn't need to re-enter this information.

#### 3.1.2 \register2.asp

A more detailed form is presented asking the user to choose a username and password. The user's full name is queried from the employee ID database and displayed on the page. The employee ID number and surname, having been extracted from the query string, are saved in hidden fields when the form is generated.

When the form is submitted, it is first processed by performing the same checks as in register.asp, which prevents anyone from bypassing the first step. Then the “Password” and “Confirm Password” fields are checked for equivalence. If either of these tests fail, then the appropriate error message is displayed and the user is presented with the form again. Otherwise, the username, password, employee ID, and real name are stored in the members table, using the registration code provided by MegaBBS. Once this has successfully completed, the user is redirected to register3.asp with the username and password passed in a query string, so the user doesn't need to re-enter this information.

### **3.1.3 \register3.asp**

This page is a modification of the interface form from MegaBBS's login.asp. The only changes are that it now displays "Thank you for registering" message when the user successfully registers and automatically fills in the username and password in the login form for the user.

## **3.2 Links Database System**

This area of the website contains web site links posted by an administrator or a links manager. These links are organized into categories based on their content. The link is presented as a link followed by a description. Each of the files in this system will be examined below:

### **3.2.1 \links\links.asp**

This page contains all the functionality to display, edit, and delete links. If the user is not an administrator, then the links are simply displayed in a table. Otherwise, in addition to displaying the links themselves, a "Delete" and an "Edit" link are listed next to each link in generated table. These links pass the "linkID" of the link to delete/edit as well as the variable "action" back to the form. An administrator can also see a form at the bottom of the page, which is used to add links to or edit links in the database. This form also contains an action variable and posts back to the links.asp page.

Depending on the action variable, the form may be processed in several ways. If action is "add", then the "LinkName", "LinkDescription", "LinkURL" and "CatID" submitted in the form are used to create a new entry in the database. If action is "delete", then the record with the matching "linkID" will be deleted from the table. If the action is "edit", then the page will be redisplayed with the values for the link being edited placed in the form at the bottom of the page. The hidden input "action" in the form would now be set to change and the "linkID" would be passed as a hidden input on the form. When this form is submitted the action performed would be "change", in which case the link being edited would be updated in the table.

### **3.2.2 \links\editcat.asp**

This is the interface through which link categories are created, removed or renamed. This page is very similar to the links.asp page. The page always displays the categories, each with an associated "Edit" and "Delete" link, as in links.asp. Below this a form is shown where a new category can be added or modified.

Depending on the action variable, the page may be processed in several ways. If action is "add", then the "CatName" submitted in the form is used to create a new

entry in the database. If action is “delete”, then the record with the matching “CatID” will be deleted from the table. If the action is “edit”, then the page will be redisplayed with the values for the category being edited placed in the form at the bottom of the page. The hidden input “action” in the form would now be set to “change” and the “CatID” would be passed as a hidden input in the form. When this form is submitted the action would be “change” in which case the link being edited would be updated in the table.

### **3.3 Newsletter System**

The Newsletter System operates in exactly the same way as the Links Database System. The only difference between the links database and the newsletter database is that in the newsletter database, the link is chosen from a list of files stored on the web server, rather than allowing the administrator to enter arbitrary values for the link entry. Each of the files in this system will be examined below:

#### **3.3.1 \newsletter\managefiles.asp**

This file is the interface to the File Management System. A list of file in the files directory is presented as links, each with an associated delete link. There is a form, which is used to upload additional files. This form is submitted to another ASP file that handles uploads and stores the files in the “\files” directory. In this page there is a variable called “action” much like in the links and newsletter pages. If action is “delete”, then the file specified in the input field “delete” is deleted from the server. In order to access this page one must be an administrator or newsletter manager.

### **3.4 Job Vacancy System**

The Job Vacancy System is a simple system utilizing database queries to add/edit/view/delete job vacancies. This system uses the MegaBBS-implemented user access system and isManager() to differentiate between administrator access and user access. Each of the files in this system will be examined below:

#### **3.4.1 Job Vacancy Listing**

\jobs\jobs.asp

This file displays each job listing, separated by categories. A connection to the database is made using the variable “sConnectionString”, which is accessed by all pages in the system requiring database access. Job categories are kept in the “JobCat” table,



and each entry has a name and corresponding “CatID” number. The “Jobs” table references the “JobCat” table to retrieve the list of categories. Each job contains a “CatID” number that determines what category it belongs to. Renaming a category in the “JobCat” table will result in all job vacancies in that category to be displayed under the new name.

