Funding New Technology

for the Charles Dickens Museum

An Interactive Qualifying Project Report
submitted to the

Charles Dickens Museum

and to the Faculty

of

Worcester Polytechnic Institute
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by

_____
Casey Beaulieu

_____
Barrett Franklin

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Jocelyn Lally

_____
John McAleer

Project Liaison: Florian Schweizer

Abstract

The Charles Dickens Museum required a feasibility study for a new digital cataloguing system and assistance with completion of a grant application for funding to implement the system. We researched the grant application, studied potential cataloguing software vendors and the Museum's ability to fund ongoing costs after the conclusion of the grant period. The feasibility study and our recommendation for the best software vendor enabled the Museum to make an informed application to the Arts and Humanities Research Board.

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1.0 Executive Summary

The aim of this IQP included conducting a feasibility study of a Collections Management System (CMS) for the Charles Dickens Museum, with Florian Schweizer, Assistant Curator. Bringing this new technology to the Museum required funding and resources that lie outside those available to the Museum. To acquire these resources, the Museum is applying for a £300,000 grant from the Arts and Humanities Research Board (AHRB), spread over three years, to acquire the software, labour and hardware resources necessary to complete their mission. The Museum's requests of our project team included the recommendation of a suitable software package from a reputable vendor that would meet their requirements, conducting a feasibility study of the project and conducting researching for and drafting responses for the grant submission to the AHRB.

The Charles Dickens Museum houses possibly the most extensive collection of items related to Dickens's life. The Museum is located at 48 Doughty Street, in London, UK, where Dickens lived from 1837 to 1839. The Museum is restored to look as it would when he lived there and includes many items from his lifetime. It also includes a Library with editions of Dickens's novels and a research room housing books that critique Dickens's writings, newspaper clippings, photographs, portraits and illustrations. Overall, the items in the Museum number approximately 100,000. Since no central standardised catalogue of these items existed, and there was no way to access them without being physically present in the Museum, the Museum decided to catalogue all of its items and make the collection available to the public via a searchable Online Public Access Catalogue (OPAC). The Museum also wished to include a unique searchable topic mapping interface, drawing from their catalogue, with associations created by members of their staff.

Research for this project began with the Request for Proposal (RFP) document, sent to potential software vendors in January 2004. The document listed several specific requirements the Museum had for the Collections Management System. First, an initial software comparison was made, and responses were input into a data matrix noting whether companies had answered "yes" or "no" to each requirement. Some companies were initially rejected, since they did not comply with important requirements or they were out of the price range. Then, sections of the RFP were rated to determine which of the requirements were most important. Using this qualitative basis, the companies were further analysed. Several of the more important factors

included whether the company had separate modules to accommodate for the Library, Archive and Museum Collections, that it complied with accepted cataloguing standards (MARC, AARC, Spectrum and ISAD(G)), that it had capabilities for an Online Public Access Catalogue and a report generator so the Museum could manage their holdings. These and other factors were used to simultaneously compare the short list of software finalists.

Once the list was narrowed down to two vendors, interviews were conducted with supplied customer names to get a perspective on the company and the software in action. These interviews were conducted at the Victoria and Albert Museum, the British Museum's Compass Group, the London Transport Museum and the Wallace Collection, with members who had been involved in the respective cataloguing projects. These interviews provided valuable information concerning the companies that were being considered, as well as the undertaking of the cataloguing itself. After conducting the company evaluation and feasibility study of its integration with the Museum's mission, it was clear that the software vendor System Simulation, Ltd. (SSL), and their proposed software, Index+ was the recommended software choice. SSL, with an office in Covent Garden, close to the Museum, received highly favourable reviews from members on its impressive list of customers. Their programmers are highly skilled and the software is very customisable to suit the needs of the Museum. Their proposed price also includes these initial customisation costs. It is highly recommended that the Museum's staff members who will use the system work with SSL to plan both the entry interface and the searchable OPAC interface. After implementation, customisations can still be made, but this is expensive. SSL was contacted with follow-up questions and clarifications, to ensure that this system would truly be what the Museum wanted.

After making a recommendation of this software, a study of the feasibility of the project was conducted. The factors that needed to be researched included assurance that the project would be completed in three years, that the software would integrate with the Dickens Museum Classification Schema and have XML capabilities to implement the Topic Mapping Schema. Interviews with those who had already undergone cataloguing projects similar to this, particularly the heads of collections at the Victoria and Albert Museum and the Wallace Collection, provided useful information on the feasibility for the entering of records for the collection within the allotted three years. Both suggested services to download standardised records or to convert card catalogues to digital catalogues to import into the database, rather than

physically creating records for each item. Also, one of the main capabilities for the system the Museum wished to have was a Topic Mapping Search interface, which would allow for search of the catalogue through associations in the holdings of the Museum created by the cataloguer, used for research and academic purposes. This topic mapping capability provide users of the Museum's site a unique educational way to search their catalogue, learning new associations identified by a Dickensian scholar that they perhaps did not know. The Topic Mapping Scheme may also be a generic tool, adapted and used by other museums and libraries with similar cataloguing schemas. Another essential portion of the feasibility study included an examination of the ongoing costs that will need to be paid by the Museum for the system after the expiration of the grant as well as how the Museum could pay for them.

The last portion of the project, the recommendations made for the AHRB Resource Enhancement Scheme Application, integrated the previously conducted research to put forth a best effort for a successful application. The research includes careful study of the requirements of the grant and the application itself, in addition to case studies of previous applications. Ensuring that the drafted application presented for the Museum's project showed that their aims of their project coincided with the ideals of the Arts and Humanities Board. The AHRB is a grant giving organisation which funds projects for higher institutions or their associates. The Charles Dickens Museum is applying for this grant as an associate of Queen's University Belfast. The grant monies will be used to cover costs of software, hardware and labour. Three staff members will be hired, including a librarian, archivist and post-doctoral research assistant. The librarian and archivist will work at the Museum, while the research assistant will work under the supervision of Dr. Leon Litvak, the grant representative from Queen's University. The University will also host the server storing the catalogue and will be responsible for its general upkeep.

Our project team was able to submit drafted responses to approximately 75% of the grant application, integrating the research of the software capabilities, the requirements of the Museum and what it will do, as well as the future impact of the system. The Collections Management System and the future project plan depend wholly on the acceptance of the grant application. The application, due 28 May 2004, will either be accepted or denied in November of 2004. If the grant is accepted, a drafted schedule completed by our project team and Mr. Schweizer will commence. Pending a successful application, the Museum's catalogue will

provide access to the general public to a unique interface to learn from one of the great writers of England.

2.0 Introduction

It is a common problem for smaller museums, such as the Charles Dickens Museum, which employs a total of six staff members, to keep the information contained in their large collections well organised and accessible. The Charles Dickens Museum is an international research centre dedicated to the life and works of Charles Dickens, which consists of a Library, Archive and Museum Collection. The Library is a room in the Museum which houses different editions of the works of Dickens and is open for exhibition to the public. The Archive, located in the basement, houses books concerning Dickens, catalogues of portraits, photographs, illustrations, newspaper clippings and images of Dickens' life, and is open to researchers and enthusiasts by appointment. The rest of the house is the Museum, which has been refurbished as it would have looked when Dickens lived there from 1837 to 1839. The Museum displays a collection of artefacts from his life, and is open to the public (http://www.dickensmuseum.com). Our project started in March of 2004 at which point the Museum did not have a comprehensive standardised digital catalogue of all of the items, which extends to an estimated 100,000 objects. The physical collection held within the Archives has begun to deteriorate over time from sifting through it as well as the previous efforts to digitise portions of the collection. Although to date, no complete catalogue has been attempted. Before the start of this Collections Management Project, the contents of the Museum's Library Collection and Archives were only available to researchers in person, limiting its access to patrons who are able to visit the Museum. The Museum hopes that a complete Collections Management System (CMS) with capabilities for an Online Public Access Catalogue (OPAC) will make information on Dickens more readily available and stimulate interest in Dickens and bring more people to the Museum to view the physical collection.

The Charles Dickens Museum desired the IQP to focus on ways of making their collection of 100,000 photographs, writings, and miscellaneous items digitally catalogued and available to the world, with a unique search interface. As electronic catalogues have become more advanced and widespread, the expectations of the general public and researchers have grown, which is challenging for smaller museums to keep up with rising expectations. The expansion of new technologies requires obligations that a small museum is hard pressed to fulfil. These obligations include the labour needed for the manual installation of the new software and hardware, the expertise needed to catalogue a standardised collection, and the financial costs

incurred for implementation and general upkeep. Determining which software programs would ease some of the burden of the Museum was a goal of this project. The system would enable such specialised collections to have their information available to the public and could truly benefit researchers and enthusiasts around the world.

Ideally, the Museum would digitise and catalogue their entire collection with a new public database. At the outset of our project, no comprehensive database of the items existed, which restricted information available about the collection. Because no central database existed, operations were inefficient and cumbersome to the staff, who had to physically leaf through the collection to search for information sought by researchers around the world. The successful execution of a new system would alleviate the strain on the staff and allow them to focus on other interests and venues. Implementation of a proper cataloguing system required resources which were unavailable to the Museum. These resources included a software package for inputting bibliographic records files, information technology and hardware, and an experienced cataloguer and archivist to enter the items into a standardised database. In order to get assistance in these areas, the Museum sought the aid of grant makers to implement their Collections Management System.

Obtaining assistance from outside sources required our team to research the Arts and Humanities Research Board (AHRB), whom the Museum hoped to approach for the necessary funding. In order to acquire such a grant, a considerable amount of research needed to be completed to ensure that the requirements of the Arts and Humanities Board were integrated into our project design. For instance, it would be desirable to have a database which follows the Anglo-American Cataloguing Rules (AARC). Furthermore, following these rules and implementing the Machine Readable Cataloguing Standards (MARC) would give more authority to the cataloguing efforts. These standards and other requirements were specifically expressed by the Museum in their Request for Proposal (RFP), which was sent to possible software suppliers. The answers from the responses were highly considered in the decision making process forming the team's recommendations for a short list of three software packages which best met the requirements. Similarly, the issues which surround hosting the collection online through and Online Public Access Catalogue needed to be researched and included in our team's evaluation of software proposals. It was evident that extensive research into the design and implementation of the unique and innovative user interface for the Museum catalogue was necessary. As a result

of our research, recommendations would be made to the Museum on approximately 60% of the grant application as well as a short list of recommended software vendors who could complete their requirements for the CMS.

The Museum had its own unique cataloguing technique which was implemented in 1984 for the books located in the Library and Archives of the Museum, the Dickens House Classification Schema, designed by Kevin Harris. The classification system describes aspects of Dickens' life in terms of a Victorian personality, and it was hoped that this schema could be used as a generic tool by other museums to describe other Victorian personalities. It was our intention to integrate this schema with a topic mapping search method—an intuitive search method which uses the data output from the chosen software program—as a useful generic tool to present to the Museum community. To understand how to make this cataloguing technique used by the Museum useful, our team needed to recognize how the cataloguing system worked.

The Access database of Archive photographs and illustrations created by the previous IQP teams for the Museum is incomplete and was never intended to contain the entire collection. This does not indicate that the teams did a poor job, but that the Museum's requests at the time did not require a complete catalogue. Since the completion of the previous projects, the overall scope of the cataloguing project had developed; the previous projects were a significant foundation, and show continuous efforts on the cataloguing system. The latest efforts were focused on a new system containing the whole collection; standardised with the ability to support Internet access. These concepts came from the initial interview conducted with Florian Schweizer (personal communication, 29 January 2004). It was the Museum's wish for the catalogue to be beneficial to their staff and expandable to fit their needs and therefore a software package had to be chosen that met their requirements and the preferences of those who would make use of the system the most.

The project research began by understanding the requirements that the Museum staff identified as being crucial to the Collections Management System as features it must include. The staff members at the Museum working on the project identified these requirements collectively. By gaining expertise and understanding of the key cataloguing standards and how they pertain to museums of similar size, our team was able to better identify a suitable software package which would be compatible to import and export data in these standards.

By informally interviewing people who were in charge of the Collections Management System for the Dickens Museum, we were able to get a better understanding of which requirements of the system were more important than others. These helped in our evaluation of the software matrix and choice of the best software package. Interviews conducted with the staff on the current cataloguing methods gave our team direction on how to pick a software package that allowed customisation for the desired search method using the schema the Museum already had in place. By gaining expertise and understanding of the key cataloguing standards and how they pertain to museums similar in size to the Charles Dickens Museum, we were able to advise the Museum to implement a system that met the specifications of professional standards and their needs. The outcome for the Museum was a short list of software programmes, with a recommendation for the strongest candidate, which would appropriately meet their needs to completely inventory and digitally catalogue the collection. It was also ensured that the chosen software allowed the option of putting aspects of the collection online, with the ability to integrate the innovative search method using topic mapping geared toward similar museums. The Museum was also presented with a well researched draft of the AHRB application and a project time table pending acceptance of the grant.

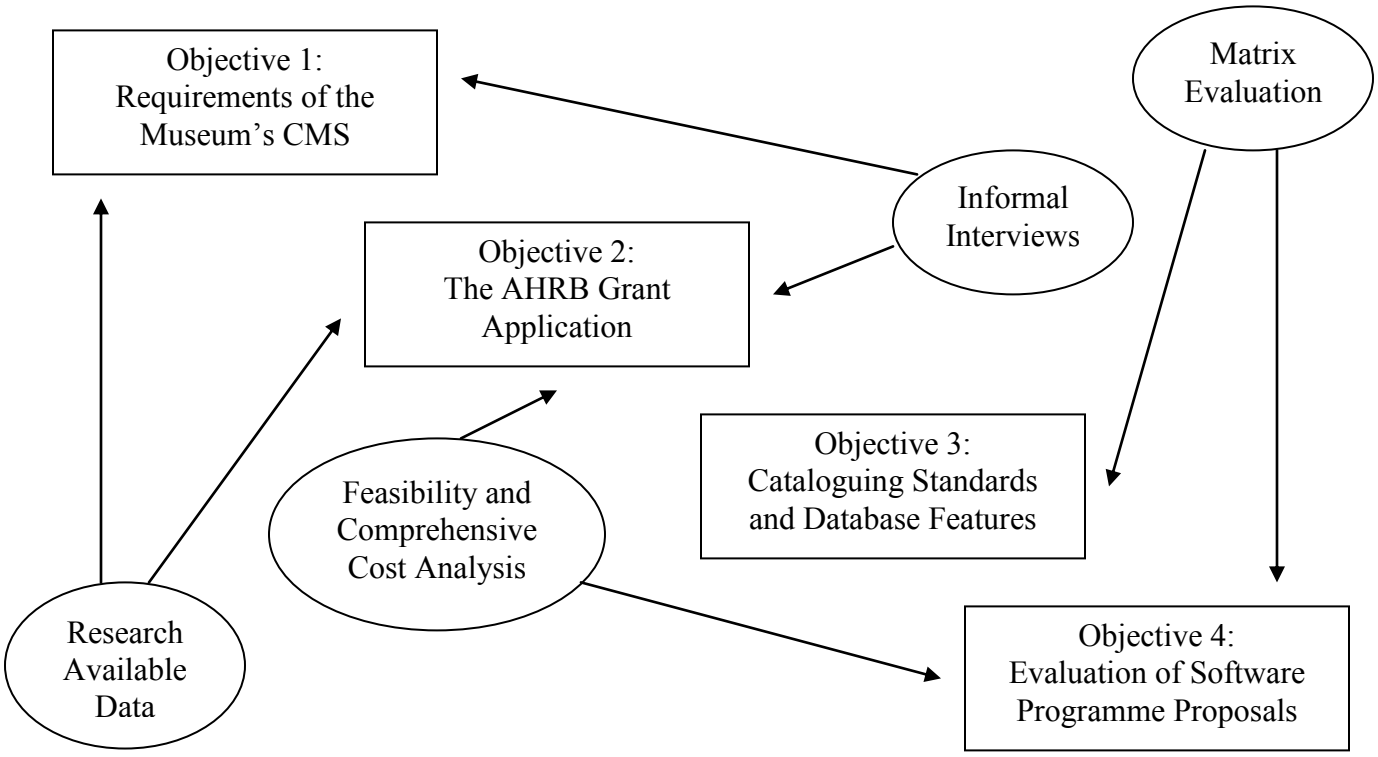
3.0 Background

From the perspective of the Charles Dickens Museum, the core issues of our project were preserving the integrity of their physical collection, making it available to the public and researching the necessary steps needed to gain resources, both monetary and technological, in order for the project to be feasible. To effectively complete this project, a short list of suitable software programs was recommended, which allow for a unique search method to be implemented at the Charles Dickens Museum and possibly other museums of similar size.

Our proposed recommendations encompass the following factors: the Museum's requirements for the Collections Management System (CMS) and Online Public Access Catalogue (OPAC), the unique Victorian personality schema the Museum uses as its classification schema, the guidelines and preferences of the Arts and Humanities Board, the cataloguing standards that the CMS should include, and evaluation of cataloguing software solutions that are appropriate in our project. These concepts were important because they identified core areas for our group to focus attention on to proceed with project work. Their order is a natural progression needed to complete our project. First we had to understand who the sponsor was and what their vision is for the cataloguing system, the system they already have in place, and understand the requirements they have researched and outlined to potential software vendors. Next we explored the details of who the Museum was approaching for funding, and the cataloguing standards which needed to be applied in our project and software evaluations. Finally, the software solutions were researched and recommended to help the Charles Dickens Museum with their CMS. In the following section, we define each concept of our research, describe which aspects of the concept are useful to our project and explain how they helped our research and the development of our project.

The following figure (Figure 3.1: Research Concept Map) depicts the concepts which required understanding by our team in order to conduct our research and complete our project, and how they relate to each other.

Figure 3.1: Research Concept Map



3.1 The Charles Dickens Museum

In order to successfully complete our project, we required a more complete understanding of the background of the Museum and its operations, the standards currently used to catalogue their library, the previous cataloguing efforts that have been made and the requirements for the Collections Management System (CMS) that were decided upon and sent out to potential software vendors. This allowed us to further understand why the Museum wished to digitise their collection and helped us throughout the progress of the project. Researching the history and operations of the Museum provided an understanding of their missions and philosophies, especially when applied to this cataloguing system. The Museum currently uses the Dickens House Classification System designed by Kevin Harris, which separates Dickens's life into detailed categories, including his works, biographies, criticisms, and cross referenced to include other details, such as location, chronology, family members and influences. In addition to the card catalogue, there have been two previous IQP projects completed to digitise portions of the

collection. To further the efforts and create a standardised and complete CMS, the Museum put together their specific requirements for the system in a Request for Proposal (RFP) sent out to possible software vendors. Understanding these concepts was the first step our team took in evaluating what type of system would best fit with the Museum's requirements.

3.1.1 History of the Charles Dickens Museum

The Charles Dickens Museum, located at 48 Doughty Street, in London, England, was once the home of the famous Victorian author, from April 1837 until December of 1839. During his period of residence in the house, Dickens published some of his most famous works, including *Oliver Twist*, *The Pickwick Papers* and *Nicholas Nickelby* (http://www.dickensmuseum.com). Dickens moved into the house shortly after marrying Catherine and during their stay she bore two children. After 1839, the family moved near Regent's Park, which was destroyed in 1959. The Doughty Street home was under threat of being torn down in 1923, but was saved by the Dickens Fellowship. In 1925, a Museum was opened at the location by the Fellowship and now the house is the "world's foremost repository of Dickens related material and remains the worldwide headquarters of the Dickens Fellowship" (http://www.dickensmuseum.com).

The Dickens Fellowship, which saved the house from demolition, is comprised of Dickens enthusiasts, and was established in 1902. Their mission was to create an unparalleled archive of materials belonging to and related to the life and works of Charles Dickens. Also, *The Dickensian*, a journal published about three times a year for members of the Dickens Fellowship, is published from the house (Dickens House Museum Brochure). The Museum that stands at 48 Doughty Street has been restored to appear as it would have when Charles Dickens lived there, including several pieces of furniture and other articles he owned, and physical items including original drafts of his novels, first editions, original illustrations and portraits. Besides the physical collection on display, the Museum houses the most extensive collection of Dickens related material, including portraits, illustrations, books and newspaper clippings (Dickens House Museum Brochure).

3.1.2 Previous Cataloguing Efforts

In order for our team to understand the previous cataloguing efforts made by the Museum, we first researched the two previous IQP projects completed at the project site, since this information was most readily available to us before travelling to the project site. This information was helpful because it gave us insight into the Museum's operations, as well as technical data on the previous cataloguing efforts, explaining their progress and where the projects were left. They also provided our team with information about the Museum's goals for digitisation, in order to preserve precious items in their collection. It was necessary to study these projects, because the past teams went to great lengths to research the best options to digitise the collection, and their choices were made for good reasons. Our research and design kept the spirit of the Museum's intentions for the project as outlined by the previous teams, but the scope extends substantially beyond theirs. Researching the previous projects and learning about their accomplishments helped us realise and work toward the Museum's ultimate goals for the future of its collection.

The two previous projects, "Dickens House Museum Photography Collection" (2002) and "Creating a Collections Management System" (2003) provided important background information on the Museum. Both projects stressed the need of the Charles Dickens Museum, like many libraries and museums, to preserve the integrity of its collection, as it has deteriorated over time through physical handling of objects (Burkart 2002, Kakorous 2003). Both projects digitised a portion of the collection, illustrations and portraits, and created a searchable database, in hopes to preserve the quality of the items. However, in order to truly preserve the integrity of the system, a complete and integrated catalogue of all of the various collections needs to be combined in one central, standardised database. An incomplete catalogue, in this case, may be as damaging as none at all. It was our goal to aid the Charles Dickens Museum in gathering the necessary resources and choosing a system which best fits its intentions for an inclusive catalogue of the priceless collection.

Understanding the concerns of the Museum, which precipitated the request for a cataloguing system in the past, was very beneficial to the project to understand the long term goals for the collection. The previous projects were not intended to encompass the entire collection, but to work with the existing resources of the Museum to begin a digitisation project. Though the previous efforts were not as extensive as this project, the fact that other attempts

were made shows a strong interest on the Museum's part of a comprehensive digitisation project, which will help them in the grant application process. The reasons why the Museum seeks to have a comprehensive digital collection were studied by Kakorous et al (2003). One reason is that the staff receives many requests for prints in the collection, which requires them to be able to quickly search for pieces, with inconsistent searchable details. With the lack of a complete central database, we realised this can be a very time consuming task for the staff. The physical searching and sifting through the cabinets for these items, as pointed out by the previous project teams, damaged the integrity of the system and precipitated the project. Because of these reasons, the Museum wanted not just a digital database, but also a searchable, standardised and integrated catalogue.

An ideal system for the Museum would include a digitised database of their collection, with the staff and researchers referring to the scanned image, rather than the actual item. Mr. Rodney Obien, Archivist for the WPI Gordon Library, recommended three copies of each image for the database. The first is the "archive" copy, which is taken at a very high resolution and serves as the best digitised copy. This copy will primarily be used exclusively by the Museum. The second is the "working" copy, which is the copy that researchers will likely be able to view when in the Museum. This is at a medium resolution; large enough to gather information but not cumbersome to the digital storage. The third is the "thumbnail" image, which is at a very low resolution and is used primarily for identification purposes. With the Museum's wishes to eventually have the catalogue on the Internet, the thumbnail image is what will likely be posted, as the low quality will deter unauthorized use. Having all three of these images for each specific function in the Museum's database will decrease the need for staff members to physically sift through the items in the filing cabinet. The ability to archive different versions of pictures is a feature that the software package to help with the Collections Management System should have. For pure research and identification purposes, scanned images of the items are sufficient, and would replace the need to actually hold the item. In this way, digitising the collection will uphold the integrity of the system. If putting the database online increases use and interest in the collection, by having both the working and archived copies at the disposal of the researchers and staff, the integrity of the system will be maintained.

The previous project team went through great lengths to create a collections management system that could encompass the illustrations portion of the collection, while also integrating

previous databases (Kakarous 2003). They made future references to changing the database over to Past Perfect and MySQL. Past Perfect was ruled out by the previous group because of cost and lack of knowledge of the program. However, since the Museum is applying for grant money, funding is not such a limiting factor now as it was then. Our group considered this program, as it may have had many added benefits which the current system is lacking. MySQL was ruled out by the previous group because its benefits of internet capability were superfluous, since at the time the Museum did not have immediate intentions of hosting the database online. Since the Museum was applying to grant makers for financial assistance, it was possible to choose software that was most appropriate for the database, rather than limiting choices based on monetary resources.

The previous IQP groups identified many sources of information that were helpful to our project team, such as sources both in Worcester and London who could help us choose a system which met the specified needs of the Museum. Also, they identified and investigated similar systems, such as those used at the Library of Congress, the British Museum, the Worcester Art Museum and the WPI Gordon Library. Referring to these sources was helpful to determine the scope and usability options available.

Both of the project teams recommended the Museum put their collection online (Burkart 2002, Kakorous 2003). They also researched the consequences of taking these steps, which our team considered as the eventual catalogue of the Museum will be hosted online. The previous teams mentioned making watermarks on the pictures and also reducing the quality of the print, to maintain the integrity of the collection as intellectual property of the Museum (Kakarous 2003). Being aware of the consequences of hosting online, as well as the benefits, and the vision of the Museum to create a new way of searching a database online with great significance in similar situations, our team took the necessary steps to ensure that the Museum would ultimately have a system that worked with its resources and fit their needs.

Researching the existing system implemented by previous project teams was helpful to us; we learned of potential road blocks and things to consider in our project. Also, it was integral for our project team to study what kind of system the Museum was working with. However, there were major differences which set our project apart from the previous. Our project was not a continuation, completing work that was started by another team, but it did deal with the same theme. Rather than continuing to take small steps toward the goal, our project was to design a

plan to help the Museum satisfy the overall goal they have been trying to reach from the start. Since the project dealt with the same theme, it was necessary to study the decisions made by previous teams. Their projects did not complete the entire scope, but they kept with the mission of the Museum. Since our project was to devise a system and apply for a grant that will eventually complete the digitisation of the collection, the research already performed in this area was invaluable to us.

3.1.3 Requirements of the Museum – (RFP)

Members of the staff of the Charles Dickens Museum, with the help of members of the Dickens Fellowship, compiled a list of requirements and features they would like their Collections Management System (CMS) to have. These requirements were sent out as a Request for Proposal (RFP) to potential software vendors. (See Appendix 8.2). The RFP gave vendors an idea of the Museum and its mission, general requirements of the system, as well as a detailed list of specific features that the software should be able to meet. The Museum outlined a timeline of installation of the system in Spring of 2005, after the anticipated receipt of the grant from the Arts and Humanities Board. In general, the Museum wanted the system to be able to handle cataloguing and bibliographic record maintenance, support an Online Public Access Catalogue (OPAC) and be able to generate reports that will help the Museum manage its collection. The Museum asked vendors to give hardware and software quotes, and required that their companies install, train the staff members, and be available for maintenance and enhancement of the system. This RFP prepared by the Charles Dickens Museum was very important to our project, as it outlined what the Museum wanted specifically in their system, and was used extensively to compare and contract the different software package descriptions submitted to the Museum.

3.1.4 The Dickens House Classification Schema

The Dickens House Classification Schema is unique to the Museum because it was designed specifically for the Museum to include all aspects of Dickens's life. Understanding this system was a major goal of our research, because the Dickens Museum wanted to use this cataloguing schema along with the output of data from the CMS to create a topic map searchable interface. The Museum hoped that this could be used by other museums to describe other Victorian personalities and that the topic map method of searching could be a useful educational

tool. Using output data in the form of XML to be consistent with standardised fields from the software package, a flexible user interface will be created. The Museum hoped that its schema can be applied to other institutions, by simply changing the categories to fit the lifestyle of the personality being described. The members of staff at the Dickens Museum feel the schema created by Kevin Harris is ideal for other museums because it is fully developed in areas of Dickens's personality, which reflects many common themes among typical Victorians. This is why it was imperative that our team look closely at the output of data from the chosen software package, since the Museum hoped the collection would eventually integrate with other institutions with an innovative and educational search technique.

3.2 Understanding the Preferences of the Arts and Humanities Research Board

We needed to understand the preferences of the Arts and Humanities Research Board in order to increase the probability that the Museum's grant proposal to the AHRB would be accepted. By looking into previous grants that were awarded, as well as the specific requirements that are put forth by the Board, we were able to modify and highlight the aspects of the proposal that would be more appealing to the Board. By the end of May 2004 the Museum will have submitted their application for the Resource Enhancement Scheme, which allots £300,000 dispersed in increments of £100,000 per year, over a three-year period (Arts and Humanities Research Board [AHRB] Details of the Resource Enhancement scheme, 2003). One of the main purposes of the scheme is to ensure that the collection is either preserved or made available to a wider audience than it is currently (Arts and Humanities Research Board (AHRB Guide to Awards, 2003). Another aim of the scheme is to "support creation and development of generic tools for use in the exploitation of research materials and resources…" (AHRB Details of the Resource Enhancement scheme, 2003). This meets one of the Museum's main goals namely their desire to be able to contribute an innovative use for a cataloguing technique. In the 2002-2003 running for the grants, there were 44 Museum and Galleries Project Fund applications and only 21 were awarded (http://www.ahrb.ac.uk). This is only a percentage of 47.7% of awarded projects, less than half, which shows that simply making an application to the board does not ensure an award. Therefore, it was important to analyse what the Board had deemed a worthwhile investment and make the application comply with these findings.

One of the Board's main goals is to help expand the wealth of knowledge from research and its results to the public and the research community (AHRB, 2000). This was an excellent starting point in our research, since a goal for the Dickens Museum is to finish digitising and cataloguing their collection and make it readily available to the public. We were able to adjust the focus to how the database could aide research as well as granting the research community greater access. Parts of the AHRB's mission include incorporation of Information and Communication Technology (ICT), which is also another one of the fundamentals in the Dickens proposal (AHRB, 2002). These are some things that we encouraged the Dickens Museum to emphasise in their proposal to reflect a project that fits with the purpose of the Board and embodies the type of project it finances. We feel that the proposal the Museum will submit in May 2004 is one that strikes the main elements the Board is looking for. In addition, it was necessary to look deeper into other projects that were given awards and see what similarities they may have with the Dickens proposal, and what makes these projects stand out.

The Museum would like to finish cataloguing their collection and one particular application, accepted in 2001; "English Labouring Class Poets 1700-1900" is comparable to the completion of a Victorian Personality Schema. The English Poets and Charles Dickens share a historical basis. The main goal of the project was to research and discover lost poetry written by the labour class between the years 1700 and 1900, and specifically by men. The proposal argued that the feminist movements had found most of the literatures written by women, but the larger portion of the working class were men, and their input to the literature of this time was of major importance to a making a complete literary record. The project applicants attempted to make a complete volume of the poems that were made by these men. This gave us the impression that the Board is interested in projects that attempt to complete a previously started collection of important information. The applicants felt that by filling in the previously omitted poems and other forms of literature that it would make it possible to gain a greater understanding of the English poetry of that time and benefit the way it is taught (AHRB, 2002). Thus the interest in this project may have come from the completion of the inventory, but also that it would clarify the times and give a clearer meaning that can be used in an academic area. All of this could potentially benefit the Dickens Museum, the way they shape the purposes of the project and how it is presented in the proposal. We have also recommended that with the completion of the application that the Dickens Museum highlights that after completing of the application, the

Dickens Museum highlight the completion of the Dickens catalogue and the benefits it would have for the research community and the understanding of Charles.

A second successful application "A comparison of the information seeking behaviour of mono and interdisciplinary researchers" studied the different methods of searching techniques used by researchers (AHRB, 2002). The author of this proposal, Allen Foster of the University of Sheffield studied the methods of researchers and the uses of mono research methods and interdisciplinary methods. He was trying to test the methods of research and which ones were the most effective to getting the desired results. He proposed to determine the results through the use of questionnaires and interviewing the researchers. This shows the Board is also interested in researchers and their methods of research. The Dickens Museum is attempting to find a catalogue system that will best fit the methods of the researchers that use and are interested in Charles Dickens, but are also interested in coming up with a new method of searching and going through databases. This is another example of what the Museum should focus on in their proposal and bring it forth to the attention of the Board.

These typical projects were successful in obtaining their desired grant money from the AHRB that we had initially researched. We needed to gain a better understanding of the types of applications the Board looks into and what they are more likely to accept. According to Dr. Litvack, (18 March 2004) the technical aspects of the proposal are not what the Board is interested in. Their ultimate goal is to fund projects that they feel will increase the spread of knowledge, allowing the resource to reach a larger audience. The Museum is attempting to get this grant so that their newly digitised comprehensive catalogue available to the public with an Online Public Access Catalogue (OPAC). With these types of grants already awarded, it was necessary that we looked into other proposals in greater detail to further the progress of the proposal that the Dickens Museum is nearly ready to submit. We must keep in mind what it is about these grants that make them appealing to the Board.

During our research we came across three case studies that were similar to the ultimate goals of the Charles Dickens Museum. The first of the case studies was provided by Dr. Litvack. He applied for a Research Grant Scheme to help fund his project "The Clarendon Edition of Charles Dickens's *Our Mutual Friend.*" The project's intent was to produce a critically edited text of Dickens's novel *Our Mutual Friend,* with editions already in existence. There are several critical texts which already exist which include Poole's Penguin Classics edition and Brattin's

Everyday Dickens edition. Dr. Litvack also provided us with his application for the project and can be found in Appendix . Due to the fact that the project application was not successful the first time it was submitted to the AHRB, we could identify initial differences between a successful and an unsuccessful application. The application included the changes that Dr. Litvack had made from the first application and these were the first items we could identify as being preferences of the Board. In the first application, Dr. Litvack had put in his budget, expenses for flights that the Board deemed unnecessary, and in the second application he was able to eliminate a large portion of the travel costs. The most beneficial change for the application was the creation of a secondary product. Initially the intent of the first project was to make the critical text only, and in the second round of application, the project team had come up with a way to make an electronic resource. The new resource contained a collation of the different editions on *Our Mutual Friend* which also included the textual witnesses (Litvack, 2001).

The application from Dr. Litvack and that case studies were a starting point for our research that we studied and analysed to obtain the preferences of the Board. We have researched and analysed the previous grants to come up with recommendations to adjust this proposal so that it meets the requirements set forth by the Board, but in addition to that, make it stand out, reflect the goals and mission of the Board, and thereby increase its chances of being accepted. At the same time, we have maintained the innovation and creativity of the project, making it the centre of the application to be sure that the research of the previous grants does not stifle the overall goal of the application.

3.3 Cataloguing Standards

Delving into such a project as defining, organising and suggesting a software to accommodate a novel method to search the catalogue of the Museum's collections, faced us with a few daunting realities. First, in order for the eventual system be successful, it must follow a format widely accepted by the museum and library worlds alike. It must have a system of search, input, and study which is familiar and readily accessible while allowing for a new method to progress through the system. Thus, gaining a solid understanding of such practices in the different concentrations proved necessary. It became evident that understanding the current standards for cataloguing would include not only museum standards but librarianship standards,

at their most general level as well. We researched a few key organisational standards including: the Anglo-American Rules for Cataloguing (AARC), the Machine Readable Cataloguing Record (MARC), the General International Standard Archival Description (ISAD(G)), and finally, SPECTRUM the UK Museum Documentation Standard. These were all relevant to the project on different levels. The importance of the standards is demonstrated through a simple example, when the Museum seeks further funding some funding bodies, and grant making boards require certain practices be followed in order to be eligible, standards such as these are one such practice. Following of these standards not only created a solid system, but a more widely accepted system as well.

The Anglo-American Rules for Cataloguing are a standardised set of rules, under constant review, designed to effectively organise groups, generally written works, into a readily searchable catalogue. The rules are designed to allow the system to be under constant revision as new media types become more significant and need more attention. While many, if not most, of the rules deal with written works such as books, journals, and articles, the AARC is evolving to also include online sources, and collections—since we recognised the holding of the Museum to be in multiple media, we quickly realised the importance of the AACR to the collection which the Museum houses.

The AARC is overseen by the Joint Steering Committee, a governing body which meets several times per year to revise the system and keep it current with respect to the trends of cataloguing bodies. It proved to be very important to use the AARC standards because of their solid base; these standards are accepted, and jointly run by: The American Library Association, The Australian Committee on Cataloguing, The British Library, The Canadian Committee on Cataloguing, CILIP: Chartered Institute of Library and Information Professionals, as well as The Library of Congress (http://www.nlc-bnc.ca/jsc/). In terms of the numerous books, periodical, journals, playbills, monthly parts, theatre programs, dissertations, and offprints within the collection of the Museum, following these standards allows for compatibility with library systems outside of the Museum—such as TALIS, which is the library consortium which Queens University, Belfast belongs to (http://www.talis.com/default.htm).

The useful Machine Readable Cataloguing Record (MARC) system converts the Anglo-American Rules for Cataloguing to a format which computers are able to use. When the AARC is input into a computer the data is in the form of text, which cannot be comprehended by a

computer unless given a method, or markup, to do so. They require code which allows them to look for flagged text—in this case, letters in a specific pattern. So, the MARC system uses a code to develop "signposts" in front of the different bibliographic sections. These "signposts" allow the computer to search for different things such as keywords, author, title and dates, (http://www.loc.gov/marc/umb/um01to06.html). Even though some see the MARC system and the AARC system as two different systems the MARC system is an extension of the AARC.

The standards become difficult to deal with when they are used concurrently with other systems. However, when this is done successfully, the final system as a whole is much stronger. In our case, implementation of the General International Standard Archival Description (ISAD(G)), worked to further strengthen the proposed system within the Charles Dickens Museum. The ISAD(G) system, unlike the AARC and MARC systems it is not a markup, it is a method to organise the data. It deals with levels of information, allowing for some users to have access to only certain levels of information. For instance, while a curator or staff member may have access to all levels of the indexed information on lower levels, such as how the item was acquired, price, or insurance information, a visitor to the Museum or the Museum's online catalogue would not be permitted such information. There are numerous advantages to controlling the information in such a method which permits deeper access into the levels of the catalogue. While for obvious reasons, some information will never be released as public—insurance for example—information on acquisition and specific dating may be important to researchers and thus, a source of eventual income for the museum. Furthermore, the ISAD(G) system further organises the information within the system, creating additional ways from which to approach research within the system. (See Appendix 8.6 for a more in depth explanation of the ISAD(G) standards.)

The final standard which is highly pertinent to the Charles Dickens House Museum's catalogue is the Spectrum system. The Spectrum system is the United Kingdom Cataloguing Standard, so it is important for the Museum to follow. This will further allow researchers within the UK a level of familiarity and ease of use with the newly designed system. The system must stretch the current possibilities but keep its base firmly rooted, familiar to researchers, if it does not successfully do this it will be increasingly difficult to attract researchers to the holdings of the collection because of its unfamiliar methods, which in turn cause difficulties. For a more in

depth explanation of SPECTRUM Standards see Appendix 8.7 for an abbreviated explanation of the SPECTRUM Standards.

From a basic understanding of the aforementioned cataloguing systems we were able to more intelligently advise the Museum on how to follow these standards, those which we should consider, and those we should not. This allowed us to further work on, develop, and research the compatibility with an innovative search method, while keeping the Museum in line with accepted standards used widely throughout the United Kingdom, the United States and other parts of the world as well. Once we grasped a firm understanding of theses cataloguing systems in use throughout the world we were better equipped to develop such a system.