### **3.4.2 Job Detail Listing**

\jobs\job-detail.asp

This file requires a “jid” be available. This file will retrieve the job description from the entry in the Jobs table with the same “jid” and inserts the data into a formatted table.

### **3.4.3 Job Administration Page**

\admin\job-admin.asp

This file contains a form to add a new job vacancy, and links to the edit and delete job vacancies or delete categories pages. Once a user has submitted a form, this file will place all available information into the “Jobs” table. There are no required fields in this form. Clicking on “Create Category” will cause this page to create a child window loading new-cat.asp. After new-cat.asp is submitted this page is refreshed. The opening and refreshing of this page is accomplished with JavaScript.

### **3.4.4 Job Vacancy Delete**

\admin\job-delete.asp

This file lists all jobs similar to jobs.asp. This file however allows the administrator to edit and delete jobs from the Jobs table. Selecting delete job will delete the job from the “Jobs” table using “jid” as the reference.

### **3.4.5 Job Vacancy Edit**

\admin\job-edit.asp

This page uses “jid” as a reference point. This file the selected job vacancy information into a form similar to the one used to add a job. The user can add or remove information to this form. There are no required fields in the edit form.

### **3.4.6 Job Category Delete**

`\admin\cat-delete.asp`

This file allows the user to delete a category from the “JobCat” table. This form uses “CatID” to reference the category. If a category is deleted, all jobs within that category will be deleted.

### **3.4.7 \admin\new-cat.asp**

This file allows the user to add a new category. This page is opened in a new window from the job-admin.asp page. Once the new category is inserted into the “JobCat” table, this page closes and refreshes the parent page. This is done with JavaScript.

## ***3.5 Instant Messaging System***

The Instant Messaging System allows users to communicate with one another in real time. It can be disabled on global scale by setting the value of the `bbbsInstantMessagingDisabled` variable in the “database\constants.asp” file to true, and at a local level if a user sets his “invisible” option. The Instant Messaging System is rather complicated due to the way JavaScript is structured. Each of the files in this system will be examined below:

### **3.5.1 \instant\_messaging\default.asp**

This file takes care of the creation of an instant message window when the user wishes to send an instant message. Note that this file will only create the window when the user explicitly clicks on the “Send an Instant Message” link; windows opened for received messages are open elsewhere. What is important to note is that whether the current user has accessed this page, or the person sending him a message has, this page has been accessed.

The reason it is important that this page is accessed is because it generate a GUID used for a JavaScript window name. The code that generates this GUID requires the “Scrob.dll” file to be installed on the web server somewhere, since the page creates an object from this COM server. As with all COM instances have a GUID, the choice of “Scrob.dll” is rather arbitrary, and any object created from any COM server should be sufficient, so long as the COM server is reloaded to generate a new GUID.

The generation of the GUIDs was a technique chosen to uniquely identify each instant message window. Since the GUID is generated by the web server, the GUID is guaranteed to be unique for both the sender and the receiver, who will use the same GUID as an instant message window name. This ensures that if users A & B are

conversing, and then user C wishes to talk to user A, that a new window is generated by A for the conversation between A & C, leaving the window for A & B alone.

### 3.5.2 \instant\_messaging\IM.js

This file is a general-purpose library file used by the Instant Message System. It contains 4 functions that each try to deal with some form of deficiency with JavaScript:

- `createIMWindow()` attempts to solve the problem of JavaScript disallowing the passing of window references between web pages. Although JavaScript does prohibit this, it does allow a new reference to an existing window to be generated. This function will first try to generate that reference, and if it cannot, then it creates a new window. This allows the Instant Message System to update the correct windows when messages are sent and received.
- `delayWrite()` is called by the JavaScript code generated by `Get_messages_from_db.asp`. This function will update a window's contents after a pre-established amount of time (currently defined in `Get_messages_from_db.asp`). The reason for this is that a page must fully load before it can be modified, and `onLoad()` was not working properly.
- `saveConversation()` will save the current conversation from a user's window to a cookie, so it can later be restored. When the user sends a message, it causes the current page to change briefly so the database access code can be executed, which then redirects back to the instant message window. When this redirect occurs, all form values are erased, so some mechanism had to be created to restore the value in the conversation box. Using a session (server-side cookie) probably would have been a better way to deal with this, since client-side cookies have a 4K limit of text, but the mixing of client-side JavaScript with server-side VBScript was very ugly.
- `loadConversation()` is `saveConversation()`'s complement, and reads the value from the saved cookie when the instant message window is reloaded, restoring the conversation box.

### 3.5.3 \instant\_messaging\conversation.asp

This file contains the code that draws the instant message window. The style classes for the various objects are in the master stylesheet, and begin with ".im". This is the file that makes use of `IM.js`'s `saveConversation()` and `loadConversation()` functions. When the "Send Message" button is clicked, it calls `saveConversation()`, and then forwards the request onto the `add_message_to_db.asp` file. It also tries to make several things user friendly.

It will only present the sender of an instant message with a full list of users the first time the user creates the window. Thereafter, or if a window is created in response to a received message, the other recipient's name is the only one that can be used with

that window. This makes it so a window can only be used for communication with one other user. All other communication requires the creation of a new window.

It also greys out buttons when it is not appropriate to click on them, in most cases. There are a few times when this is not the case, but the code required to handle these would be rather time-intensive, both to program and for the end-user's machine to execute. For example, when the "Clear Text" button is clicked, the current message is erased and the "Send Message" greyed-out, so it cannot be pressed. However, if a user were to use the "Backspace" or "Delete" keys to clear the message, the "Send Message" button would not be greyed-out; the code required here would have to check the string in the text box whenever a key is pressed to see if the string is empty.

### 3.5.4 \instant\_messaging\add\_message\_to\_db.asp

This file takes care of adding each message to the “InstantMessages” table in the online community database. Along with the sender, receiver, and message, it also stores the window name of the sender. This allows the code that reads messages to update the correct window. This code also actually adds two entries to the table, one for the sender to the receiver and one for the sender to the sender. This allows the logic that retrieves messages and updates the instant message windows to actually add the sender’s message to his conversation box. When it is all done, it redirects back to the calling instant message window.

### 3.5.5 \instant\_messaging\rslite.js

This file was taken from <http://www.ashleyit.com/rs/rslite/rslite.zip> and was modified marginally. It provides a rudimentary means of remote scripting, which allows the code to retrieve instant messages to be called periodically without forcing a page reload. This is important because it allows new instant messages to be received asynchronously, not forcing the user to reload his current page or some other technique.

The class defined in this file passes of information via cookies. `get_messages_from_db.asp`, when called will write information out to a cookie. `rslite.js` is included on the client-side, and automatically reads the contents of this cookie with a simple function call.

### 3.5.6 \instant\_messaging\get\_message\_from\_db.asp

This file retrieves all new messages for a user from the “InstantMesages” table in the online community database. It dynamically generates JavaScript code which it writes out to a cookie. When this cookie is read by the client, the code is executed, which presents the user with his new messages. Dynamically executing dynamically-generated code is admittedly not a best practice, but it was the most feasible way of both bridging the gap between client-side & server-side code and allowing a web page to retrieve new messages without having to reload. Since this code is rather small, and all static pieces abstracted out into `IM.js` as best as they could be, the dynamic situation is not problematic. Any amount of code larger than this is extremely unadvisable however, since it makes debugging a chore.

The code also updates the timestamps on messages as they are retrieved to indicate when they were read. On another pass through the database, it removes all entries older than the current time, effectively pruning the database of older messages that have already been read (messages that have not been read have a NULL value for the “dateread” attribute and are unaffected).

**Appendix H – Management and Administration of *NurseLife***

Management and Administration  
of

*NurseLife*

Marie Curie Cancer Care  
April 2003

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## 2 Introduction

Due to the dynamic nature of the *NurseLife* system, it is necessary to manage it daily to ensure that it remains up to date and useful to the nurses. Links must be updated, new forums created, and job vacancies updated to keep the nurses interested in the community.

This document details how the common tasks associated with the maintenance of the community should be completed. While this document does not describe in exhaustive detail every administration feature of the community, it does cover those that are the most important to the proper functioning of the community.

If a feature is not listed in this manual, it is not meant to remain unused. The majority of the features are intuitive once the basic structure of the community is understood and there are also on-screen descriptions of many of the features.

### 3 *NurseLife* Overview

*NurseLife* is an online community for nurses at Marie Curie Cancer Care (MCCC). The community is divided into several main areas: discussion forums, links database, calendar, job vacancy database, and *NursingNews*. There are also several other areas such as instant messaging and private messaging, but these areas require little or no administration and as a result are not discussed in this document.

Using administrative interfaces, forums can be created, modified, delete and organized into categories. Properties of these forums, such as who can post and whether file attachments are allowed, can also be fully controlled. Links, job vacancies, and *NursingNews* articles can also be created, deleted and modified. Calendar events that will appear for all users can also be created via the administration interface.