Working towards the development of a new system which integrated a unique method of searching forced us to step back, gain a wide knowledge base of the standards and methods which currently exist in order to achieve success and still following all of the standards. Our success hinged on our understanding of the current systems in order to propose completion of a new search method. It was a challenging task and is described by Nancy Dennis (Vision vs. Reality: Planning for the Implementation of a Web-Based Online Catalogue in an Academic Library) as a "reality of challenges;" challenges to not only implement the new system, but to do so while collaborating standards used by groups world wide.

3.4 Cataloguing Software Solutions

Over the past few years, the Dickens Museum staff have attempted to begin cataloguing various parts of their extensive collection. They found that the catalogues proved quite helpful, but were specialized for certain items in the collection. One example, a former IQP project, was an Access database which was created to store information and records about various illustrations and drawings in the Museum's collection. In order to catalogue the entire collection, a new solution was needed and the Museum decided a whole new database would be required to do so. The staff decided that the purchase of a new cataloguing system was the best route to take, rather than attempting to create their own from a program such as Microsoft® Access or the like. They also wanted to create an innovative catalogue search technique while implementing this system, and so they decided an IQP would be needed to decide what new search method would best fit with the Museum's needs and which software package would best empower this search method. In addition, assistance requesting grant money would be required from the IQP

team, as the software packages were all out of the price range of the Museum and writing the new search method and entering all of the collection's records would require new salaried staff not currently accounted for in their allotted budget.

The Museum has decided to take proactive steps in their cataloguing efforts by not only setting a goal of thoroughly electronically catalogue their enter collection, but also by developing a new method of searching for both experienced researchers as well as the casual Museum visitor. The Museum has wisely chosen to select a software catalogue which will encompass all of their needs, using grant money to help front the large venture which they would otherwise not be able to afford. At the same time, the Museum will be using the money to design and install a new method of topic mapping based searches. The hope is that the Dickens Museum, as well as other museums and libraries throughout the world, can benefit from this newly developed search method, benefiting both staff and researchers while bringing press to the Museum for its contributions.

4.0 Methodology

It is a long term goal of the Charles Dickens Museum to make their collection more accessible to the general public by electronically cataloguing their collection. Our project consisted of acting as consultants to the Museum in order to help them reach their goal. The project included identifying the suitability of available software resources which would integrate an innovative cataloguing and search technique and included consideration for implementation and future development. Completion of their mission required financial assistance from outside grant makers whose criteria were strongly considered to ensure that the eventual system would comply with these expectations and professional cataloguing standards.

The aim of our research, data collection and analysis methods used were largely qualitative and included informal interviews, researching available data, pair-wise comparisons, and an evaluation matrix. Informal interviews were used to gain insight from the staff of the Museum and members of the Dickens Fellowship who were involved in the collections management project. Interviews were also conducted with experts in the areas of cataloguing and collections management. The interviews we conducted were only semi-structured, which gave us the flexibility that we needed to permit the interviewee room for free thought (Singleton, 1999). Furthermore, the environment of an informal interview allowed experts to lend advice to our project team and compare the Museum's endeavours with their own. Another research method used by our team was researching available data. This method was used to help understand the Collections Management System the Charles Dickens Museum was using when our project began, the cataloguing standards which the collections management software must encompass and the grant application for the Arts and Humanities Research Board.

The most important part of our project, choosing the software package which best encompasses the requirements of the Charles Dickens Museum, included a pair-wise comparison and rating system of their requirements listed in the Request for Proposal (RFP) and an evaluations matrix of each software company's response to the RFP. Rating the requirements in the RFP and applying it to the software responses was important because it gave our team a qualitative way to evaluate the responses, along with the quantitative evaluations matrix.

4.1 The Charles Dickens Museum

Background research on the Charles Dickens Museum revealed their expectations for the Collections Management System (CMS). This helped us evaluate the software proposals that were sent to the Museum to provide them with software for their Collections Management System. The background research on the sponsor included the history of the Museum, previous cataloguing efforts that have been made on this project, the requirements of the Museum for their CMS, and the unique cataloguing schema written for the Museum by Kevin Harris. Much of the information concerning these four different aspects of the Museum was gathered through researching data available to our project team and informal interviews with members of the Museum's staff, and members of the Dickens Fellowship related to the cataloguing effort.

4.1.1 History of the Dickens Museum

The Charles Dickens Museum's website and other information available to patrons provided the necessary history and background to understand the Museum. The Museum is relatively small, but it also serves as the central headquarters of the Dickens Fellowship. The Museum houses the most extensive collection of Dickens related material (http://www.dickensmuseum.com). For that reason, the process of applying for a grant in order to implement a Collections Management System was a very important mission of the Museum. Many of the works in their collection are one of a kind and so preservation of them was very important. Also, because the Museum is used by researchers, having a system which would meet their needs as well as the staff of the Museum with an intuitive user interface was important. So, we kept in mind the eventual uses of the system, to allow the adaptability of the output data from whatever software programmes were recommended. It was also necessary to speak with members of the staff of the Museum, most importantly Florian Schweizer, Project Liaison and Assistant Curator, as well as Andrew Xavier, Head Curator of the Museum, during the process to make sure our project team was on the right track and keeping with what the Museum envisaged for the system.

4.1.2 Previous Cataloguing Efforts

The reports from the two previously completed IQP projects, "Dickens House Museum Photography Collection" (2002) and "Creating a Collections Management System" (2003),

enabled our team to evaluate the previous cataloguing efforts. These reports revealed the methodology followed by the teams, the conclusions that were made and the details and functionality of the systems that were implemented. The first project, completed in 2002, "Dickens House Museum Photography Collection", attempted to catalogue the 5.000 images in the Photography Collection, so that researchers could search through the catalogue and view the digital images, rather than physically sort through the pictures. This system would preserve the physical integrity of the collection. The project team only digitised the portraits collection, consisting of 600 photographs. The database was created using Microsoft Access and the project team also created an administrative and user manual (Burkart, 2002). The second project, "Creating a Collections Management System", completed in 2003, expanded the Collections Management System to include the illustrations section of the Museum's collection and also imported the portraits from the last IQP. This database was also created using Microsoft Access, after considering many choices, because the previous Microsoft Access database could be integrated easily (Kakarous, 2003).

In contrast with the two previous projects, the scope of our project was to include help the Museum electronically digitise and catalogue their entire collection, while the other teams focused on sections of the collection, actually digitising items in the collection and programming the database and its interface. Their teams were also working with limited resources, which greatly affected their software choice. Even though these projects were not as comprehensive to the Collections Management System, the Museum hoped that the previous cataloguing efforts could not only be imported into the CMS but would also show continuous work on the CMS and be helpful in the grant application process. The scope of our project, beginning the process of the Museum's comprehensive CMS, was more extensive than the two previous projects, which only dealt with a part of the collection. Since our project was so different, the reports of the previous teams were not as helpful as we initially hoped. Their projects dealt largely with digitisation and designing the Access database, two aspects of collections management which our team did not actually do. However, it was a valuable experience to learn about the cataloguing procedures used by other teams, background to the Museum and why they made certain decisions about their databases.

4.1.3 Requirements of the Museum – (RFP)

To understand the specific requirements and features that the Museum decided upon in their Request for Proposal (RFP) to potential software vendors, we interviewed Florian Schweizer, who gathered the requirements, and studied the requirements as well. The requirements were gathered from various sources and included a description of the Museum, a specific listing of features which must be included in the software and a list of open-ended questions which allowed the company to elaborate on its software. This section provided the basis for our evaluations matrix. The RFP also included a description of the different sub-collections in the Museum and the different catalogues they have for them, as well as a brief description of the Dickens House Classification System, which is unique to the Museum to catalogue their books. This section showed our team exactly what was in the collection and how the software had to accommodate to fit in with their collection.

After studying the specifics of what the requirements were and speaking to Mr. Schweizer, our group was able to discern which requirements were most important to the project. There were certain features that the CMS absolutely had to have, or have a similar way to perform the desired function. Some issues were negotiable, as long as software providers made recommendations in these areas. The specific requirement for the features in CMS software was flexible, as long as what the system was kept true to what the Museum envisaged for the project. By working in such close proximity with our liaison on the project allowed our information gathering in this area to be very informal, as our team could be in frequent conversation with those who hold the vision for the CMS. This method was very helpful to us in gaining insight on aspects of the Museum's history and operations. This knowledge helped us execute the project consistent with the Museum's vision and purpose.

4.1.4 The Dickens Museum Classification Schema

The Dickens Museum Classification Schema, written by Kevin Harris and used by the Charles Dickens Museum was researched via inspection of documentation, correspondence with its author and informal interviews with Don Staples, the current librarian who works with the system at the Museum. The schema was important to the Museum because it hoped it could be used to create a new search method which could be used by similar institutions. Comprehension of the classification system and how it is used by the Museum was important since we needed to

evaluate whether any of the software packages would give output data that could be arranged in the manner of the classification schema and be manipulated into a topographical search method by category with a user interface that coincided with what the Museum envisaged for the Online Public Access Catalogue.

4.1.5 Topic Mapping

For years, indexes have been the primary means of finding resources in catalogues, libraries, and collections. They help to find specific information quickly and easily, but make assumptions that those using the index know exactly what they are looking for. There is little to no assistance if one is looking for the link between one topic or subject and another, and so users of the index might not know or find all of the possible associations. The staff of the Charles Dickens Museum wishes to change that, and so have decided to begin the process of designing a new search method for museums and libraries all over the world to benefit from.

In order to begin the design and implementation of a new search technique for the Dickens Museum, it we needed to understand the type of tool sought. After an interview with Mr. Schweizer, it was determined that the Museum sought to develop a new tool using topic or mind mapping. These tools are currently being explored as a method for data storage in large corporations to make data accessible to people who file data and information differently. The concept was not a new one, as it has been explored, developed, and even programmed using technologies such as Extensible Markup Language (XML) for the past few years. However, it hadn't yet been used for an association map, or a generic learning tool, in the concept of a museum type institution.

On the simplest level, a topic map is a map of interlinking associations to various files or information. These topic-based associations made the topic mapping scheme a strong candidate for the Museum because of the associations already made through the Victorian Personality Schema. Based upon this strong connection, the Museum sought to gain a greater understanding of the methods used to develop such a product for use with a Museum's electronic catalogue, and attempting to better understand the feasibility of such an undertaking. Through the research it was found that generic topic maps have been created using XML and have proven to be very successful in the dissemination of knowledge. This, in turn, led toward a greater desire for an XML driven catalogue.

4.1.6 Overview of Topic Maps

Topic maps are comprised of three main elements:

Topics – The concepts which group various items together.

Associations – The relationships of one topic to another, allowing for interconnectivity and navigation.

Occurrences – The various information resources that relate to the topics.

The true benefit of topic maps is that they allow a museum to enrich their information and records with specialist knowledge. Instead of simple keyword searches, where irrelevant results may appear or associated items without that keyword are missed, topic mapping guarantees interconnectedness and many more associations between items because it is based upon topic selection and relation. Thanks to the dedicated work of the specialists who populate the information databases, a user of the topic mapping system is much more likely to find what they are looking for as well as possibly learn about connections and related information which they may not otherwise have known about or found.

4.1.7 Data Collection: Interviews and Researching Available Data

Much of the data collection concerning this research objective was performed through informal interviews with members of the Dickens Museum Staff and researching available data that was at our disposal. Our semi-structured interviews were helpful because we really wanted to find out what kinds of requirements there were for the system. Our team did most of the listening, while those with expertise told us about what they envisaged for the Collections Management System. Staff members at the Museum helped us identify other people who would be useful for our team to interview. Before conducting our interviews, our group drafted interview questions and a format to conduct the proceedings. After conducting our interviews, we analysed our data in a meaningful way by compiling information based upon ideas that arose frequently. Depending on the numbers of people interviewed, many or few of their suggestions were able to be integrated into our software evaluation. Suggestions from staff members and other interviewees were also scrutinized for feasibility. Some people we interviewed worked with varying resources from what the Museum has at its disposal, so their systems worked quite

differently from the Museum's. (Appendix 8.1 contains a list of sample questions used in some of our interviews.)

4.1.8 Content Analysis: Ranking the RFP

In order to analyse the data collected through interviews concerning the requirements of the Museum, several methods of ranking the requirements were used, including a pair-wise comparison, ranking of the sections, and picking out individual requirements which were crucial to the software choice. An example of the pair-wise comparison used by our team can be seen in Figure 4.1: Example Pair-Wise Comparison). The pair-wise comparison lists the ten general requirements of the software, listed in Section I of the RFP, and each feature is rated against each of the other nine features. The ten features include: installation by 2005, capabilities for an online public access catalogue, a report generator, separate modules for the library, archives and museum collection, the hardware recommendations, installation/training, maintenance/enhancement, general responses to questions, price and past users. To begin the ranking, the first sample feature (Installation by 2005) is ranking along the top row of features. If Installation by 2005 is more important than having an Online Public Access Catalogue, then a "1" goes in the box, as below. This is done for each feature, and the total is the sum of numbers in the row for that requirement. The feature with the greatest number for a total is the most important, and so on.

Figure 4.1: Example Pair-Wise Comparison

	Installation By 2005	OPAC	Report Generator	Modules (LMC)	Hardware Recomm.	Installation/ Training	Maintenance/ Enhancements	Responses to Questions	Price	Past Users	Total
Installation by 2005		1									
OPAC											
Report Generator											
Modules (LMC)											
Hardware Recommend.											
Installation/ Training											
Maintenance/ Enhancement											
Responses to Questions											
Price											
Past Users											

In addition to a pair-wise comparison, which included the ten general requirements in Section I of the RFP, each subsequent section was rated for importance, from 1-5. Also, in each section, important requirements were picked out into a list as features that were crucial to the software. Collecting data about the rated requirements was done through analysis of the RFP and interviews with our liaison and other members of staff. Their expertise was necessary to assess what factors had the largest bearing on the software recommendation. These three methods of rating the requirements were later used to evaluate the software packages comparatively in specific areas.

4.2 The Arts and Humanities Research Board

Researching available data on previous successful grant gave us information that we were able to analyse which identified the preferences of the AHRB. This was helpful in our suggestions to the Museum with their application, and recommendations of which items in the application would appeal to the Board. After we successfully acquired the information from the AHRB and the Arts and Humanities Data Service (AHDS) were able to use the content analysis method to organise and analyse the data.

4.2.1 Data Collection

To gain a better understanding of these preferences, we collected resources that are publicly accessible and obtainable online that can be gathered through the AHRB. The information gained here gave the basic requirements that each application must contain. Some of these requirements include such items similar to the fact that the main contact for the application must be employed by a Higher Education Institute that is funded by Higher Education Funding Council for England (HEFCE), Higher Education Council for Wales (HEFCW), and Scottish Higher Education Funding Council (SHEFC) (Details of the Resource Enhancement Scheme, 2003). In our case, this requirement was met by Dr. Litvack who is working with the Museum, but also works for Queen's University. The AHDS is associated with the AHRB but specialises in the area of preservation and promotion of electronic resources (http://ahds.ac.uk/about/index.htm). The Museum must also provide the Board with a budget in the application. The budget will outline how the £300,000 will be spent over the three years. These previous statements are just some examples of the requirements laid out by the AHRB.

In order to identify the similarities between previous successful applications we needed to acquire information on the individual projects. Materials were collected from the AHRB's website which included case studies in the Board's annual reports on select grants that had been awarded the previous years. Further documentation on case studies were provided by Mr. Schweizer and Dr. Litvack, and we acknowledge Prof. David Ganz and Dr. Ulrich Pagel for their contributions to our project. Dr. Litvack had gone through two rounds of applying for the same grant. He was unsuccessful the first time, but was able to alter his application and made the necessary changes that were needed to make the application appealing to the Board. We spoke to him to obtain the information on what types of changes he had to make, and what factors in his application he felt were particularly crucial to his success or initial failure. We compared this information to the other grants and the Museum's application to the Board to determine which items were relevant and were recommended to the Museum as substance to focus on for the Museum's application.

4.2.2 Data Analysis

The main method that was used to logically organise and evaluate the data collected from the case studies was content analysis. This technique is used to simplify the information and data by collecting it into categories that summarise the characteristics of the information gathered (Singleton, 1999). The information gathered from the AHRB can be gathered into categories. Two of the easiest characteristics that we can use to identify the case studies are simply "Accepted" and "Declined." This is a simple first step in organising the information. Within these categories were able to identify subcategories by objective criteria, such as "Completion of Collection" (Singleton, 1999). These subcategories included the following: "Was this application a digitisation project?" and "What was its contribution to the academic or scholarly community?" Applying questions such as these to the grants helped break down the information into smaller categories and made the information more organised and relevant.

We were able to identify many similarities between the various successful grants; however, it was necessary for us to determine that the similarities were relevant to the Museum's project. If the subcategory was unrelated to the Museum's application then it did not need to be considered and more information was eliminated. Identifying these smaller categories and grouping similarities across the grants allowed us to quantify the results (Singleton, 1999). The

more frequently a similar characteristic was identified throughout the different grants, the more likely it was that it was a factor that the Board was partial to. That is, however, provided that the requirements are not included in these characteristics. It is assumed that these requirements would be present in all of the accepted grants.

After the analysis was completed, the key items found throughout the accepted grants were determined. With this information we were able to provide the Museum with the similarities found throughout grants that we recommended either be integrated into their application or further highlighted.

4.3 Cataloguing Features

It was important to determine which database features of each candidate of software packages were most applicable to the Museum's needs. For instance, some systems had well developed keyword search ability but because of using a proprietary method of data storage they lacked in their mark-up design, or expandability. While for some museums lacking this ability might have been acceptable, we desired a system which allowed for expansion in the future when the current system is outgrown. Furthermore, we desired a system capable of using XML. This was sought after order to accomplish all of the cataloguing features including the new Victorian Personality Topic Mapping cataloguing method. It was very important to understand the form and method in which the data would be stored and accessed. As such, we collected considerable data on each of the different software packages available to us, and became knowledgeable in cataloguing database features.

4.3.1 Data Collection

There are a few key ways in which we were able to collect data on the different database features: background research, a software evaluation matrix, scholarly article review, and interviews with experts. For background, we selected a sample of a few museums with similarly sized collections which had undergone a similar digital cataloguing process to use as case studies. Additionally, we researched scholarly articles which dealt with instances of cataloguing under multiple standards—we found these mainly using Worldcat™ (http://newfirstsearch.oclc.org/WebZ/FSPage?pagename=home:sessionid=sp05sw01-58808-dreb7yql-38ptnv:entitypagenum=2:0) and other similar scholarly journal search engines.

Orginizations such as the Chartered Institute of Library and Information Professionals (CHILIP) (http://www.cilip.org.uk) also proved useful. Finally, we create a list of cataloguing experts ranging from Rodney Obien, the WPI George C. Gordon Library Archivist, to local experts—like Douglas Dodds, Head of Collections Management for the Victoria and Albert Museum—who further identified cataloguing standards and features which they felt would be important for our system.

4.3.2 Data Analysis

By researching database features implemented in other similar museums, we determined which features most suited the Charles Dickens Museum and which were unnecessary. By comparing our system with other similar systems certain features compared and contrasted to gain a greater depth of understanding as to their necessity. Coincidentally, the ability to test different software packages allowed us to further understand which features to choose, and those not to. Scholarly articles also allowed us to understand the aspects which were to be considered "requirements" by experts. While we understood that some added features would be beneficial—especially in terms of expandability and customisation—purchase prices of such features were also taken into account. Finally, interviews with experts in the cataloguing field allowed us to gain real world interpretations of the different cataloguing features as they related to the Museum.

4.4 Software Analysis and Assessment

4.4.1 Collecting Feedback

Staff of the Charles Dickens Museum offered opinions on the computer system, or lack thereof, currently in place. Since there are only a few staff members, the discussions were more casual conversations then formal interviews and were conducted throughout the seven week project to get their input, feedback, and expectations on various subjects. Out of these conversations, the most commonly discussed topics included:

- Ease of use/intuitiveness of the system
- Software solution from a reputable company with previous experience in this field
- Expandable, but not so large it would require IT personnel to manage

- Within the price range of the grant
- Followed the MARC and SPECTRUM standards
- Could interface with the previous MS Access databases created by the Museum

With these topics outlined, the evaluation of the software proposals themselves could begin, outlining the important answers and weighing each companies answers compared with the others.