To aid in the task of administering the community, an administrator may appoint other users to “manager” or “forum moderator” roles, which give them the same rights as an administrator, but restricted to only one area of the website. With appropriate people selected for managing these smaller areas, the overall burden to the administrator should be significantly lessened. All of the website administration functions should be fairly intuitive to use and are organized into appropriate menus. In the following sections, access to this menu will be discussed, along with how to use most of the major administration functions.

## 4 Installation Guide

This chapter describes the initial installation of the online community onto a server running IIS and MS SQL Server.

1. Install and setup server platform (Windows 2000, Windows XP)
2. Note: IIS 5 must be used as the web server
3. Install and setup MS SQL
4. Unzip online community files into root folder or sub folder within the web server e.g. C:\inetpub\wwwroot if using IIS. Note: Ensure that folder containing community files enabled web sharing
5. Start up MS SQL Enterprise Manager
6. Connect to the database and select properties of the database
7. Under the 'Security' tab in 'Authentication' select 'SQL Server and Windows'
8. Hit OK
9. Navigate to database folder
10. Select 'Action' and 'New Database' and create a new database with the desired name and hit 'OK'
11. Navigate to the security folder and select 'Action' and 'New Login'
12. Select a login name and password for the account. Change the default database for the login to the database just created
13. Under 'Database Access' select database created earlier
14. Under 'Database Roles' select 'db\_dataowner', 'db\_datareader' and 'db\_datawriter' to enable read and write access and hit OK
15. Exit Enterprise Manager and begin Query Analyzer
16. Log in as Administrator and set database to database created earlier
17. In the white box copy the SQL Script included and hit the play button
18. Complete system configuration by visiting <forum root>/admin/forum-setup.asp
19. Select SQL Server Database option and enter IP of server, and appropriate user name password created in the steps prior
20. Remove 'bEmergencyMode = 1' line from constants.asp file
21. The web server must have write access to /newsletter/files/ as this is where nursing news file will be uploaded
22. Default username and password for administrator is 'Administrator' / 'changeme'

## 5 Administration Menu

This is a menu where all of the administration functions of the community can be reached from. It organizes the administration functions into logical groups for ease of use.

### 5.1 Access Administration Menu

NB: Administration can only be accessed by the administrator or a person given administrator privileges by the system administrator.

1. Log into an account with job administration privileges
2. Visit the administration menu page by clicking on the **Administration** link on the menu bar

### 5.2 Contents of Administration Menu

1. Visit the Jobs Administration page by following the procedure listed above.
2. Select the link on the menu (Figure 1) to the appropriate function you wish to complete.
  - a. **Global Settings**
    - **BBS Global Configuration:** General configuration of the community. E.g. Set up the database and forum domain.
    - **Template Message:** Set up template for various functions.
  - b. **User Maintenance Functions**
    - **Administrators:** Add administrators to the community.
    - **User Maintenance:** Edit / Delete, and Lockout users.
    - **Reset Who's Online:** Clears all names from "Who's Online"
  - c. **Forums / Messages**
    - **Categories:** Edit, add, and delete forum categories.
    - **Forums:** Edit, add, and delete forums.
    - **Copy forum settings to other forums:** Copy forum configuration settings, moderators, or user restricted access to forums.
    - **File Attachments Maintenance:** Delete attached files that may be inappropriate or wasteful of disk space.
  - d. **Miscellaneous**
    - **Bad Word Filter:** Select bad words and choose replacement.
    - **Ban an IP:** Input IP address to ban.
    - **Ban by e-mail address domain:** Ban users from inputted email address domain.
    - **Broadcast Message:** Mass e-mail message to all users.
    - **Calendars:** Add, edit calendars.
    - **MBBS Codes:** Review and insert MegaBBS codes that replace HTML tags
  - e. **Extra Features**
    - **Link to Newsletter:** Access newsletter page to add/edit/delete newsletter links. Upload newsletter.

- **Jobs Database:** Access jobs page to add/edit/delete jobs and categories.
  - **Links Database:** Access links page to add/edit/delete links.
- f. **Job Vacancies**
- **Add Job:** Add a job.
  - **Edit / Remove Job:** Edit and remove job postings.
  - **Remove Category:** Delete job listing categories.
- g. **Edit Managers**
- **Edit Job Vacancies Managers:** Add / Remove managers to job vacancies.
  - **Edit Newsletter Managers:** Add / Remove newsletter managers.
  - **Edit Links Managers:** Add / Remove links managers.
- h. **News Administration**
- **Create Article:** Create ASP formatted news article. Note that this file must still be manual linked from the main page. This link generates an ASP file with a news article and uses the appropriate header and footer.

Administrative Functions	
<b>Global Settings</b>	<b>User Maintenance Functions</b>
<a href="#">EBS Global Configuration</a>	<a href="#">Administrators</a>
<a href="#">Template Messages</a>	<a href="#">User Maintenance</a>
	<a href="#">Reset Who's Online</a>
<b>Forums/Messages</b>	
<a href="#">Categories</a>	<b>Miscellaneous</b>
<a href="#">Forums</a>	<a href="#">Bad Word Filter</a>
<a href="#">Copy forum settings to other forums</a>	<a href="#">Ban an IP</a>
<a href="#">File attachments maintenance</a>	<a href="#">Ban by e-mail address domain</a>
	<a href="#">Broadcast Message</a>
<b>Database</b>	<a href="#">Calendars</a>
<a href="#">Compact Database</a>	<a href="#">MBBS Codes</a>
<a href="#">Database Upgrade / Index upgrade</a>	
<a href="#">Repair Forums</a>	<b>Extra Features</b>
<a href="#">Purge Old Items</a>	<a href="#">Link To Newsletter</a>
<a href="#">Repair Users</a>	<a href="#">Jobs Database</a>
	<a href="#">Links Database</a>
<b>Job Vacancies</b>	
<a href="#">Add Job</a>	<b>Edit Managers</b>
<a href="#">Edit / Remove Job</a>	<a href="#">Edit Jobs Vacancies Managers</a>
<a href="#">Remove Category</a>	<a href="#">Edit Newsletter Managers</a>
	<a href="#">Edit Links Managers</a>
<b>News Administration</b>	
<a href="#">Create Article</a>	

Figure 1 The administration menu has links to all administrative functions

## 6 Forum Categories

Forums are organized into categories to make navigation easy. This chapter details how these categories are to be managed. These categories can be added, renamed and deleted

### 6.1 Add Category

3. Log into an account enabled as a Administrator.
4. Click on **Administration** on the side menu bar.
5. Click on **Categories** link under **Forums/Messages**.
6. Type new category name under **Add new category**
7. Click the “Submit” button.

### 6.2 Delete Category

1. Log into an account enabled as a Administrator.
2. Click on **Administration** on the side menu bar.
3. Click on **Categories** link under **Forums/Messages**.
4. Select the category(s) to delete in **Delete Categories**
5. Click the “Submit” button.

### 6.3 Edit Forum

1. Log into an account enabled as a Administrator.
2. Click on **Administration** on the side menu bar.
3. Click on **Categories** link under **Forums/Messages**.
4. Click the edit button next to the category you wish to edit.
5. Edit the category name as desired.
6. Click the “Submit” button.



## 7 Forums

Forums are areas in which users post and reply to messages. Each forum should have its own topic and only this topic should be discussed within the forum. Also forums may have moderators which act as local administrators within the forum. Deleting or moving inappropriate or off topics messages and possibly posting messages to prompt discussion.

### 7.1 Add Forum

8. Log into an account enabled as a Administrator.
9. Click on **Administration** on the side menu bar.
10. Click on **Forums** link under **Forums/Messages**.
11. Select **Add New Forum** in **Actions**
12. The “Creating/Editing Forum” page will appear.
13. Fill in the form and click the “Submit” button to add a new event.
14. Required Information
  - a. **Forum Name**: Name of the forum.
  - b. **Category ID**: The category under which the forum will be organized
  - c. **Forum Description**: A description of what is to be discussed in the forum
15. Advanced Features - Most of these options are self explanatory, however the most commonly used will be discussed here.
  - a. Registration required to post? – This should always be select as it allows registered users to post to the forum.
  - b. Closed to non-registered users? – This should always be selected so that only registered users can view the forum.
  - c. Is this a restricted forum? – This is a special type of forum that will generally not be used. Using this feature, only selected users may access the forum.
  - d. Allow Anonymous posts? – This allows user to post a message anonymously. There username is still associated with the message, however it is only accessible to administrators
  - e. Let registered users attach files to posts? – This should be selected to allow users to attach files to posts. The maximum file size should also be set to avoid excessive disk usage on the server.
  - f. There are many other options with full descriptions available. For most of these the default settings should be acceptable in most cases.