4.4.2 Software Matrix

A Microsoft Excel spreadsheet with every question posed in the Request For Proposal (RFP), as well as each company's response to the questions was created and dubbed the "Software Matrix" (see Section 8.10). While each proposal came in its own binder with differently formatted answers to the nearly 100 questions posed in the RFP, laying out the data in this matrix form made it easy to compare the various software proposals and also highlighted strengths and weaknesses in each proposal. This comparison chart was the largest factor in determining which software proposals met the needs of the Museum, and which fell short.

As each answer was being entered into the Excel sheet, they were being evaluated. Any unanswered questions were flagged, as well as answers which did not appear to be sufficient or did not appear to answer the question which was posed in the RFP. Finally, particularly good and poor features were flagged for easy review later.

Once the matrix was completed, companies were contacted with follow-up questions and for clarification on answers they had already given. Once all of the questions were clarified through follow up e-mails and phone calls, comparisons between the various vendors were made and all but three were eventually eliminated. Some were eliminated immediately as they were not MARC compatible, which was a major requirement for the Museum. Others were not able to import or export XML, and since this is the language the Museum plans to use to interface with the "Topic Map" features which will be coded later, these packages were generally dismissed as well. After the initial round of comparisons three vendors were removed, leaving four possibilities to be more closely examined.

4.4.3 Feasibility Study

A general feasibility study was performed to ensure that a suitable package was recommended in the end and topic mapping could then be added to it. The study was focused in

two areas. The first was to outline the pricing of salaries, while also ensuring that the program chosen to be recommended from among the four remaining possibilities fit within the monetary boundaries of the grant. The second area was to ensure the program was technically capable of being completed and operational within the time allotted. The results of this study helped to make the recommendations to the Museum regarding where the most time, effort and money should be focused during the timeline of this endeavour. The study mainly comprised a comprehensive cost analysis and technical overview, as well as review the software's layout.

4.4.3.1 Comprehensive Cost Analysis

Much of the money for the Museum comes from visitors and donations, and is enough to keep the Museum operating at present. This new catalogue is outside those operating costs, and so is almost entirely dependant upon the eventual acceptance of the grant application. With this knowledge, the total grant allowance was divided up and calculated to find the amount available for software and hardware once all staffing costs were set by the project's liaison.

Calculating the maximum amount of money which could be used towards the software and hardware components quickly helped determine which packages were well within the limits, which might be close, and which were simply too expensive for the Museum to purchase. Some of the vendors answered questions with "Available as customisation" to important feature questions posed in the RFP, and so these packages were not eliminated but rather kept as options until later eliminated for various other reasons.

The cost analysis also helped to evaluate the prices of hardware, if it was included in the RFP. While the purchase a complete software and hardware package from one vendor would be ideal, a few of the packages were simply too expensive when combined with both software and hardware recommendations. In the end, the package recommended did not include hardware in the estimate, but did recommend minimal hardware requirements. Therefore, using the total remaining after salaries and software were factored out, a recommendation was concluded.

4.4.3.2 GUI Examination

Some of the proposals included screenshots of what their products actually looked like and included on the screen. Reviewing, when possible, the layout and visualization of the various software packages helped to give an idea of which packages appeared to be intuitive for both staff and researchers to use. While not all of the proposals included screen shots of the GUI

(Graphical User Interface), those who did proved very helpful in illustrating not only how well laid out the program was, but also how well the company had kept up with technology. While some appeared easy to use and rather new (often web based), others appeared very poorly laid out or even archaic (Windows 3.11 screenshots), helping to illustrate the commitment some companies have to their software, and that others have simply been selling the same package for years with little to no updating.

4.4.3.3 Export Ability

The ability to export the data from the catalogue's database was critical for the topic mapping concept to succeed. This meant that when recommending a software package, it was imperative that the software was capable of exporting the data for the topic mapping software to access. Various methods of accessing the data were proposed by various vendors, but the most consistent and feasible method was an XML export. The benefit of XML over other languages is that the technology is customisable and constantly improving, and at the present time seems the best solution for gaining access to the data. Real-time, direct access to the database's individual entries would have been ideal, but as noted later in this document, was often not an option and was not deemed so important that a vendor should be eliminated for not offering it as a possibility.

Another option, available from Vendors Two and Three, is known as XML responses. The concept is that rather than exporting all of the data in one large file and then storing separately for the XML topic mapping software to access, the topic mapping software has direct access to the catalogue's supporting database. There are two benefits to this. First, once a record has been entered or updated, the topic maps have instant access to the information. When records are exported, the data is completely independent from the catalogue, and so changes in the catalogue's collection do not reflect themselves in the topic mapping solution until all of the data is exported again. Second, since only certain records are being requested at a time, the time required to process the request is much faster. Exporting all of the records from a database take quite a long time and slow down the server while it is completing the request, and should the export be forgotten or scheduled infrequently, the topic map could vary widely from the content of the updated catalogue.

4.5 Project Schedule

Objective	Week						
	1	2	3	4	5	6	7
The Requirements of the Museum							
Speak with Florian about Museum RFP							
Reconfirm and adjust goal statement							
Acquire RFPs sent to software companies							
Set up informal interviews with staff							
Complete informal interviews							
Dickens House Classification Schema							
The Grant Application							
Contact AHRB							
Obtain information on previously accepted grants							
Contact Dr. Litvack on progress of application							
Assess similarities of successful grants							
Integrate similarities in grant application							
Features in the CMS							
Research markup system to be used							
Research XML markup language							
Research MARC							
Evaluating Software Packages							
Review software proposals							
Create matrix of software requirements							
Evaluate the matrix							
Determine list of 3 potential software packages							
General							
Prepare findings/recommendations							
Present project findings to Museum							
Paper							

5.0 Data and Analysis

5.1 Rated Requirements of the Museum

The requirements of the Museum, sent out in the Request for Proposal (RFP) document to potential software vendors in January of 2004, were researched, analysed and rated to determine which sections of the document were most important in keeping with the vision the Museum had for the Collections Management Project. The resulting ratings were applied to the software evaluations matrix in a more qualitative way. This allowed a concurrent comparison of how each software company performed in each resulting important area.

5.1.1 Pair-wise Comparison

The pair-wise comparison chart was organised to include the ten general important requirements found in Section I of the RFP (See Appendix B: Request for Proposal from the Charles Dickens Museum). They were weighted against each other to get a better idea of what requirements were most important to consider in the later analysis. The pair-wise comparison chart is presented in Figure 5.1. The comparison chart was used to qualitatively evaluate the software matrix. The matrix itself is quantitative, since it consisted of yes/no answers, without taking into account which questions were more important. The pair-wise comparison takes into account the fact that some requirements are more important than others and were therefore assigned more weight, and considered more carefully in later analysis.

Figure 5.1: Pair-wise Comparison

	Installation By 2005	OPAC	Report Generator	Modules (LMC)	Hardware Recomm.	Installation/ Training	Maintenance/ Enhancements	Responses to Questions	Price	Past Users	Total
Installation by 2005		0	0	0	0	0	0	0	0	0	0
OPAC	1		1	0	1	1	1	1	1	1	8
Report Generator	1	0		0	1	1	1	1	1	1	7
Modules (LMC)	1	1	1		1	1	1	1	1	1	9
Hardware Recommend.	1	0	0	0		1	1	1	1	0	5
Installation/ Training	1	0	0	0	0		1	0	0	0	2
Maintenance/ Enhancement	1	0	0	0	0	0		0	0	0	1
Responses to Questions	1	1	0	0	0	1	1		0	1	5
Price	1	1	0	0	0	1	1	1		0	5
Past Users	1	0	0	0	1	1	1	0	1		5

Analysis of the pair-wise comparison shows that the most important and highly weighted requirements were separate modules for the Library, Museum and Archives that integrated with each other, an Online Public Access Catalogue which gathers information from these three modules to make the collection available to the public, and report generator capabilities so the Museum can manage its collection. The separate modules for the Museum are necessary to manage their collection of books in their Library, the items in their Museum, and keeping standardised records of their Archive collection. Since the Online Public Access Catalogue is one of the crucial elements of the Museum's project, its interfacing with all three modules is critical. The report generator was also a necessary feature in order to manage the Museum's collection. Other factors that were considered, but were not considered crucial, were the hardware recommendations made by the software vendors, their general responses to the questions, the price and evaluation of past users. Factors which were not very important were the installation, training, maintenance and enhancements, since the responses to these sections were expected to be similar in each of the responses, and were considered more in depth later in analysis.

5.1.2 Rated Requirements

The data listed in Figures 5.2 and 5.3 shows further ratings of the requirements listed in the RFP which was used in later analysis. Figure 5.2 lists each individual section of the RFP, rated in importance, from 1-5, with 5 being the most important. Section IV was left out since most companies did not supply hardware with their proposal. Figure 5.3 shows the most important requirements within each section of the RFP. These items were picked out as requirements that weighed heavily and would be used in more extensive qualitative analysis of the software companies chosen for the short list. The complete set of rankings of the requirements, including the pair-wise comparison, the rated sections of the RFP and the important requirements (Figures 5.1-5.3), were completed to further analyse the software evaluation matrix.

Figure 5.2: Rated Sections of the RFP

I	General Requirements	5
II	General System Requirements	5
III	Detailed Functional Requirements	5
III.A	Cataloguing, Bibliographic File and Authority Control	5
III.B	Online Public Access Catalogue	5
III.C	Serials	1
III.D	Interfacing and network	1

III.E	Report Generator	4
III.F	Management Reports	3
III.G	Archives Module	5
III.H	Museum Module	5
III.I	Photographic Collection	5
IV	Minimum Hardware Requirements	
IV.A	General Conditions	
IV.B	Hardware	
IV.C	Power Conditioning	
IV.D	Terminals	
V	Vendor Support	
V.A	Vendor Viability	5
V.B	Database Loading	3
V.C	Delivery and Installation	4
V.D	Supplies	2
V.E	Training	4

Figure 5.3: Important Requirements of RFP

Section II – General System Requirements			
	Integrated Modules with authority files	II.A.2-II.A.3	*sharing authority files
	HTML output	II.A.6	
	Expandability, Enhancement	II.A.7-II.A.10,12	
	System Performance for 5 years	II.A.13	
	Manual input into CMS	II.A.14	
	Input with MARC format	II.A.15	
	Data protection, backup	II.A.18,25-27	
	Written in common language	II.A.28	
Section III-Detailed Functional Requirements			
Section A-Cataloguing, Bibliographic File and Authority Control	User Interface	III.A.4	
	Compliance with authority files	III.A.2-3, 9, 14-16	
	MARC input/output/entry	III.A.6, 16	*MARC
	Hold digital images	III.A.12	
Section B-Online Public Access Catalogue	Search fields	III.B.2	
	Search methods/strategies	III.B.3-36	
Section C-Serials	Holdings managements	III.C.2-13	
Section D-Interfacing and network	Internal/external terminals	III.D.2	
Section E-Report Generator	Report Formatting	III.E.2-6	*III.E.5: wide variety

of data

Section F-Management Reports	Evaluation of the system	III.F.2, 5
	Record changes of database	III.F.12-14
Section G-Archives Module	5 tier ISAD(G) Compatible	III.G.1-2
	Access authority files	III.G.7
	Digital images	III.G.8
	Archival report	III.G.9-10
	Import in word processing	III.G.12
Section H-Museum Module	Classed Spectrum Standards	III.H.1-2
	10 digital images	III.H.6
	Access authority files	III.H.5
	Searchable	III.H.8
	Print Reports	III.H.9
	Import through word proc.	III.H.10
	Fields for status of object	III.H.11-17
Section I-Photographic Collection	Import existing catalogue	III.I.1
	e-commerce capable	III.I.2
Section IV-Minimum Hardware Requirements		
Section A-General Conditions	Support current records	IV.A.1
	User documentation/upgrade	IV.A.4,6
Section B-Hardware	Standard hardware recom.	IV.B.2
Section C-Power Conditioning	Protect from surges	IV.C.1
Section D-Terminals	Workstations & OPAC terminals	IV.D.1-2
Section V-Vendor Support		
Section A-Vendor Viability	Financial statements	V.A.1
	Other customers	V.A.3
Section B-Database Loading	MARC input/output	V.B.1
	Record loader programme	V.B.2
Section C-Delivery and Installation	Preparation of site	V.C.1-4
	Vendor installation	V.C.7-9
Section D-Supplies	Prices/suppliers	V.D.1-2
Section E-Training	Initial 5 person training	V.E.1
	Other sessions	V.E.2,5

The chosen requirements above were taken from the entire RFP as the Museum's most important requests for the software vendors. This data was used to make the distinction between important requirements and to distinguish which among these were most important so a better analysis of the products could be conducted. Since no company was expected to be able to accommodate all of the requirements, only the most important (Figure 5.3) were applied to the short list of vendors. Without weighting the requirements, only a quantitative analysis could have been made, and the vendor who answered "yes" the most number of times would have been chosen as the best candidate. However, applying weight and importance to each of these requirements allowed a comparison of how well each company fulfilled these requirements in the areas with the most significant weight.

5.1.3 Topic Mapping Data

Topic mapping is a relatively new concept, and therefore a majority of the data was found in scholarly journals and online forums. From these sources, more information was learned about the background of topic mapping, the concepts behind it, and why it tends to be beneficial to those who choose to implement it. There is a wealth of knowledge on the subject, with many viable possibilities for implementing the system in a museum or library setting. In terms of data storage and navigation, mind mapping is cutting edge, in large part because of the rapidly developing technology. In an article titled "Linking Mental Models and Cognitive Maps as an Aid to Organizational Learning", David Spicer comments that "Understanding the way individuals think about or perceive problems, questions, concepts and physical systems is critical to effective learning and research." Thus, by design, if a successful mapping schema could be developed it would greatly aid those attempting to learn about Charles Dickens, his life, and the associations which made up his life and works. Further in-depth research about current mind mapping efforts allowed us greater insight into how we could effectively use this exciting technology to teach about Dickens life.

Through the research into the current topic mapping being done in other institutions, it was easier to determine how likely it was that such a system could be used to aid researchers, students and Dickensians alike to learn more about the great author. The scholarly articles and online forums gave a much greater sense of the design of such a system. They also helped to

illustrate that implementing a topic mapping system in the Dickens Museum was most likely feasible and could truly benefit both researchers and casual visitors who might use the system.

5.2 AHRB Grant Application Case Studies

Three previous grants served as case studies. Two of the case studies were resource enhancement schemes and the third was a research grant. While the three were not all the same schemes, we analysed the contents of the case study to determine what similarities they contained and used them to determine the preference factors of the Board.

Content analysis was used to analyse the similarities between the information in the three case studies (Singleton, 1999). While reading the grants, information that appeared to be important or resembled a requirement found in the guidelines were noted and then inputted into a matrix. The "Guidance notes completing and submitting the Resource Enhancement application form" document from the AHRB's website was what determined the initial flag to uncover the similarities. Once each case study had been examined the matrix was applied to the other grants. For example, if Grant 1 had an aspect that was apparent and deemed important, it was recorded in the matrix. If at the completion of reading the other two grants the same aspect was not readily identified, we would then return to the matrix to see what aspects for each grant had yet to found. This meant going back over the grants with the created guideline of specific items made from the matrix, to search for. The factors which were identified in one grant provided a tool to uncover overlooked factors present in the other grants.

The AHRB explores each application they receive to see if one of the end products the venture will generate will be a teaching tool. In the "Guidelines…" document, the AHRB mentions the project applicant should make known if a teaching tool is to be produced, however, it is not required. Through our analysis of the case studies, we identified a general teaching tool in each, leading us to conclude that a teaching tool is a prominent output of successful grants. This teaching tool is to be used by both students and professionals and is intended to increase knowledge of the subject area of the grant which was not fully complete or developed. The applicants included in their projects that the teaching tool was an end product in two of the projects. In the third case study, while a teaching tool was not specifically designed and created, the project leader did include how one of the project's products could be used to further education in varying academic communities. Another prevalent factor discussed in the case

studies was the knowledge and experience gained by the post-doctorate students hired to complete the project. In two of the case studies, one or two post-doctorate students were needed for the completion of the project. The authors included the knowledge the students gained in the specific area of the grant, and with the need for IT to complete the project, the student gained valuable real world experience with Information Technology as an additional bonus. The Charles Dickens Museum intended to hire a post-doctoral student to complete the project. The knowledge and experience the student would gain from the project is in keeping with the Board's preferences.

Initially, twenty different similarities were discovered in at least two of the documents. Most of the similarities were later uncovered in all three grants; however, one or two remained present in only two of the grants. Several of the similarities had been repeated in different sections, or were the same principle reworded with subtle differences. These twenty commonalities we narrowed to fifteen factors (Figure 5.4). Integrating these aspects into the grant application increases the likelihood of its success with the Arts and Humanities Research Board. While this is not necessarily guaranteeing the success of the application, it is our conclusion that without their inclusion and prominence in the application the grant would not be considered by the Board as a fundable project. These factors were included in our grant application written for the CDM and can be found in Appendix 8.5.

Figure 5.4: Preference Factors in Case Studies

- Enhanced Access – World Wide Web
- Social Need
- Contributions to Scholar and Academic Community
- End Product
- Generic Tool
- Dedication of Project Participants
- Time Management
- Previous Accomplishments for Same Project
- Conciseness
- Knowledge and Experience Gained for Post Doctorate Research Assistant
- Copyright Intellectual Rights

- Up-Grade Ability
- Testing of Product
- Feasibility of Project Goal
- Previous Grants by Project Leader

5.2 Software Evaluation

5.2.1 Cataloguing Standards

Close study of the Request For Proposals (RFPs) delivered by the companies showed that not all of the cataloguing systems allowed for use of MARC records. However, research showed that there were many different methods for storing the authority files-specifically, the ones which dealt with books. Often, the format of the records, whether in MARC format or not, was not an important issue. The ability to import, export, and update records in such a format however was-MARC is a tagging system with approximately nine-hundred possible fields to tag a specific book, or piece of literature (See Appendix 8.3 for an image of a MARC record). The different systems generally used a proprietary format to store the data, but in some cases allowed for an interface to deal with MARC records. Thus, the inability to use MARC records or difficulties exposed in dealing with MARC records were grounds for dismissal of a software firm's proposal.

5.2.2 Software Matrix Evaluation

After close consideration of the projected budget, the pros and cons of each software package, as well as the feasibility of implementing a future topic mapping scheme, the list of possible vendors was narrowed down to a final three. For a complete overview of the data compilation of each proposal (which was deemed the "Software Matrix") for a side by side software comparison, please see the appendix in Section 8.10.

Out of all the questions and answers in the software comparison chart, the following were deemed most important when deciding which software packages to eliminate or recommend, and determined whether the vendor was eliminated or made one of the three finalists:

- Vendors 6 and 7 did not incorporate MARC as required by the Museum
- Vendor 5 was too expensive for the Museum to afford

- Vendor 4 did not have some of the smaller features the staff required, and their response time was rather poor in answering the follow-up questions. Another deciding factor was that we could find no mention of the software product on their web site, and it seemed that they were a bit too corporate-business oriented.
- Vendor 1 seemed like the best choice at first, but after noticing that they forgot to include a large component in their price list and did very little to remedy the situation, we eliminated them a possible vendor.
- Vendors 2 and 3 appeared to be equal contenders, and so museums and libraries using both were contacted. After talking with staff members who used each system, all Vendor 2 users seemed very satisfied while Vendor 3 users did not seem quite so content. One woman using Vendor 3 stated she was leaving because she disliked the system so much.
- Vendor 2 was deemed the better choice, and therefore is our recommendation for the Museum.

For a complete overview of the analysis which led to the elimination of the other candidates, see the Appendix 8.4.