### 7.2 Delete Forum

1. Log into an account enabled as a Administrator.
2. Click on **Administration** on the side menu bar.
3. Click on **Forums** link under **Forums/Messages**.
4. The “Creating/Editing Forum” page will appear.
5. In **Actions** select the name of the forum(s) to delete
6. Click the “Submit” button

### **7.3 Edit Forum**

1. Log into an account enabled as a Administrator.
2. Click on **Administration** on the side menu bar.
3. Click on **Forums** link under **Forums/Messages**.
4. Select **Add New Forum** in **Actions**
5. The “Creating/Editing Forum” page will appear.
6. Click the **Edit** link next to which forum you want to edit
7. The “Creating/Editing Forum” page will appear.
8. Edit the forum properties as necessary and click the “Submit” button.

## 8 Links

This area is to provide links to webpage which are not part of the online community. For links to *NursingNews* use the *NursingNew* area. In this area links are provided with description. Categories are available to organize these links in a logical manner to aid in user navigation.

### 8.1 Manage Categories

Links are organized into categories. These make it easier to find a link if the list becomes long. Categories can be created, modified, or deleted as described below.

#### 8.1.1 Add Category

1. Log into an account enabled as a Links Manager.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Click **Edit Categories** in this form.
5. In “Add Category” type the name of the category to add.
6. Click the “Submit” button.

#### 8.1.2 Modify Category

1. Log into an account enabled as a Links Manager.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Click **Edit Categories** in this form.
5. Click the **Edit** link next to the category you wish to edit.
6. In “Edit Category” type the new name for this category.
7. Click the “Submit” button.

#### 8.1.3 Delete Category

1. Log into an account enabled as a Links Manager.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Click **Edit Categories** in this form.
5. Click the **Delete** link next to the category you wish to delete.

## 8.2 Manage Links

### 8.2.1 Add Link

1. Log into an account enabled as a Links Manager.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Fill in the form and click “Submit” to add a new link.
  - g. **Link Name:** Name of hyperlink.
  - h. **Description:** Description of link.
  - i. **URL:** Web page link will point to.
  - j. **Category:** Category link will appear under. Click on “Edit Categories” to add / edit / delete categories.

### 8.2.2 Delete Link

1. Log into an account enabled as a Links Manager.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers (see Figure 2).
4. Click the **Delete** link next to a link remove the link.

### 8.2.3 Edit Link

1. Log into an account enabled as a Links Manager.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers (see Figure 2).
4. Click the **Edit** to edit a link.
5. The name, description, category, and URL can now be edited in the form below.
6. Click the “Submit” button when done.

Other Links	
<a href="#">Marie Curie</a> Marie Curie Website	<a href="#">Delete / Edit</a>

General Web Links	
<a href="#">Submit a Link</a> Submit a Link to this website	<a href="#">Delete / Edit</a>
<a href="#">Google</a> Search Engine	<a href="#">Delete / Edit</a>
<a href="#">WPI</a> WPI Homepage	<a href="#">Delete / Edit</a>

**Add Link**

Link Name:

Link Description:

URL:

Select Category  [Edit Categories](#)

**Figure 2 Add / Edit / Delete Links from this interface.**

## 9 *NursingNews*

In order to utilize the *NursingNews* management feature it is necessary to understand how it functions. The user interface contains links to files stored on the local server. When adding a link it is first necessary to upload the file that will be linked to the server. Only once the file has been uploaded can a link to it be created.

### 9.1 *File Management*

These functions below manage the files available to link to for the *NursingNews*. For a link to be created the file must first be uploaded. File not linked to may be deleted if disk space is a concern.

#### 9.1.1 Upload File

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on *NursingNews* on the side menu bar.
3. In the “Add Link” form at the bottom of the page click the Upload/Delete Files link.
4. Click the browse button under “Upload File to Newsletter” and select file.
5. Click Submit (Note: It may take some time for large files to upload)

#### 9.1.2 Delete File

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on *NursingNews* on the side menu bar.
3. In the “Add Link” form at the bottom of the page click the Upload/Delete Files link.
4. Click Delete next to the file you wish to delete from the server (not this does not automatically remove the link)

### 9.2 *Manage Categories*

Links are organized into categories. These make it easier to find a link if the list becomes long. Categories can be created, modified, or deleted as described below. Note that a category cannot be deleted if it contains links.

#### 9.2.1 Add Category

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on Links on the side menu bar.

3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Click **Edit Categories** in this form.
5. In “Add Category” type the name of the category to add.
6. Click Submit.