As mentioned in the bullets above, a major issue arose with Vendor 1's proposal. In the proposal, Vendor 1 had described features and abilities of some software modules which had not included in the final price list proposed to the Museum. The inconsistency would have either cost the Museum an additional initial £26,000 plus £8,000 per year after that, or left them with a package which did not encompass all of the needs of the Museum in order to incorporate the topic mapping features. After the oversight was noticed and the company contacted for an explanation, it was concluded that this software company's proposal was not as strong as it had first appeared, and such a large oversight might be an illustration of the company's lack of focus and commitment to its customers. The representative apologized for the oversight, but did little to remedy the situation other than to state he could send an updated price list. This vendor therefore was removed as a possibility, narrowing the final list to two candidates.

The final two candidates, Vendors 2 and 3, were very similar in what they could offer the Museum. Vendor 3's proposal cost was lower than Vendor 2, but many of the answers stated "Yes, with customisation", which would lead to an increase in the final price of the software.

Taking these customisation costs into account, both software packages would be nearly equal in price and so cost could not help to determine which was a better candidate. The need for customisations in Vendor 3's proposal did affect the final decision, though, as customisations often mean the features have never been added before and so the Dickens Museum would be the first one to use many of them. New software code always has a higher rate of problems than that which has been field tested for sometime, and often causes downtime and headaches for customers. The Museum was hesitant to be the first to implement a custom solution from Vendor 3, as the code has never truly been tested in a Museum setting before and chances are the software vendor has less experience dealing with the specialised topics if this is the first time they have coded for it. Based on this factor, Vendor 2 was weighted over Vendor 3 since many of its features were standard and ready to go, rather than customisations to be added later.

All that remained was to talk with actual users of both systems and ask what they felt about the system. These interviews and discussions are described in great detail in the following section, but they were the final deciding factor that allowed us to continue rating Vendor 2 over Vendor 3, therefore affirming our decision that Vendor 2 was the best candidate as our final recommendation to the Dickens Museum.

5.2.3 Company Profile

Along with the software evaluation matrix, each company was also evaluated based upon the layout of their proposal, their web site and client list. While some proposals were well written and easy to understand, others were poorly written or appeared to be completed in a hurry. Viewing the web site of each company revealed what each company's focus was, and quickly illustrated that some companies were so large they didn't even list the recommended software on their many different pages of products. The client list included in each proposal revealed information on which types of clientele these companies were particularly catering towards. One negative factor the client lists revealed was that some of the software vendors had no libraries referenced on their customer list, and the solutions they were all posing are technically considered "library cataloguing software".

Customer support played a key factor in the evaluation process as well. Each vendor was contacted at one point or another during the evaluation process for clarification and further information, and response time was noted. Some responded rather quickly, one as soon as an hour, while another never responded despite multiple attempts to contact them. While the

response timings did not directly eliminate or save any company on our list of possibilities, it did affect the evaluation.

Along with reviewing the software proposals, interviews were conducted with customers of both Vendors 2 and 3. Talking to other customers of these two companies who had similar systems in place proved useful in evaluating the companies, especially in the areas of user and technical support, costs and ease of customisation, and providing a different perspective on the company. Interviews for the evaluation of vendor two were conducted with two of their customers, the British Museum and the London Transport Museum. Both had different perspectives on the software, but offered useful information about support and dealings with the company. Customers listed by Vendor Three were contacted, including the Wallace Collection, the Hackney Archives, the Greenwich Borough Museum, the Royal College of Physicians, the University College of London, and the University of London Library. None responded and only after repeated phone calls was a meeting set up with one, the Wallace Collection. However, this customer was planning to discontinue use of the software, but an interview was still conducted to see the system in action.

The London Transport Museum has been customers of Vendor 2 since the late 1980s, according to Bryan Wills, the Networks System Manager. The Museum has grown with Vendor 2 and was a pilot for many of their new features in testing. Vendor 2 was very helpful with customisation of the system, but this tended to be pricey. However, since the London Transport was a customer for so long, it was natural to think that much of the technology has become outdated and they have needed to update. The software system in place at the Transport Museum was large, with over 300,000 items yet it was very flexible. The Museum had a few staff members working with the system, none full time, but some have attended training courses to be able to work with the language codes in order to manipulate the software and data to produce the desired results. Their system uses hard fields for all objects, as well as "soft" fields which can be added to any item. This was helpful to standardise, but also left room for improvement of the system. The image arena, which stored and later linked images to information in the database, automatically made the different sizes of images (thumbnails, working copies and archival copies), which would make the digitisation and linking images less cumbersome to the staff. Mr. Wills liked the system, and agreed that customisation costs can add up and be costly, but that the

company was very flexible to work with their needs and to grow and meet the expectations of its customers.

The British Museum employs Vendor 2 for their Compass Group, which is an Online Public Access Catalogue housing about 5,000 images from the Museum in an educational and searchable database. According to Matthew Cock, Creative Editor, the Museum has been with Vendor 2 since 1998 and went live with their Compass website in 2000. The software system in effect uses a controlled vocabulary (authority files) to keep its cataloguing consistent as well as a thesaurus for consistency in the fields of location, name, maker, place, range and subject. In order to use information for different sources, different versions of an index exist for an item, rather than two entries. The different modules included the Compass Module, the Library Module, the Website and a static Touch Screen search for the Reading Room, all implemented with the help of Vendor 2. The modules extract data from the same source, and the customisation of these searchable interfaces was done by Vendor 2 with the design input from the Museum. In contrast with the London Transport Museum, the British Museum did not pay large costs above and beyond the contracted prices for the design of the database and web interfaces. During the opening phases, the Vendor had worked with the Museum to design the interface to their liking, waving costs of customisation after the contract was completed. In general, the Museum was pleased with the flexibility of the company, as well as their responsiveness to their needs.

Andrea Gilbert, Librarian and Archivist for the Wallace Collection, had been working with Vendor 3 for over four years. She expressed displeasure with the vendor, noting that it was hard to get in touch with them to troubleshoot her problems for support. The program was very rigid, which was not helpful to Ms. Gilbert, since she could not easily expand the capabilities of her database. The program did not handle the entering of MARC records well, leaving out fields, although it did work with importing and exporting the records, as long as they were formatted correctly from the source, which was cumbersome. She also expressed displeasure with the report generator module, as it was hard to format the data output to look the way she wanted. The program itself was easy to use, but it did not include all of the capabilities she would have preferred. Ms. Gilbert only had one of the modules offered by Vendor Three, and had attempted to try another, but it was not a favourable situation and she eventually had to get a refund for the module. In general, the review Vendor 3 from the Wallace Collection of was not favourable and

the librarian expressed many frustrations with the system that could have also become problems to the Charles Dickens Museum.

5.3 Programme Feasibility

The feasibility study presented to the Museum covered aspects of implementing software for the Collections Management System (CMS) which they should consider before purchasing software. These factors included the feasibility of inputting MARC records into the cataloguing system, the service agreement and contract with the vendor, customisation costs of special features in the software, the ongoing costs of owning the software and how the Museum could pay for them, as well as the feasibility of the data output being integrated into a searchable interface.

Conducting the feasibility study helped the Museum and members of its Board who were involved with Collections Project understand all of the implications brought by applying for the grant and beginning a comprehensive CMS. The feasibility study will help in the grant application process, moreover because it will show the Arts and Humanities Research Board that the Charles Dickens Museum is applying for funding only after carefully considering the specifics of implementation. The study shows the Museum had foresight to put time into considering the road blocks that might arise in the future and helped to define the scope of the project to be completed with the resources that they were applying for.

5.3.1 Creation/Import of MARC Records

The feasibility of whether all of the MARC records could be created and input into the library catalogue was the subject of research for the Collections Management Project. The amount of MARC records which needed to be purchased or created for books in the Library Collection was approximately 7,000. If there were not enough time or resources to import or create these records, the scope of the project would have been jeopardised. Douglas Dodds, Head of Collections Management for the Victoria & Albert Museum, estimated that his cataloguers each completed approximately 2,000-3,000 records per year. He suggested that the Museum purchase as many records as they can, since compared to the salary of the cataloguers, this can be very cost effective. Also, MARC Records can be downloaded for free from the Library of Congress and downloaded from the British Library as well.

Ms. Gilbert, Librarian & Archivist from the Wallace Collection, conducted a feasibility study on methods of purchasing and inputting MARC records when she began cataloguing the Collection's 10,000 books. Not only is the Wallace Collection greater in size, but it also had no classification system and there was no existing card catalogue of the collection. Ms. Gilbert researched possibilities of batch downloading MARC Records from sources such as the Online Computer Library Centre (OCLC) database, the Batch Search Key Processing, and free downloads from the Library of Congress. The OCLC WorldCat database search costs 68p per record, including search and export, which would be approximately £4,760 for the 7,000 records. However, if a search using this service yields no records to export, the search charge must still be paid. The Batch Search Key processing method involves making a spreadsheet of information on the books and processing the file with the WorldCat database. This method costs 37p per record, approximately £2,590 for the collection. Although it requires preparation work, it only charges for returned records.

Douglas Dodds, of the V&A, recommended MARC Link, whose provides the service of creating MARC records or converting existing records into the MARC format, working with the Museum's budget and timeframe to customise their services to meet the needs of their customers. Their client list includes the British Library, the Library of Congress, OCLC (mentioned earlier), St. Paul's Cathedral Library and the Tate Gallery. Mr. Dodds also recommended other systems, such as OCLC (also studied by Ms. Gilbert) and RLG, which have searchable databases for the acquisition of MARC records. The transferring of MARC records over RLG cost no charge, provided the record existed from another source, however there were possible costs associated with configuring software for the searches.

The Library of Congress MARC Record search and download (http://catalog.loc.gov/) was easy and free and records could be saved or emailed. The output can be viewed and saved, but the conversion of this format to the arrangement that will be necessary to import the records into the database may cumbersome. However, considering that the Library of Congress is an authority in MARC records, and that the service is free, it may be worthwhile for parts of the collection. The British Library did not have any facilities to download MARC Records, but in July 2004 their system was to be updated and would include this feature.

With consideration for the options of searching and converting free downloads, payment for downloaded records, and also paying a company to convert the card catalogue into MARC

records, it may prove more cost effective for the Museum to employ MARC Link to work with whatever needs the Museum has. This decision should be made by the Museum, with the expertise of the Cataloguer, concern to the above information, and the budget for the project. Any of the previously mentioned methods were feasible for the Museum to use in order to enter the 7,000 records into the system.

5.3.2 Service Agreement and Contract with Vendor

Vendor 2 did not include an actual copy of their Service Agreement, but did outline the expectations and responsibilities of both parties in their proposal. The company has promised to assign a team to the project, if accepted, along with a project leader who will serve as the contact liaison between the vendor and client. If the museum chooses Vendor 2, they will clarify any necessary information and then enter an 'Agreement and Software Order' to outline exact expectations, pricing, timelines, and deliverables. The documentation expressly states that anything added once this contract is signed will be done so outside of the original contract and so may cost more and be outside of the timeline associated with the original contract.

As part of the agreement, the vendor will also provide training for the staff of the Museum. The proposal states they are willing to do onsite training of up to six members of staff for a period of two days. As specified in the RFP, the training will allow staff members to:

1. Perform operator functions and supervisory override functions.
2. Know common causes of system failure and remedy for each.
3. Follow oral instructions given by telephone for the correction of system problems.
4. Identify and perform all elements of preventive maintenance of the system not routinely performed by the vendor.

In addition to training, the proposal states that the company will provide phone and on-site support as necessary. During the interview process with the other museums using Vendor 2, both stated that they were happy with how the company dealt with issues that arose. Both said the vendor was responsive and helpful when issues arose, and that few issues related to the catalogue had arisen in the time they have had the system.

5.3.3 System and Ongoing Costs

The costs to consider for the ongoing feasibility of the project include the cost of the actual software package, the yearly licenses, the purchase of the hardware in the first year and the cost of hosting the server at Queens University in Belfast. A proposed budget for the Charles Dickens Museum, as submitted to the AHRB, follows in Figure 5.5.

Figure 5.5: Projected Budget

Charles Dickens Museum Projected Budget	Year 1	Year 2	Year 3	
Staff Salaries	45520.02	48051.98	36709.77	
Travel and Subsistence	3175			
Consumables				
Equipment (Including Hardware/Software)	27378	14000	14000	
Yearly Licenses	4500	4500	4500	
Server Costs	3800	1000	1000	
Public Access Workstations	800			
Special Costs				
Indirect Costs (46% of Staff Costs)	20939.2	22103.91	16886.4	**Grand Total**
TOTAL	106112.22	89655.89	73096.17	268864.28
			Leftover	31135.72

The above budget was initially proposed by Dr. Litvak and Florian Schweizer, and had been modified to include the actual price of SSL software and yearly licenses, as well as estimated hardware costs. The budget was prepared to present to the AHRB for the purposes of understanding the feasibility of the recommendations in terms of the £300,000 grant spread over three years. The cost of software proposed by System Simulation Ltd was £42,000; spreading the cost over three years brought the software cost to £14,000. The ongoing costs for the SSL software yearly licenses were £4,500. These two quoted prices included necessary software licenses, implementation of the system with the desired structure of the Museum, data migration from existing catalogues, the design and implementation of the interface for the input screens and for the public, eCommerce installation, training and installation. Since the quoted price included working with the Museum to design the proper and necessary interface, there should be little customisation costs for the first three years, as long as the librarian and cataloguer working for the Museum planned out the database structure with staff at SSL designing the system. In the future, however, there may be a need for the Museum to customise the database, its interface or the Online Public Access Catalogue. In this case, customisation costs are quoted by SSL to be

£450-750 per day. The leftover money is what remains after all of the necessary costs and are taken from the budget, which leaves the Museum a cushion to pay for unexpected costs in the future.

The costs in the budget for hardware and hosting of server costs are included in the first year hardware/software budget, and prices were gathered through estimates for the suggested hardware from the recommended software, SSL. The following is the recommendations for the server and workstation requirements.

Server:

Pentium III 700 or equivalent processor

128 MB ram (at least, 512 MB recommended)

20 GB+ hard disc (or to suit Museum)

15" SVGA screen

CD or DVD drive

Suitable backup device (CD/DVD-R or tape)

Unix/Linux/Solaris or Windows NT/2000/XP

Workstations:

Pentium/Celeron 500 or equivalent processor

64 MB ram (at least, 128 MB or more recommended)

10 GB hard disc

CD or DVD drive

15" XGA screen (17-19" recommended)

Windows 95/98/NT/2000/XP

These requirements were used to generate a rough estimation of the total hardware cost for input into the budget. It was estimated that the server would cost £2000, £500 for supplies, £300 for a monitor and a yearly price of £1000 for costs and upkeep of the system. Also estimated were two public access terminals at a cost of £400 each.

At the expiration of the grant in three years, it will be necessary for the Museum to be able to pay for the £4,500 yearly licensing fee and general maintenance fees. The Museum hopes that part of these costs would be absorbed by increased eCommerce from the selling of prints online through their website. The rest of the cost may be absorbed through linking advertisements with amazon.com, Google Advertisements or other similar advertisers.

Information on becoming an associate of amazon.com was gathered with the help of David Perdue, who operates an informational website on Charles Dickens and includes links to Dickens products available on amazon.com (http://www.fidnet.com/~dap1955/dickens/). Mr. Perdue explained that he links to the products on his site and the link is tagged with an ID that identifies the site if someone clicks on it, and if they purchase to product, the site gets a certain percentage. Information available on amazon.com's website explained that as an associate, the Charles Dickens Museum website would host links to Dickens related products available on the amazon.com website and if people were to click on these links and purchase the items, 2.5-10% of the products sold with their Association ID would go to the Museum as a referral stipend (http://www.amazon.com/gp/browse.html/104-3773663-1253557?node=3435371). This feature would help absorb the cost of yearly license fees for the Online Public Access Catalogue by making products that were not available on the Museum's website available for purchase to patrons. Barnes and Noble also had a program similar to the amazon.com program (http://www.barnesandnoble.com/affiliate/intro.asp?userid=O9t1zsJHEA&cds2Pid=946).

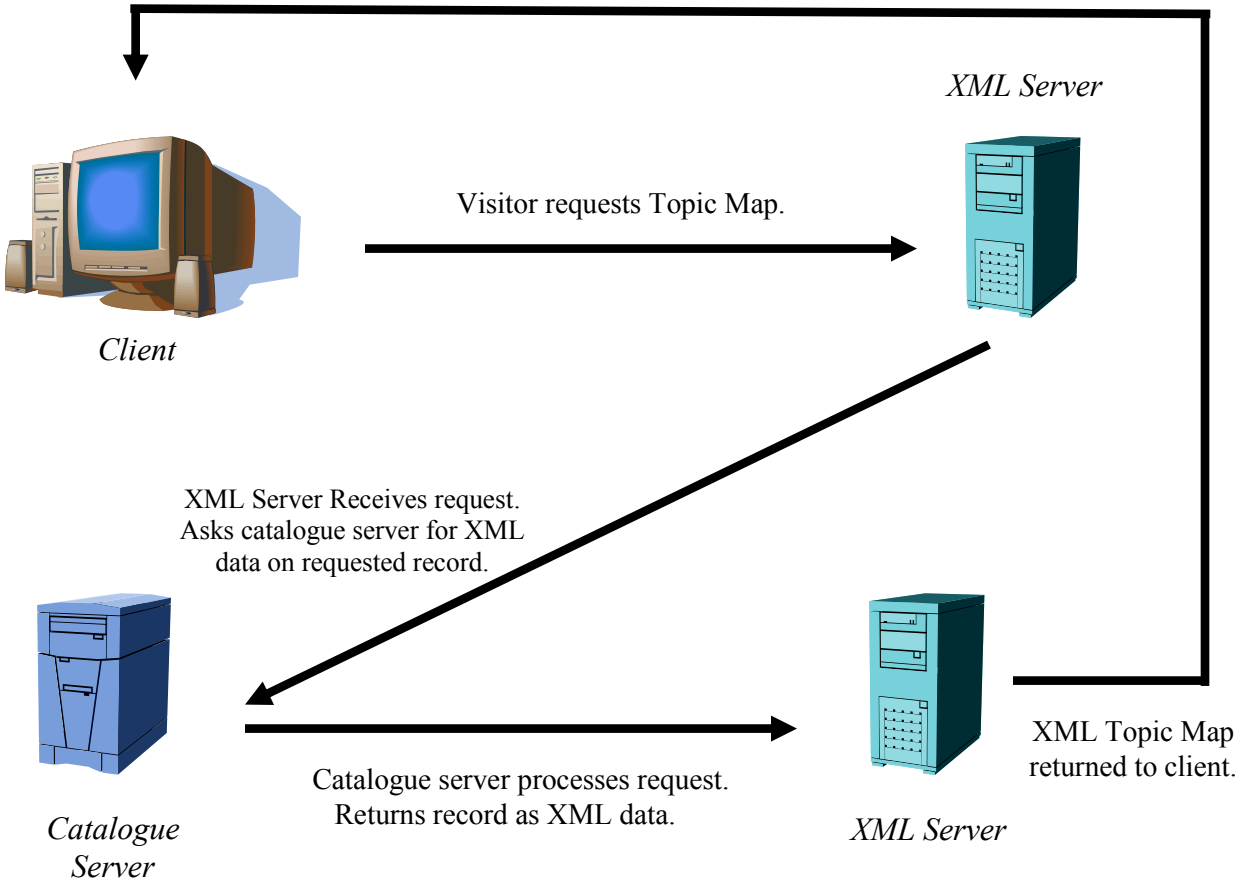
Google offered two services, AdWords and AdSense, which were helpful to research for the Dickens Museum. AdWords is a service that costs money to advertise on Google's search results page, while AdSense is a service that makes revenue for a site by hosting relevant ads on their site. The AdWords program was designed to work as a relevant advertisement scheme, so that a search for "Charles Dickens" would provide the user with an advertisement on the search results page linking to the Charles Dickens Museum website. The advertisement had a minimal start-up fee of £5 and a 4p minimum keyword search fee. The program was very flexible, with a "pay as you click" scheme which requires payment only if people clicked on the advertisement, and also allowed for a budget to be set up, so daily bills do not exceed a determined amount. An inspection of sponsored links with the keyword search "Charles Dickens" showed two sponsored links selling Dickens novels. This advertising scheme would be helpful to promote the eCommerce site of the Charles Dickens Museum site. The other program, AdSense, allowed for the Museum's site to show targeted ads that are relevant to the readers of its page. The ads can also be customised to fit the scheme of the site and Google's ad-fitting scheme would base ads on the content and context of the Dickens page (http://www.google.com/ads/products.html).

5.3.4 XML Data Output

Now that a final software package has been selected, its ability to integrate with the next step of the project, the XML topic mapping, must be assured. Vendor 2's software proposal was chosen, in part, because it allows for the export of XML. The concept for the topic mapping scheme is to use the data from the catalogue to propagate and associate with that of the data in the topic maps. In order to do this, the program will need to export XML records on a scheduled basis, and the topic mapping software must then use these as the data to display the physical topic maps. By using XML, the hope is that not only will the technology develop, but that it is customisable and therefore can be individualized based on the individual needs of the Museum, cataloguing software, and topic mapping software all at the same time. XML is designed to "tag" each item of information for later interpretation by various computer applications, and in this case, the topic mapping software to be designed by the post-doctoral student. SSL stores its data in a propriety database format known as Index+, and so using a database lookup to retrieve the data seems to be a much less feasible option as it is both harder to implement, and less flexible if something should change in the database accessibility/security, format, or field layout.

As stated earlier, Index+ cannot be accessed directly by the topic mapping software, but there is an alternate solution to exporting the data on a regular schedule. The benefit of accessing the data directly from the database is that all information will be available as soon as it is entered into the Museum's catalogue. This can be done in one of two manners, SQL/ODBC queries and XML responses to HTML queries. ODBC requests (i.e. SQL) require extra software and configuration from the vendor to be installed, but the XML responses are available as part of the HTTP server which will be purchased in the proposed package. The basic concept of how HTTP requests for XML data is illustrated in the Figure 5.6.

Figure 5.6: Flow Chart



Requests can also be done through the Microsoft® .NET, because it can serve XML responses under SOAP in a Windows environment. While this method will most likely not be used, it is a benefit to have another possibility in case it becomes necessary to access the data differently than originally envisioned.

6.0 Conclusion and Recommendations

Our IQP group prepared and then presented the Charles Dickens Museum with a study of the feasibility of the implementation of the Collections Management System upon the anticipated receipt of the grant from the AHRB that the Museum is applying for. The factors studied included ongoing costs, entry of MARC records and support from the software vendor. Since the budget for the CMS from the £300,000 grant accounts for all necessary costs and still yields a leftover, the project is financially viable. While the Museum will still have to pay yearly licensing costs after the expiration of the grant, there are many ways they can cover these costs from the website itself. The presence of the Online Public Access Catalogue (OPAC) on the Dickens Museum website will stimulate interest and the helpfulness of the website, making their e-Commerce module more readily accessible. This e-Commerce of newly available prints from the CMS on their site, along with paid linking to other commerce sites, should provide the Museum with income to help pay these licensing costs.

System Simulation Ltd (SSL) is the recommended cataloguing vendor. SSL had many various reasons why it stood out above the other clients, and should serve the Museum well. According to the proposal, it meets almost all of the Museum's needs and the only section SSL said "No" to should be part of the system by the time the Museum is ready to purchase. SSL has been in the business of software cataloguing for quite a few years now, and has a strong customer list. Every customer we talked to had positive experiences with the company, and recommended their software and support. Finally, with the ability to reply to requests in XML, SSL has met the need of being able to interface and exchange data with the topic mapping scheme to be implemented later on in the project. In short, we are confident that SSL will meet their needs as both a cataloguing solution for their entire collection, but also as a tool to interface with their eventual topic mapping schema.

After considering the feasibility of different methods of entering MARC records of the Museum's Library Catalogue, we recommend that the Museum work with the newly hired Librarian to determine which method is best for the Museum. Considering the costs associated with the labour of the Librarian searching and formatting free downloads and outsourcing the conversion of data in the card catalogue, it may be most cost effective to outsource the task, leaving the Librarian time to attend to other aspects of the cataloguing process.

Since customisation costs for the recommended software can be expensive, and it is quoted in the proposal of SSL to work with the Museum to design the input and user interface for the OPAC, we strongly recommend that the members of staff who will work most with the Collections Management System work with the SSL software designers to ensure that the catalogue includes all of the needed features and will provide the output desired by the Museum. SSL is willing to make the system work for the Museum and has the capabilities to include everything they need, it is simply a matter of the Museum carefully and clearly outlining exactly what the system capabilities should be, to ensure they get the system to work for them.

A second major deliverable that was initially unanticipated by our IQP team, was providing the Museum with over 75% of their grant application already finished. Our draft of the completed parts of the application was submitted to the Museum to serve as a solid foundation for their final application to the AHRB, due 28 May 2004. This included the fifteen previously identified preferences and technical knowledge of the software solutions. The entire execution of the work done by this IQP project depends on the success of the grant. The Museum does not have the resources to purchase a large software package and customise it to their needs, employ the staff needed for its implementation and even the upkeep costs of maintaining the system. Through analysing the content of previously successful grants, speaking with successful grant writers and our advanced knowledge of the project we were able to write a grant with greater chance for success. We identified fifteen preference factors and while writing we highlighted these items to make their presence in the grant apparent to the Board. While the inclusion of these factors does not necessarily ensure success of the grant application, it is our decision that without including them, that the chances of the grant being accepted are greatly decreased if not altogether eliminated.

After considerable research into the concept of topic mapping, and numerous meetings to talk about the difficulties of implementing such a system we determined, that as long as a knowledgeable programmer is united with a Dickensian able to understand the associations within the Harris Schema that it could be possible to design such a system. Furthermore, we ascertained that it is perhaps more effective to allow the archivist and librarian a head start on the programmer. Thus, when the programmer begins to write the program to navigate the associations they have a base of associations from which to work. Indeed, a key aspect of the system and the programming lies in the ability for the system to be under constant revision.

Thus, as more scholars have the opportunity to work with the system, "gaps" or associations which may be overlooked upon initial cataloguing and new associations can be easily added into the system.

Our project team was able to deliver to the Museum a strong recommendation for the SSL software that best meets their needs from the potential software vendors, the feasibility of creating and integrating an innovative search interface in the new database, and a solid foundation of work that completes a large portion of their grant application to the AHRB. We feel that this IQP has successfully completed every aspect of the project and that there is no need for future IQP groups to continue work on this Collections Management System. If the grant is successful and the project can proceed, the implementation and customisation of the software will be handled by the software vendor. Entry into the database and creation of MARC records cannot be done in a seven-week project and needs to be completed by professionals. In addition, any outside assistance must be previously stated in the AHRB grant submitted as of 28 May 2004. Changes to the projected plan submitted in the application can be changed with advanced notice and in the case of exceptional situations. Part of our IQP was to ensure the feasibility of completing the catalogue entry and customisation in the three-year grant time allotted. We concluded that it was a feasible execution plan for the Museum. The Museum's website, however, could benefit from the aid of an IQP group. The site has many areas that need improvement, such as its organisation and lack or advertisement. One of the largest issues is that the text found in the site is not recognised by search engines due to the fact that the site is built through the use of images. The image based website decreases the site's keyword search relevance and places the website farther down in searching return lists and reduces the number of visitors. The Museum's website will be the home for the resulting OPAC from our IQP. A better designed website will not only increase the hits the website receives and number of potential customers for the Museum, but the enhanced scheme will increase its usefulness as an educational tool. With the completion of the entire Collections Management System, information regarding the Dickens Museum's collection will be readily available to scholars who wish to utilise the collection and Dickens enthusiasts who are interested to learn more about the celebrated literary figure.

7.0 Sources

Amazon.com Associates. Retrieved 15 April 2004 from: http://www.amazon.com/gp/browse.html/104-3773663-1253557?node=3435371.

Arts and Humanities Research Board. Bristol: Author. Retrieved 23 January 2004, from the World Wide Web: http://www.ahrb.ac.uk/

Arts and Humanities Research Board. (2003). Details of the Resource Enhancement scheme. Author.

Arts and Humanities Research Board. (2003). Guide to Awards, Autumn 2003 – Autumn 2004. Retrieved February 2004, from the World Wide Web: http://www.ahrb.ac.uk/holders/

Arts and Humanities Research Board. (2002). Annual Report 2001-2002. Bristol: Author.

Arts and Humanities Research Board. (2000). Corporate Plan 2000-2005. Bristol, London: Author.

Barnes and Noble.com Affiliate Network. Retrieved 16 April 2004: http://www.barnesandnoble.com/affiliate/intro.asp?userid=O9t1zsJHEA&cds2Pid=946.

Baron, Robert A. (n.d.). Using MARC for Collection Management, The Arguments Against. Retrieved 25 January 2004, from http://www.studiolo.org/MusComp/MARC2.htm

Baron, Robert A. (n.d.). Computerized Collection Management: A Primer. Retrieved 25 January 2004, from http://www.studiolo.org/MusComp/PRIMER.htm

Beller, Joanne. WPI Research Librarian. Personal Interview. 26 February 2004.

Bryant, Phillip. Making the Most of Our Libraries: Library Catalogue Access – this Issues and the Opportunities. Library Review, Volume 46 No.8 (1997)

Burkart, A., Campbell, D. & Lambert, K. (2002). Dickens House Museum Photography Collection. Interactive Qualifying Project, D02. WPI London, England.

Charles Dickens Museum. (n.d.), Charles Dickens Museum. Retrieved 19 January 2004, from the World Wide Web: http://www.dickensmuseum.com/

Cochrane, P. (1985) Redesign of Catalogs and Indexes for Improved Online Subject Access. Oryx Press: Phoenix, AZ.

Cock, Matthew. The British Museum: Creative Editor, Compass Project Team. Personal Interview. 8 April 2004.

Dennis, N. K., Carter, C. E., Bordeianu, S. Vision vs. Reality: Planning for the

Implementation of a Web-Based Online Catalog in an Academic Library. Library Hi-Tech, Volume 15 No. 3 (1997).

DiCecco, Vonnie and Gleason, Mary M. Using Graphic Organizers to Attain Relational Knowledge from Expository Text. Journal of Learning Dissabilities. Volume 35, No. 4 July/August (2002).

Dodds, Douglass. Victoria and Albert Museum: Head of Collections Management. Personal Interview. 19 March 2004.

Dym, C. & Little P. (2004) Engineering Design a Project-Based Introduction 2nd Edition. John Wiley and Sons, Inc: Hoboken, NJ

El-Sherbini, Magda. Metadata and the Future of Cataloging. Library Review, Volume 50. No. 1 (2001).

Fattahi, Rahmatollah. A Comparison Between the Online Catalog and the Card Catalogue, Some Considerations for Redesigning Bibliographic Standards. Library Review, Volume 11 No. 2 (1995)

Fontanella, Prof. Lee. WPI Professor Emeritus. Personal Interview. 2 March 2004.

Garcha, Rajinder and Buttlar, Lois. Changing Roles of Cataloguers in British Academic Libraries. Library Review, Volume 48. No. 2 (1999)

Gilbert, Andrew. The Wallace Collection: Librarian & Archivist. Personal Interview. 13 April 2004.

Google Advertising Products. Retrieved 15 April: http://www.google.com/ads/products.html

Harrison, H. (1981) Picture Librarianship. Oryx Press: Phoenix, AZ

HellstroÈm, Tomas and Husted, Kenneth. Mapping Knowledge and Intellectual Capital in Academic Environments. Journal of Intellectual Capital, Volume 5 No. 1 (2004)

Kakorous, S., Lacasse, C. & Loose, D. (2003). Creating a Collections Management System. Interactive Qualifying Project, D03. WPI London, England.

Library of Congress Online Catalogue. (2004). http://catalog.loc.gov/

Litvack, Leon. (2001). The Clarendon Edition of Charles Dickens's *Our Mutual Friend*.

Maxwell, M. (1980) Handbook for AACR2, Explaining and Illustrating Anglo American Cataloguing Rules Second Edition. Chicago, IL: American Library Association.

mda Software Survey (2002). Retrieved 25 January 2004, from http://www.mda.org.uk/software.htm

Mento, Anthony J., Martinelli, Patrick and Jones, Raymond M. Mind Mapping in Executive Education: Applications and Outcomes. Journal of Management Development, Volume 18 No. 4 (1999).

Obien, Rodney. WPI Gordon Library Archivist. Personal Interview. 18 February 2004.

Perdue, David. The Charles Dickens Page. (2004). http://www.fidnet.com/~dap1955/dickens/ and Personal Correspondence. 15 April 2004.

Quinn, Patrick. WPI Humanities Department Head. Personal Interview. 19 February 2004.

Schweizer, Florian. Assistant Curator for the Charles Dickens Museum. Phone Interview. 29 January 2004.

Singleton, R., & Straits, B. (1999). Approaches to Social Research. New York: Oxford University Press

Smolnik, Stefan and Erdmann, Ingo. Visual Navigation of distributed knowledge Structures in Groupware-Based Organizational Memories. Business Process Management Journal, Volume 9 No. 3 (2003)

Spicer, David P. Linking Mental Models and Cognitive Maps as an Aid to Organisational Learning. Career Development International, (1998)

Sterling, Isabel A. Topic Mapping for Context, Searching for Context. Onlinemag.net, May/June (2003).

Taylor, A. (1982) AACR2 Headings, A Five-Year Projection of Their Impact on Catalogs. Libraries Unlimited, Inc: Littleton, CO

Williams, Wilda. Professional Media. Library Journal, April 2004

Wills, Bryan. London's Transport Museum: Network Systems Manager. Personal Interview. 7 April 2004.

8.0 Appendices

8.1 Appendix A: Questions to Guide Interviews

Basic Background Questions:

Occupational Field/Job Title:

How are they pertinent to our project?

Use questions from the following list which you feel are relevant:

1. What suggestions would you give a small museum implementing a new cataloguing system?
2. What issues would you foresee such a museum encountering? Are there specific ones which we might oversee?
3. What search methods (key fields) do you feel would be most pertinent?
4. Keyword
5. Author/Photographer
6. Date
7. Images
    - People in the image
    - Photographer
    - Date
    - Relation to Dickens
    - Name of the image
    - Location
    - Engraver
8. Have you ever worked on a similar cataloguing endeavour?
9. What is your affiliation with Dickensian work?
10. What potential users do you foresee our project attracting to the museums catalogue?
11. How would you use the catalogue/database?
12. How do you currently search for Dickens specific information?
13. Have you ever inquired about information held by the Dickens House Museum?

8.2 Appendix B: Request for Proposal from the Charles Dickens Museum

The following document was sent from the Charles Dickens Museum to potential software vendors in January 2004.

The Charles Dickens Museum and National Dickens Library

Introduction

The Charles Dickens Museum, located in Central London, is a Museum for the appreciation of the Victorian writer and an international research centre for the study of Dickens's life and works. It consists of a Museum, a Library and an Archive, all located at 48 Doughty Street. Academic and media researchers from all over the world use the resources held at the Museum, and it is for the purpose of collection management and the access of users outside the London area that we wish to acquire a collection management system with OPAC facilities.
It is envisaged that 4 staff will need access to the system, to varying degrees, on their desks. In addition the system needs to be accessed from an enquiry desk and OPAC users outside the Museum.

Major Requirements

The installation of the system is planned for spring 2005.

The vendor of the automated system under consideration should be in a position to meet the following critical requirements on the date stipulated above. Vendors should be able to give demonstrations of the use and function of the following integrated modules:

a) Cataloguing and bibliographic maintenance
b) OPAC
c) Report generator

Apart from the transfer of existing catalogues, we are planning to catalogue material that is yet un-catalogued. It is essential that the system can cope with the particular demands of library, museum and archive information.

Scope of the project

Proposals are sought for hardware, software, installation, training and ongoing maintenance and enhancement. If a vendor is not supplying hardware, it shall detail the hardware configuration required.

Mandatory Proposal Form

Vendors are asked to respond using the enclosed Summary Form, which should be sent to:

Mr Florian Schweizer
Assistant Curator
Charles Dickens Museum
48 Doughty Street
London
WC1N 2LX

The proposal should reach the Assistant Curator by 1 March 2004. If you have any questions or would like further clarification of any point in the enclosed documentation please telephone the Assistant Curator.

Response to Specifications Elements

Each submission is to include a response to all of the numbered items in the specifications and must employ the following coding with regard to each specification element:

G – in General Release
T – in testing, due _____
D – in design, due _____
P – planned, estimated availability _____
C – Custom programming available at £_____
N – Not available or planned

Prices

The prices shall be written in the Summary Form and stated in figures

Role of the Specifications

The specifications represent the functional capabilities, performance characteristics and hardware minima desired in the system to be purchased. All responses must clearly state intent to provide the functionality or support.

Guarantees and Warranties

All guarantees and warranties should be stated in writing and submitted as part of the proposal.

Past Contracts

Please include with your documentation a list of installations made since January 1998 with website addresses if possible.

Installations

The vendor is to install the system as specified, subject to exceptions in the response and agreed upon in writing by the Museum.

Proposals for Online Catalogue and Collection Management Computer System

The Charles Dickens Museum invites proposals for an Online Catalogue and Collection Management Computer System. The Museum's collection holds Museum objects, archival material relating to Dickens, and the National Dickens Library. The total number of items has been estimated at 100.000. A description of the collections is attached (A). No complete catalogue of the existing holdings exists, although some partial cataloguing projects have been undertaken. The Museum has its own classification scheme, which was devised in 1984 to meet the needs of our specific collection (B).

The aim of the Museum is to introduce a software system that will (a) enable staff to manage the collection according to modern standards[1], (b) allow researchers to search the holdings via a Webcat and OPAC, and (c) allow the Museum to develop and publish an XML schema for nineteenth-century bibliography. The Collection Management and OPAC system will be Dublin Core compliant and work crossplatform. It will function as a highly sophisticated tool for staff and researchers, enabling them to search and manage information to a varying degree of security[2]. A list of technical specifications is attached (C), but this serves as a guideline only. Vendors are expected to show that they can meet these specifications, but they will also add a considerable number of features not mentioned in the list. The system will be intuitive and use standard office layout as well as specific data input forms (e.g. for MARC). The final stage of the development of the Collection Management and Webcat OPAC system will be undertaken in close collaboration with the staff, who will test the system and ask for adjustments if necessary.

The XML schema for nineteenth-century bibliography will be a major research project at the Museum, providing the worldwide community of nineteenth-century research centres and museums with a generic tool to describe and catalogue their holdings and information. As a leading resource for the study of a Victorian public personality, the Museum can build on its existing classification to create, for example, XML-schemas and topic maps, which will also serve the wider community. The management software and OPAC will implement these generic

[1] SPECTRUM and CIDOC for the Museum, AACR and MARC21 for the Library, ISAD(G) and ISAAR (CPF) for the Archive.

[2] If the Collection Management and OPAC use the same data source then restricted public access to management information is to be guaranteed.

tools. The vendor will be expected to make suggestions for generic tools with a wider application to the Museum and Library world.

The vendor will also include answers to the following questions (presented here in no particular order):

How will the system link to and import from the Talis Library portal or other resource portals?

How will the existing catalogues (in MS Access and Word) be transferred to the new system?

How will the system implement the existing collection classification?

How will the vendor ensure that the system's functionality can be added to in order to expand the ability to take advantage of the Internet and new technologies?

How does the system maximise the potential of today's technologies?

How does the system process XML data?

How does the system ensure seamless data exchange (for example through ODBC)?

What system developments are planned for the next three years?