### 9.2.2 Modify Category

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Click **Edit Categories** in this form.
5. Click the **Edit** link next to the category you wish to edit.
6. In “Edit Category” type the new name for this category.
7. Click Submit.

### 9.2.3 Delete Category

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on **Links** on the side menu bar.
3. The Add Link form will automatically appear to managers and administrators (see Figure 2).
4. Click **Edit Categories** in this form.
5. Click the **Delete** link next to the category you wish to delete.

## 9.3 Link Management

Using these functions the links that appear to the users can be created, edited or deleted. These links are to provide access to the *NursingNews* files, for general web links please use the links area.

### 9.3.1 Add *NursingNews* Link

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on **NursingNews** on the side menu bar.
3. The Add Link form will automatically appear to managers (see Figure 2).
4. Fill in the form and click “Submit” to add a new link.
  - k. **Link Name:** Name of hyperlink.
  - l. **Description:** Description of link.
  - m. **Category:** Category link will appear under. Click on “Edit Categories” to add / edit / delete categories.
  - n. **Select File Link:** File link will point to. Click on “Upload / Delete Files” to upload a file or delete a file. File can be of any type e.g. doc, pdf, etc.

### 9.3.2 Edit *NursingNews* Link

1. Log into an account enabled as a Newsletter Manager.
2. Click on **NursingNews** on the side menu bar.
3. Select “Edit” to edit an entry.
4. The name, description, category, and file can now be edited in the form below.
5. Click Submit when finished.

### 9.3.3 Delete *NursingNews* Link

1. Log into an account enabled as a Newsletter Manager or administrator.
2. Click on **NursingNews** on the side menu bar.
3. Click the **Delete** next to a link remove that link.

NursingNews		
<a href="#">Sample Entry</a>	There could be a link to a newsletter here	<a href="#">Delete / Edit</a>
<a href="#">Sample</a>	A sample Presentation (this could be any file)	<a href="#">Delete / Edit</a>
<a href="#">Submit NursingNews Article</a>	Submit an article to the NursingNews	<a href="#">Delete / Edit</a>

**Add Link**

Link Name:

Link Description:

Select Category

Select File Link

**Figure 3 Add / Edit / Delete *NursingNews* newsletter links from this interface.**



## 10 Jobs Administration

This area of the website contains jobs available within MCCC. These jobs can be created, edit, and deleted by administrators or area managers. The jobs are also organized in to categories to make a longer list more understandable.

### 10.1 Access Jobs Administration

1. Log into an account with job administration privileges
2. Visit the Job Vacancies page by clicking on the **Job Vacancies** link on the sidebar
3. A link titled **Jobs Administration** will appear at the top of the Job Vacancy Listings. Click on this link

### 10.2 Jobs Management

The functions below are used to add, remove, and edit jobs in the database. Again, for security purposes these may only be done by an administrator or jobs area manager.

#### 10.2.1 Add a Job

1. Visit the Jobs Administration page by following the procedure listed above.
2. Fill in the form (Fig 1.0) with the appropriate information provided.
  - o. **Category:** The group that the entered job listing falls into. A new category can be created by clicking on the **Add New Category** link
  - p. **Job Title:** The name of the position described
  - q. **Grade:** Grade of the position described. May not be available for some positions, in that case leave as "N/A"
  - r. **Short Description:** A brief one to two sentence description of the job vacancy.
  - s. **Long Description:** A detailed description of the job vacancy that may contain up to 500 characters
  - t. **Location:** Description of where the job vacancy is located
  - u. **End Date:** Date until applications and résumés are accepted
  - v. **Contact Information:** Name, address, email, and/or phone number of job poster. Can contain HTML code.
  - w. **Job Term:** Description of length of position i.e. Full Time or Part Time
  - x. **Other:** All other pertinent information not filled in elsewhere

# Marie Curie Cancer Care Job Vacancies Administration

[Edit / Delete Jobs](#)   [Delete Category](#)

Category:  [Add New Category](#)

Job Title:

Grade:

Short Description:

Long Description:

Location:

End Date:

Contact Information:

Job Term:

Other:

**Figure 4** The job administration page contains the form to add a job

## 10.2.2 Delete a Job

1. Visit the Job Administration page by following the instructions above
2. Click on the **[Edit / Delete Jobs](#)** link at the top of the page
3. Select jobs you wish to delete by crossing the box next to “Delete” for each job
4. Press the submit button on the bottom of the page