How would you describe the system's capability to customise the staff screen?

How would you describe the system's capability to customise the Web-end of the catalogue?

What server requirements are needed for the smooth running of the collection management system and Webcat OPAC?

How could the underlying database be utilised for displaying information in ways other than traditional OPACs?

What search options are available for OPAC users?

What cataloguing tools (e.g. thesaurus and authority files) are included in the system and how are they designed?

Is it possible for users to set up their own account/profile, and if yes, what options will they have?

Can you describe the system's capabilities to deal with multi-media?

How will the system ensure that restricted information is secure and unavailable on the Webcat and OPAC?

The product will therefore combine a state-of-the-art Collection Management System, a sophisticated and highly efficient OPAC, and generic tools to be developed in collaboration with

the staff and included in the finished product. The Museum understands that the ongoing development (a period of two years is envisaged) will incur further development costs, but vendors are expected to state clearly the time when they will be able to deliver the product (e.g. standard Collection Management and OPAC: six months; generic tools: 12 months). The purchase price for the product is to include ongoing developments to meet the specifications as agreed on in the contract. It excludes further development coasts not specified in the proposal.

Vendors may submit proposals for hardware systems (cf. D) as part of their bid, exactly indicating the prices for software and hardware. Software-only suppliers are expected to indicate minimum and recommended hardware requirements. Short-listed vendors will be prepared to give a product presentation to the Board of Trustees of the Charles Dickens Museum one month before a vendor is selected. Only vendors with an established client base in the UK are eligible. The vendor will offer at least three options for technical support.

The Charles Dickens Museum and National Dickens Library

Summary Form

To: Florian Schweizer
Assistant Curator
Charles Dickens Museum
48 Doughty Street
London
WC1N 2LX

The undersigned propose to furnish the Charles Dickens Museum and National Dickens Library with an automated library system for which the price shown below in accordance with the specifications and the response attached hereto. It is expressly agreed that the Museum and Library have the right to reject any or all proposals submitted if such action is deemed in its interest. The total price for all components, hardware, and software as specified is exactly £_____, the breakdown of which is:

Hardware _____
Software _____
(Cost of individual modules, if applicable)
Cataloguing and Bibliographic maintenance _____
OPAC _____
Report Generator _____
Training _____
Shipping/Installation _____
Other (please specify) _____

Delivery can be made within ___ days from receipt of order.

Maintenance of hardware and software for the first 12 months after system acceptance is £_____, subject to annual increases not exceeding ____ percent for each year of the next four years.
If the Museum and Library wish a "software only" option the price will be £ _____, the breakdown of which is:

Software _____

Training _____

Shipping/Installation _____

Other (please specify) _____

Firm Name: _____

Address: _____

By: _____

Title: _____

Date: _____

Section II – General System Requirements

II.A.1 A complete system will consist of hardware, software, installation, database loader programmes, training, hardware/software maintenance and ongoing software enhancements necessary for full operation – all of which shall be quoted by the vendor.

II.A.2 The system will be fully integrated with all modules sharing a common authority file and subject database and a common command language.

II.A.3 It will be possible to move from one module to another without logging off and on.

II.A.4 All systems and applications software supplied shall be made available without restriction for use by the Museum and Library. Vendor to indicate the underlying software for the package, e.g. Oracle etc.

II.A.5 It will be possible to connect the system to a LAN and the system must be viable under Open Database Connectivity. Vendor to specify with which LANs it has interfaced its system

II.A.6 The system will support access via a browser presenting the output as HTML so that anyone external to the building can access the library system via the internet.

II.A.7 The system as bid will be capable of supporting a 50% increase in database size, number of terminals, or activity level without central site upgrade.

II.A.8 The database will be able to expand to accommodate a doubling of database size, number of terminals, or activity levels *without major redesign or hardware replacement*.

II.A. 9 Expansion to include additional features or enhancements, and improvements in technology shall be possible without interruptions to the programs already operational.

II.A.10 Initial installation of a system will include all hardware and software to support the Museum database, cataloguing and staff enquiry functions.

II.A.11 Software to support the OPAC function will be installed after the acceptance of the software listed in II.A.10

II.A.12 The vendor will offer a program of ongoing software enhancement as part of the software maintenance fee. This will include any software enhancements subsequently made available to new purchasers.

II.A.13 The vendor will assume responsibility for total system performance, including reliability and response time, for a period of at least five years from contract date, provided that the Museum and Library keep the system under maintenance.

II.A.14 The system will be capable of accepting data from tape and by keyboard entry.

II.A.15 Software capability for input and output of bibliographic, authority and holdings data in MARC format shall be provided.

II.A.16 The system will support output of complete files of bibliographic, authority or item data, or subsets of those files (including additions since a specified date, deletions and changes since a specified date.)

II.A.17 The system will be operational at least 35 hours per week with at least 98% reliability.

II.A.18 The system will provide continuous backup so no transaction or data can be lost.

II.A.19 The system will accommodate searches from all terminal and messages (electronic mail) from all non-public terminals.

II.A.20 The system will include a report generator to facilitate retrieval of management information.

II.A.21 The vendor will indicate whether applications software from other sources, including but not limited to word processing and spreadsheets, may be mounted on the system for access by PC-based workstations.

II.A.22 The vendor will describe any modules not specified by the Library which are under development or currently available.

II.A.23 The system will require no hardware or software replacement to accommodate the other contracted software modules available from or under development by the vendor.

II.A.24 The systems will require no specialised in-house maintenance or operating personnel for the Library other than the regular Library personnel using the system.

II.A.25 The system will provide a password system to limit access to certain records and functions to authorised personnel.

II.A.26 The system configuration bid will include protection against the effects of power failure or surges.

II.A.27 The system will protect the central files from erasure or contamination due to operator error or mischief.

II.A.28 The system will be written in a common programming language, to be stated, and utilise a recognised processing standard.

II.A.29 The system will support global replacement and change across all functional processes.

Section III – Detailed Functional Requirements

III.A. Cataloguing, Bibliographic File and Authority Control

III.A.1 The system will support a cataloguing and authority control module, which interfaces with all other modules.

III.A.2 Cataloguing/authority control editing functions shall be protected by several access levels of password security.

III.A.3 The system shall accept tape loading of bibliographic and authority records.

III.A.4 The system shall enable online creation of records using formatted screens and/or prompts, labelled fields or tags.

III.A.5 The system will enable automatic checking for duplicates and facilitate the addition of new copies.

III.A.6 The system will enable the entry of full records in MARC format, including tags, indicators, subfield codes, fixed field elements etc. and without limit to field strength.

III.A.7 A single, system wide bibliographic file will be shared by all components or modules.

III.A.8 The system must be able to handle analytical records.

III.A.9 The system will provide for automatic checking against authority files during data entry and will enable the display of works associated with a heading.

III.A.10 The system will construct indexes immediately as records are added to the database, rather than via a subsequent batch process. Vendor shall describe and delay.

III.A.11 It will be possible to edit and amend records with the minimum of retyping, i.e. full screen editing.

III.A.12 The system will enable digital images to be held as part for the catalogue record.

III.A.13 The system will maintain a system-wide authority files in full MARC format.

III.A.14 The system will support multiple authority files at the option of the Museum and Library.

III.A.15 Local entry of authority control data will be supported by formatted work screens.

III.A.16 Output of authority files in MARC format will be supported.

III.A.17 The system will be capable of accommodating changes in the MARC format.

III.A.18 Personal, corporate and topical name headings will be accommodated in a name authority file.

III.A.19 Title, uniform title and series entries will be accommodated in a title authority file.

III.A.20 Subject headings will be accommodated in a subject authority file.

III.A.21 The system will enable the development, at a later stage, of genre and physical characteristic authority files.

III.A.22 The system will link each heading in the authority files to each occurrence of that heading in the bibliographic file.

III.A.23 The system will enable global changes to headings in the bibliographic file.

III.A.24 It should be possible to add, change or delete authorised headings or entries in batch mode, as part of a new bibliographic record, or as keyed in locally (whether or not related to any bibliographic record.)

III.A.25 The system will regularly provide a list of all authority changes and additions and will flag unauthorised headings for review.

III.A.26 Authority headings and entries will have records that include source of authority, date first used, date of last revision, related references and the number of bibliographic records attached to the heading.

III.A.27 The system will display ‘see’ and ‘see also’ references.

III.A.28 The system will allow for the display of ‘broader terms’ and ‘narrower terms’.

III.A.29 It will be possible to browse through the authority files to see adjacent headings and entries as well as related entries.

III.A.30 The system will record and be capable of regularly providing a list of headings keyed by system users that retrieved no bibliographic records.

III.A.31 The item record will allow conservation status to be recorded.

III.B Online Public Access Catalogue

III.B.1	The OPAC will be available from all terminals.
III.B.2	The number of access points will include, but not be limited to, personal and corporate names, uniform title, conference names, title, series title, subjects, added entries and ISBN.
III.B.3	It will be possible to enter full or partial search keys.
III.B.4	It will be possible for the library to define indexes for staff and public, with the ability to set up sub-menus.
III.B.5	The system will allow key word and a-z searching of the author, corporate name, title, series, and subject fields.
III.B.6	The system will retrieve and display variant forms of a word when the root of the word is entered.
III.B.7	The system will allow internal and imbedded truncation, e.g. one entry can retrieve ‘organisation’ and ‘organization’.
III.B.8	The system will allow users to undertake Boolean searches.
III.B.9	The system will support the use of automated help and online aids to assist in search refinement.
III.B.10	The Museum and Library will be able to define the help messages.
III.B.11	The Museum will enable users to limit searches e.g. by date or type of material.
III.B.12	Readers will be able to access the ‘help’ function without losing their place in searches. Help messages will be available to readers at all times via selection from a menu, a function key and a simple command.
III.B.13	The system will allow browsing, backwards and forwards, for both bibliographic records and authority file records.
III.B.14	System log off will be an authorised function for those who have the appropriate password.
III.B.15	Readers will have access to record of all material types.
III.B.16	The system will allow for different interface levels e.g. a menu for readers and a more sophisticated menu of staff
III.B.17	There will be a system controlled stop list of words, which will not be accepted as search terms. The system will inform the reader of the use of a stop word.
III.B.18	Library staff will be able to revise the stop list.

III.B.19 It will be possible to for a reader to limit a search by year of publication, a range of dates, language, format of country.

III.B.20 The system will enable direct display of a record if there is only one match.

III.B.21 The system will display the search strategy and the number of hits retrieved by each search.

III.B.22 The system will be capable of suspending a potentially long search and providing the reader with the option to narrow the search term, terminate the search, look at current hits, or continue the search.

III.B.23 Prompts will be displayed on screen to facilitate searching by inexperienced users. More experienced users will be able to bypass such prompts.

III.B.24 The system will be cleared for a new session by use of a key or command.

III.B.25 The system will provide a series of menus or prompts, which display options to the user at each step.

III.B.26 Menu will be structured to allow the user to proceed without rekeying the current search.

III.B.27 If a search retrieved no records the system will display the index.

III.B.28 The system will display bibliographic records in labelled format, which is easily understood by readers.

III.B.29 The system will allow a choice as to how search results are to be sorted for display.

III.B.30 The ability to scroll forwards and backwards through search results should be indicated by a clear prompt.

III.B.31 When a record from a list of search results has been viewed the system will return the reader back to the same place in the list.

III.B.32 The system will automatically search on cross-references.

III.B.33 It will be possible to attach a printer to the searching terminals and to print individual citations.

III.B.34 All OPACs will be restricted to the searching of designated files.

III.B.35 The system will accommodate dial-up searches by remote PC users and will support the same graphical user interface for both on-site and remote users.

III.B.36 The system will support seamless linkages with databases and tools running on CD-Rom.

III.C. Serials

III.C.1 The serials module will be available from all staff terminals and to all who have appropriate passwords.

III.C.2 The system will provide include the following capabilities; check-in, holdings, display, claiming, routing and report generation.

III.C.3 The system will provide the ability to search for serial records by at least title, variant title, class number, ISSN, publisher, donor, corporate author/title, conference title, linked title, keyword and subject.

III.C.4 Records will contain current issue status separate from other holdings, binding records and routing instructions.

III.C.5 The system will show gaps in holdings.

III.C.6 The system will be capable of producing a master list of titles in the collection showing holdings information.

III.C.7 The system will automatically summarize individual holdings into a consolidated statement of holdings.

III.C.8 The system will allow for all types of frequencies and will enable easy adjustment if frequency changes.

III.C.9 The system will provide an area in each record for special instructions, e.g. receipt of issue to be acknowledged.

III.C.10 The system will enable the input of frequency, volume and issue information in order to enable the system to predict forthcoming issues.

III.C.11 For titles with a predictable pattern:

1. Check-in of issues earlier or later than the next expected issue will be possible.
2. Staff will not be required to key any data onto the check-in screen, except to indicate number of copies received when this is less than the number expected.
3. The system will archive old check-in information and create a new check-in screen.

III.C.12 For titles without a predictable pattern of enumeration or chronology the system will function so as to require the minimal keying of data by staff.

III.C.13 The system will allow staff to view other predicted issues if the issue in hand is not the next one expected.

III.C.14 The system will enable staff to enter issues not expected, e.g. indexes or supplements.

III.C.15 The system will be able to print routing slips at the check-in stage immediately as an issue is checked in.

III.C.16 Printing of routing slips will be adjustable to enable a batch output at the end of check-in or so that printing can be suppressed altogether.

III.C.17 The system will detect an attempt to check-in an item already received.

III.C.18 The system will automatically identify issues which are overdue.

III.D Interfacing and networking capabilities

III.D.1 The system will be capable of taking in, retaining and outputting bibliographic and authority records in MARC format.

III.D.2 The system terminal will be capable of dialling through a gateway into the system of other vendors.

III.D.3 The system will include dial-up ports for users outside the Library.

III.D.4 System terminals will be capable of accessing CD-ROM drives on a LAN

III.E Report Generator

III.E.1 The system will include a report generator. Vendor to describe.

III.E.2 The report generator will offer a wide range of formatting options.

III.E.3 The report generator will allow for specification of the data content of a report, including choice of titles, column headings, data elements, row labels, header and footer contents and automatic pagination.

III.E.4 A wide variety of data manipulation capabilities will be supported.

III.E.5 The system will support flexible output modes including screen printed graphics, text, magnetic tape or floppy disc.

II1.E.6 The Library will have the option of saving report generation specifications for future use.

III.E.7 The system will allow reports to be saved.

III.E.8 The report generator will function with all other modules.

III.E.9 Operation of the report generator will not interfere with the performance of the rest of the system.

III.E.10 The system may offer export of data for use with an off the shelf PC based application. Vendor to describe.

III.F. Management Reports

III.F.1 Regular management information shall be available through a series of standard, hand coded or programmed reports.

III.F.2 The system will report the number of searches performed with subtotals for each search type.

III.F.3 All data to be kept in one hour segments with the capability to produce daily, weekly, monthly, quarterly and annual reports.

III.F.4 The system will be able to produce reports of missing items.

III.F.5 The system will record the amount of time terminals are in active use by individual terminal and system total time for each day.

III.F.6 The system will report on error messages sent.

III.F.7 The system will report on help messages sent.

III.F.8 The system will report on printer use.

IILF.9 The system will record dial-up access to the system, reporting the number of searches requested or the amount of time external terminals were connected with the system.

III.F.10 The system will report its downtime.

III.F. 11 The system will report the number of bibliographic records and items added by day, week, month and year.

III.F. 12 The system will record the number of additions, deletions and changes to the database.

III.F. 13 The system will be able to produce lists of newly catalogued titles on a weekly, monthly and annual basis.

III.F. 14 The system will report Authority Control file changes on a weekly basis.

III.F. 15 The system will report blind-cross references.

III.G. Archives

III.G.1 The system will support the entry of records using the ISAD(G) format.

III.G.2 The system will allow for a minimum 5-tier hierarchical record structure.

III.G.3 The system will allow different classes of records to be catalogued e.g. letters, diaries, wills.

III.G.4 The system will conform to the Encoded Archive Description standard.

III.G.5 The system will enable data to be exported using a non-proprietary standard.

III.G.6 The system will allow unlimited field lengths.

III.G.7 The archive module will access the same authority files as the other modules.

III.G.8 The system will enable digital images to be held as part of the archive record.

III.G.9 The system will allow different access rights for different users.

III.G.10 The system will allow for date range searches on archival holdings.

III.G.11 The system will be able to print reports, which resemble an archive list.

III.G.12 The system will enable data to be exported to and imported from word processing files.

III.H. Museum

III.H.1 The system will conform to the SPECTRUM standard and contain most of the units of information for object records.

III.H.2 The system will allow for different classes of records to be catalogued e.g. works of art, furniture, memorabilia etc.

III.H.3 The system will enable data to be exported using a non-proprietary standard.

III.H.4 The system will allow unlimited field lengths.

III.H.5 The museum module will access the same authority files as the other modules.

III.H.6 The system will enable up to 10 digital images to be held as part of the museum record.

III.H.7 The system will allow different access rights for different users.

III.H.8 The system will allow for range searches on museum holdings.

III.H.9 The system will be able to print reports.

III.H.10 The system will enable date to be supported to and imported from word processing files.

III.H.11 The system will be able to generate a Deed of Gift for objects received from a benefactor.

III.H.12 The system will be able to generate a Thank you Letter to benefactors.

III.H.13 The system will contain a loan in and out manager which will be able to keep track of all loans movements, generate loan agreements, and notify collection managers of due items. It will also contain packing and shipping notes.

III.H.14 The system will contain detailed insurance information. Vendor to describe.

III.H.15 The system will contain a detailed condition and conservation report maker.

III.H.16 The system will be able to hold information on the legal status of objects.

III.H.17 The system will hold detailed information on storage and location movements.

III.H.18 The system will contain a photo editor which will be able to process the following actions: Acquire new image from scanner/file, Modify image, caption maker, Zoom

III.I Photographic Collection

III.I.1 The system will import the electronic photographic catalogue of the Charles Dickens Museum in its entirety.

III.I.2 The photographic catalogue module will support e-commerce for the portraits, illustrations and topographical material. Vendor to describe.

SECTION IV – Minimum Hardware Requirements

IV.A General Conditions

IV.A.1 The system will support the Library's present requirements plus 30% and will be expandable to support double the present requirements without hardware replacement. The present appropriate requirements are:

1. 20.000 bibliographic records
2. 100.000 authority records
3. 25.000 item records
4. 100 items are catalogued per annum.

IV.A.2 All equipment will be new and fully warranted.

IV.A.3 The equipment will include all components necessary for the system to be operational.

IV.A.4 The vendor shall detail how upgrades in the system will be accomplished, including increased memory, additional disc storage, more terminals etc. Vendor to indicate maximum upgrade potential.

IV.A.5 Unit prices will be provided for all system components.

IV.A.6 The vendor will supply a complete set of user documentation for all hardware and software supplied.

IV.A.7 The vendor will supply a complete set of technical documentation for all hardware and software supplied.

IV.A.8 All items necessary for the installation will be quoted by the vendor.

IV.B. Hardware

IV.B.1 Central hardware will be located in the library,

IV.B.2 Vendor to provide detailed list of hardware necessary. Hardware should be non-proprietary industry standard.

IV.B.3 The hardware expansion capability will accommodate a doubling of the database as listed in IV.A.

IV.B.4 Ports will be available for a number of terminals specified, plus 30% and there will be a capability to double the number of ports at a later date.

IV.B.5 Dial-up access from remote PCs must be available through dedicated dialup-ports with modems.

IV.C Power Conditioning

IV.1.1 The vendor will configure and certify adequacy of a power conditioner for the central site to protect from surges and other power problems.

IV.D Terminals

IV.D.1 The system will support the following types of terminals:

1. Inquiry only terminals capable of supporting a printer.
2. PC based 'workstations'

IV.D.2 The system will include inquiry only OPAC terminals.

IV.D.3 All necessary adapters, tape-loading devices and other hardware to utilise backup devices shall be configures and quoted as part of the bid price.