## 10.2.3 Edit a Job

1. Visit the Job Administration page by following the instructions above
2. Click on the **[Edit / Delete Jobs](#)** link at the top of the page
3. Click on the **[Edit Jobs](#)** link next to the job you wish to edit
4. A form similar to the **[Add Job](#)** form described above will appear with fields filled in with job information
5. Modify the job listing as you wish
6. Press the submit button on the bottom of the page

Centres		
<a href="#">Centre Manager</a>	Manage the Edenhall Centre	<a href="#">Edit Job</a> Delete <input checked="" type="checkbox"/>

**Figure 2** [Edit / Delete Jobs](#) page allows both the user to either edit or delete jobs

## **10.3 Category Management**

The below functions describe how to manage the categories in which the jobs are organized. Note that if a category containing jobs is deleted all jobs within that category are also deleted.

### **10.3.1 Add a Category**

1. Visit the Jobs Administration page by following the procedure listed above.
2. Click the **Add Category** link in the form
3. Type the name of the category.
4. Click Submit.

### **10.3.2 Delete a Category**

1. Visit the Job Administration page by following the instructions above
2. Click on the **Delete Category** link at the top of the page
3. Select the category you wish to delete by crossing the box next to “Delete” for each category
4. Press the submit button at the bottom of the page

## 11 Select Managers

Managers are users selected to manage a certain area of the website. These areas include the links database, *NursingNews*, and job vacancies database. These users have partial administration privileges in that they have access to administration function for the area in which they are assigned to administer. Only an administrator can select the managers.

### 11.1 Add / Remove (Jobs / Links / Newsletter) Manager

1. Log in as an administrator.
2. Visit the Administration Page.
3. Under “Edit Mangers” click the area of manager you add or remove managers from.
4. The left pane lists all current Managers in this area. The right pane displays all users not currently administrators. As seen in the figure below.
5. To remove a manager, select the name to remove from the left pane (or hold down Control and select many names) and click submit.
6. To add manager, select the name to add from the right pane (or hold down Control and select many names) and click submit.

Managers List : Links	
Currently allowed users	User list
houng zlewko	Administrator Bello Farva hello JaneP kangai nicke nina nirvdrum nirvdrum2 test3 testguy testing testing1 testing123
Remove >>	<< Add
<input type="button" value="Submit"/>	
To select multiple usernames, hold down the control key while clicking	

**Figure 5** The Add / Remove Managers pages allow you to add and remove managers

## 12 Calendar

The MCCC calendar is the calendar of events for all MCCC nurses. It can be used to inform the nurses about any upcoming event which may affect them. Because this page reaches all the users only administrators can modify it.

### 12.1 Add Event

1. Log into the system as an administrator or calendar moderator.
2. Click on **Calendar** on the side menu bar.
3. Click on **MCCC Events** link under **Calendar**.
4. Click on date of the event to add.
5. The “Add a calendar event” page will appear (see Figure 2).
6. Fill in the form and click “Submit” to add a new event.
  - a. **Short Description:** Short description that will be displayed on the calendar.
  - b. **Long Description:** Longer description seen when user clicks on event.
  - c. **Time of Day:** Select “All Day” or enter time of day event occurs.
  - d. **Recurrence:** (Note: This feature is shown when **Advanced Features** is clicked) Set how often this event occurs.
  - e. **Private Event:** This allows administrators to add an event to personal calendar. This is automatically on when adding an event in **My\_Events** in simple mode.
  - f. **Disable HTML:** Turn off HTML tags in event description.
  - g. **Allow Signups:** Allow users to sign up for event.

### 12.2 Delete Event

1. Log into the system as an administrator or calendar moderator.
2. Click on **Calendar** on the side menu bar.
3. Click on **MCCC Events** link under **Calendar**.
4. Click on the event to delete.
5. The view event page will appear.
6. In “Actions” at the bottom of the page click delete
7. You will be asked to confirm the deletion. Click Submit.

**Add a calendar event**

Short Description :

Long Description :

Time of day :  Event occurs all day  
 Event occurs at :  :

Recurrence :  Event happens one time on :  (dd/mm/yyyy)  
 Event happens daily  
 Event happens weekly on :   
 Event happens monthly on :  (dd)  
 Event happens yearly on :  : Month (mm)  : Day (dd)

(choose one) Date Range: (recurring events only)  
 Occurs indefinitely  
 Occurs over a date range  
 - Beginning date  
 - Ending date

Private event?  
 Disable HTML?  
 Allow signups?

**Figure 6** Add events from this interface.