SECTION V - VENDOR SUPPORT

V.A. Vendor Viability

V.A.1 Vendor will submit its most recent audited financial statement.

V.A.2 Vendor will detail the number of staff committed to software development and maintenance.

V.A.3 Vendor will submit a complete list of installations made since January 1995.

V.B. Database Loading

V.B.1 The Library will be responsible for providing bibliographic records in MARC format

V.B.2 Vendor will provide loader programmes for bibliographic records.

V.C. Delivery and Installation

V.C.1 The vendor will provide central site preparation instructions.

V.C.2 The Library win provide and prepare the site.

V.C.3 The Library will provide adequate space for the peripherals and the proper electrical power.

V.C.4 The vendor will inspect and certify the site.

V.C.5 In scheduling delivery, installation and training, the vendor will accommodate the Library's desire to accept the functional components in stages as set forth in Section II

V.C.6 The Library reserves the right to change the sequence or lengthen the time between the installation of modules.

V.C.7 The vendor will supply a detailed schedule setting forth the steps of delivery, installation, start-up, training etc. it proposes to follow.

V.C.8 The vendor will supply an estimated time required for the actual installation of the initial system and for each later stage of installation.

V.C.9 The vendor will install the system.

V.C.10 All cabling necessary must be supplied by the vendor.

V.C.11 All materials and installation practices will be in conformity with listing regulations.

V.C.12 The vendor will certify in writing when the system is installed and operational.

V.D. Supplies

V.D.1 The vendor will provide a listing with current unit prices of all supplies required for operation of the system.

V.D.2 The vendor will identify source of supply in addition to itself.

V.E. Training of Personnel

V.E.1 Personnel selected by the Museum and Library - as many as 5 persons - will be given a system overview and demonstration of each basic function in the initial installation at the Library.

V.E.2 Similar sessions will be scheduled as each module is brought in.

V.E.3 For the initial installation 5 staff members (Curator, Librarian, Assistant Curator, Archivist + 1) will be trained so that they are capable of performing the following unassisted:

1. Perform all operator functions and supervisory override functions.
2. Know common causes of system failure and the remedy for each
3. Follow oral instructions given by telephone for the correction of system problems
4. Identify and perform all elements of preventive maintenance of the system not routinely performed by the vendor.

V.E.4 Vendor will quote the maximum number of trainees per class and the total number of training days.

V.E.5 Similar training sessions will be provided as other modules are brought in.

V.E.6 Vendor will quote costs for any additional training.

V.E.7 The vendor will provide clear and complete user manuals detailing all operations necessary for use of the system.

V.E.8 The vendor will provide appropriate supplements and updates prior to the activation of any software updates.

V.F. Maintenance

V.F.1 The vendor will offer full preventative and remedial maintenance for software and for all hardware which it provides.

V.F.2 The vendor will provide telephone support.

V.F.3 The vendor, or its subcontractor, will provide on-site hardware and software maintenance from 9am to 5pm. Monday to Friday for a fixed monthly rate, and hourly rates for maintenance outside normal hours.

V.F.4 For any items for the maintenance of which the vendor is responsible, a four hour response time is the maximum allowable to have a maintenance person at the Library for correction of a major problem.

V.F.5 Software maintenance will include all software enhancements offered as part of the standard system to future prospective customers.

V.F.6 The vendor will identify any software modules currently available or planned, which will only be available to the Library at an additional charge.

V.F.7 The vendor will identify user groups in existence at the time of the bid and give evidence of facilitating regular communication among users.

V.G. Application Software Requirements

V.G. 1 The application software will be written in an ANSI standard higher level language which is capable of transfer to hardware other than the computer line being proposed by the vendor.

V.G.3 Source code and system documentation for all applications programmes must be supplied to the Library.

SECTION VI - ACCEPTANCE AND ONGOING RELIABILITY

VLA. The Components of Acceptance

VI. A.1 Post-installation tests will be performed upon completion of each stage of the phased installation.

VI.A.2 Each post-installation acceptance test will have three components: a review to determine that all specified features are present, a measurement of response times, and a measurement of reliability over a period of 45 consecutive days following the vendor's written notice that each stage of the system is fully installed and operational.

VI.A.3 The Library will hold back no more than 25% of the price of the hardware and software initially installed, pending passage of initial acceptance test.

VI.A.4 If the system is bid as a single package, the Library will negotiate a schedule of implementation and payment for the several stages.

VI.A.5 The Library may withhold 25% of the hardware/software price for new modules until the acceptance test has been satisfied following installation of these modules.

VI.A.6 The response time and/or reliability components of the acceptance test be repeated when any combination of the database, number of terminals, and activity levels have been increased by 30% - with remedies to be tied to the maintenance contract.

VIB. Conducting the Acceptance Test

VI.B.1 Representatives of the Library and the vendor will check the availability and performance of each feature while all terminals in the system are in use.

VI.B.2 Maintenance logs will be kept by the Library m order to facilitate the measurement of system reliability.

VI.C. Reliability and Downtime

VI.C.1 The automated system will be 98% reliable during operational hours after initial installation, after each module is installed and for as long as the Library subscribes to the vendor's maintenance programme.

V1.C.2 Downtime will be that period of time when it is not possible to perform scheduled activities due to an equipment or software malfunction or when the system is released to the vendor for remedial maintenance.

VID. Response Time

VI.D.1 Response time for reader access catalogue searching will average no more than 5 seconds 95% of the time for all queries, except Boolean.

VI.D.2 Response times shall not exceed eight seconds for any search except a Boolean search.

VI.D.3 Boolean queries shall average no more than six seconds 95% of the time.

VIE. Withholding of Maintenance Payments

VI.E. 1 Pending acceptance of the initial installation, no hardware or software maintenance costs shall be incurred by the Library.

VI.E.2 Failure of the automated system to perform at the contracted level of reliability after acceptance shall result in the Library withholding 10% of the monthly maintenance fee for each 1% the system fall below the contracted reliability level.

VI.E.3 If any part of the files of database is lost due to a system failure when all maintenance schedules have been observed by the Library, the vendor will provide its personal for restoring the files or database, or the Library may withhold maintenance payments until it has recovered the cost of having its own staff rebuild the files or database.

VI.E.4 If hardware is in the vendor’s contract, and if the vendor retains a third party hardware maintenance firm, it shall manage the maintenance contract.

8.3 Appendix C: Sample MARC Record from the Library of Congress

from (http://cip.loc.gov/cip/ecip7c.html)

LC Control Number: 2001047329

MARC Display:

```
000 01735cam  22004098a 450
001 12497690
005 20011113191229.0
008 010808s2001    nyu     b    001 0 eng
906 __ a  7 b  rix c  orignew d  1 e  ocip f  20 g  y-gencatlg
925 0_ a  Acquire b  2 shelf copies x  policy default
955 __ a  to SSCD pc23 2001-08-08; c  sh20 2001-08-13 d  sh44
       2001-08-14 e  sh43 2001-08-17 to Dewey a  aa17
       2001-08-21
010 __ a   2001047329
020 __ a  0801487161 (pbk.)
040 __ a  DLC c  DLC d  DLC
041 1_ a  eng h  ara
042 __ a  pcc
050 00 a  B753.F33 b  .A25 2001
082 00 a  181/.6 2  21
100 0_ a  F¯ar¯ab¯i.
240 10 a  Selections. l  English. f  2001
245 10 a  Alfarabi's philosophy of Plato and Aristotle / c
       translated, with an introduction, by Muhsin Mahdi.
246 30 a  Philosophy of Plato and Aristotle
250 __ a  Rev. ed.
260 __ a  Ithaca, N.Y. : b  Cornell University Press, c  [2001]
263 __ a  0110
300 __ a  p. cm.
490 1_ a  Agora editions
500 __ a  With new foreword.
504 __ a  Includes bibliographical references and index.
505 0_ a  The attainment of happiness -- The philosophy of
       Plato, its parts, the ranks of order of its parts, from the
       beginning to the end -- The philosopy of Aristotle, the
       parts of his philosophy, the ranks of order of its parts, the
       position from which he started and the one he reached.
650 _0 a  Happiness.
600 00 a  Plato x  Contributions in concept of happiness.
600 00 a  Aristotle x  Contributions in concept of happiness.
650 _0 a  Philosophy, Ancient.
700 1_ a  Mahdi, Muhsin.
830 _0 a  Agora editions (Cornell University Press)
963 __ a  [This field  is for the name , phone number, and
          email address of the publishing house contact person.]
```

CALL NUMBER: Library of Congress Holdings Information Not Available

DATABASE NAME: Library of Congress Online Catalog

8.4 Appendix D: Initial Software Evaluation

The following were the main reasons for why each of the Vendors was eliminated as a possible final candidate:

Vendor 4

- **Facts**
  - Hardware and Software-£17.104 Software Only-£15.204
  - Did not reply to either of our correspondence e-mails for more clarification
  - Company is very corporation based, and does many varied applications. Does not appear to be a library specialist.
- **Conclusion**
  - Within our price range
  - We're concerned that GEAC is not as supportive as the Museum may need, since they didn't even reply to either e-mail
  - The package is affordable and includes many of the requirements of the RFP, so it's not that the package is bad
  - Some of the answers seemed to be for questions not posed in the RFP, and so we're slightly concerned that they may have answered questions without a true understanding of what was being asked

Vendor 5

- **Facts**
  - Software only - £82.836
  - Uses STAR to store data
  - Exports ASCII text, MARC, XML, or comma-delimitted files
- **Conclusions**
  - The software package was inclusive of much of the needs of the RFP, but is simply too expensive for the Museum to consider

Vendor 6

- **Facts**
  - Software only - £31.025
  - Most features don't work with MARC
  - Stores data in multiple files
  - Requires more licenses
- **Conclusion**
  - Within our price range
  - Since it does not work well with MARC records, it was quickly eliminated as a possible solution
  - Since it stores the data in hundreds of various files, integrating the database with the topic mapping feature would be a nightmare
  - More licenses as more users use the system can quickly raise the price

Vendor 7

- **Facts**

    - Software only - £69.582
    - Stated in the cover letter of the proposal, this is not a library cataloguing implementation and does not support MARC format
    - Uses expensive database as back end
    - Timeline of 5 days to one year for installation
- **Conclusion**
    - Our of our price range
    - MARC support is a necessary component of our program
    - Potential cost issue if database needs upgrading/outside support in the future

The timeline of 5 days to one year seems rather odd. How can a company be so unsure of their timeline?

8.5 Appendix E: AHRB Application Form

A · H · R · B

arts and humanities research board

Application Form

Resource Enhancement scheme

Confidential

Closing Date: 28 November 2003 ☐ Closing Date: 28 May 2004 ☐

For office use only	AN	APN	P1	P2	P3	AH

Please ensure that you read the 'Guidance notes for completing and submitting the Resource Enhancement application form'

1. Name of applicant

Title: First name: Surname:
Date of birth:

Address for correspondence

Postcode:
Tel no:
Email:

2. Present appointment

Present appointment and employing institution

Your link with the institution if you are not currently employed by the HEI that will host the research

3. Details of grant requested

Title of project (not more than 15 words)	Sum requested to the nearest £
Online Catalogue of the National Dickens Library and Research Collection at the Charles Dickens Museum	

Is this a resubmission to the AHRB?

Yes		No	
		X	

4. Project summary

Information on your project may be provided to the media and the wider public. Please use this space to provide a description of your research in a way that could be used for a general – i.e. non-expert - readership. (Maximum 100 words.)

Primary aim is to produce the authoritative online public access catalogue of the holdings of the Charles Dickens Museum, the premier resource in the world for the study of this author. By bringing together, in one streamlined resource, an illustrated description of the museum's holdings of historic objects, paintings, photographs, manuscripts, and primary and secondary print material, it will introduce a wider audience – including international scholars, enthusiasts, and pupils – to the range of unique items in the collection

5. Co-applicant(s)

Title, First name(s), Surname (underlined)	Date of birth
1. 2.	

Present appointment and employing institution

1.
2.

6. Commitment to the project

Please give details below of the anticipated average number of hours per week that will be devoted to the project by the following

Principal applicant
Co-applicant (1)
Co-applicant (2)

7. Particulars of other research funding and commitments

Please give details of any support sought or received from any source – including the AHRB – in the past five years, for this or any other research project. You should read carefully the guidance notes provided before completing this section. Please note that the time commitment box need only be completed where a project will be running at the same time as the project for which you are applying for AHRB funding.

Name of applicant	Funding Body	Title of Project	Start date	End date	Time commit-ment (hrs per week)	Amount Sought/ Awarded (£)	Outcome

8. The research resource

In no more than 750 words please provide

(a) a description of the research materials or resources at the heart of your proposal including their current value
(b) their potential value to the research community and an explanation and justification of the need to enhance the resource
(c) what advice you have sought or received from other scholars on the value of the resources and how they might be made more accessible. If the resources are based outside the HE sector, you should describe the link between the resource-holding institution and the HEI, and the nature of the resource-holding institution's commitment to the work.

A.

The Charles Dickens Museum (opened in 1925) is the most important collection in the world of material related to the life and work of this writer. Located in the grade 1-listed house where Dickens lived from 1837-9, it combines the functions of museum (1000 objects, including paintings, personalia, and items relating to or illustrative of Dickens's enduring significance in Western culture); research library (over 100,000 items); photographic collection (10,000 images); and archive (50,000 items covering a period from Dickens's lifetime to the present). Material in the Library falls into two distinct categories: primary and secondary. Primary sources includes rare books, monthly parts of novels, plagiarisms, dedication copies, and annotated public reading copies, as well as many complete editions, stretching from the original monthly parts, through all editions over which Dickens exercised editorial control, to the most recent Everyman's Paperback edition. Foreign language editions and many grangerised copies add to the value of this collection. The collection of secondary sources covers all aspects of Dickens's life, work, and reception, and includes rare books on topography and biographical matters. The majority of the Museum's books are unique or rare items, which are generally unavailable to the academic community, and for which there are no MARC (Machine-Readable ????)records The archive includes papers originating from Dickens (over 800 letters and literary manuscripts); contemporary records; family papers and legal documents; newspaper cuttings from 1870 to the

present; papers relating to Dickens research since 1920; the records of the worldwide Dickens Fellowship; theatre programmes since 1920; and a music sheet collection.

The collection has value as an important repository of material relating to the development of national culture. In DeVries's recent bibliography it has been described as *********. In monetary terms, it is valued at £5 million for insurance purposes (but individual items would of course, fetch much higher prices on the open market). As for scholarly value, the resources are used regularly by both UK and international researchers, as well as by film, television, and radio producers, enthusiasts, and ??? . Members of the public also benefit from access to the building, which is open for casual visits, organised tours, school visits, and special exhibitions, and access courses. The Museum's small, dedicated staff handle a host of day-to-day inquiries (by phone, email, and in person) from individuals and groups who see the institution as the first — and most logical — port of call for all matters Dickensian. The bulk of the Museum's collection is, understandably, hidden from public view; but these materials are of interest to — and accessible by — scholars and specialists by arrangement with the Museum. It is, at present, impossible for researchers who do not visit in person to take advantage of all the Museum might offer, because no comprehensive, widely available, up-to-date catalogue of the collection exists. If, as this project proposes, an online facility were developed, the Museum's collection could be made known to a wider world, and a greater number of individuals would benefit from familiarity with this unique, world-class set of resources.

The Museum has for some time recognised the problems identified above. Details of its holdings are kept in a variety of formats, including card catalogues, Word files, database files, A4 file

boxes, and still photographs. There are several cases of incomplete inventory records: for example, there is no comprehensive catalogue of the photographs, magic-lantern and 35-mm slides, and colour transparencies; only 25% of the primary and 50% of the secondary library holdings are recorded; also, while some individual collections in the archive have contents lists, there is no complete catalogue. Because of funding constraints, it has been impossible to progress with this work on an enlarged scale or at an accelerated pace; nevertheless, the modest initiatives already undertaken have had demonstrable benefits. A digital catalogue of a portion of the Museum's illustrations and portraits was created in a Microsoft Access database in 2002. This facility, developed as a pilot project, had as its primary goal the enhancement of Museum revenue through supplying photographs for purchase by, for example, literary and historical scholars, picture researchers, and television companies. The absence of a robust delivery system has prevented even this small portion of the Museum's collection from being made available to the general public in an online facility. This proposal to the AHRB seeks to develop such a facility which, in addition to making details of the Museum's holdings available to a wider world, would preserve selected artefacts from accelerated deterioration.

In 2002 the Trustees of the Museum established a Collections Group, whose members include representatives from academia and librarianship, as well as Museum staff. Its remit is to collect, document, preserve and make electronically accessible material (books, objects, and archival material) relating to the life and work of Dickens, in order to develop the Museum's Collection as a centre for research, serving a range of users including scholars, students and the media.

Queens University will manage the server for the resource once digitised. They will provide the technical knowledge needed to maintain the database. Backups are made daily and

stored in an off-site firebox to prevent damage. Dr. Litvack, the project applicant is a Reader at Queens University, and is also a Trustee of the Charles Dickens Museum. The Museum will be providing their curator, Mr. Xavier, and assistant curator, Mr. Schweizer, as dedicated assistants and are co-applicants to the project. They will be managing the post doctorate researcher who will be hired for the project as well as working with the librarian, archivist and permanent Museum staff member during the creation and entry of the items into the database. (747 words)

Total number of words

9.Output and dissemination

Are the main outputs of your project intended to be *(please tick one or more, as appropriate)*

Book (single authored)	
Book (co-authored)	
Book (edited)	
Book (chapter)	
Critical edition	
Journal article (refereed)	
Journal article (non-refereed)	
Conference paper	
Catalogue	
Datasets	
Database	
Software	
Website	
Performance, film or recording	
Exhibition or installation	
Artefact, work of art	
Composition or score	
Piece of creative writing	

Interactive website	
Other (Please specify)	

Please describe the proposed output from the project, and outline your plans for publication or public output of the work for which you are seeking an award (in no more than 200 words). Specify the audiences to whom the outcomes of your project will be of interest, and how you will present those outcomes to them.

A complete database and catalogue of the contents of the Charles Dickens Museum will provide easier access to the world class resource, which has proved to be valuable to researchers over the past 80 years. The OPAC will contain an innovative topic mapping search interface allowing users to see associations systematically defined by Dickensian experts. The associations relate areas of Dickens life and works from the entered search keyword to other areas in the database which may not be obvious, but are inter-linked with related themes and categories throughout the catalogue. The foundation for the associations is the Classification Schema which was designed specifically for the Charles Dickens Museum in 1983. The Schema classifies information about Dickens with extreme specificity, but can be applied as a generic categorisation tool for Victorian personalities. The innovative searching interface system can also be used as an interactive teaching tool to expose non-Dickens experts to lesser known areas of Charles Dickens. The database will be deposited with AHDS and through the Museum's website users will be able to gain access to the OPAC. (179 words)

Electronic resource: If you are submitting a proposal where a **significant product or by-product** is the creation of **an electronic resource** then you must also complete **Appendix 2** describing the value added to the project by ICT and the project's proposed methods.

10. Scheme of work and proposed outcome

Please describe in no more than 1500 words your proposed scheme of work and the proposed outcome, using the following sub-headings: aims & objectives; outcome; methodology; dissemination. If this is a resubmission, you should summarise the changes you have made in resubmitting your proposal. Failure to provide adequate detail on all aspects of the project, including the reasons for expenses to be incurred, **may seriously prejudice your application.**

Aims and Objectives:

The project seeks to create a comprehensive and fully searchable catalogue dedicated of the collection at the Charles Dickens Museum. *The whole of the collection will be recorded with*

approximately 37,000 files entered into the database. With this, one-hundred percent of the Museum's holdings will be digitally documented, improving the staff's ability to locate items and will make the contents of the Museum available to users. Prior to the project a maximum of twenty-five percent of these items were card catalogued greatly hindering the staffs time and effort in locating requested items for researchers and other academics. Each item will be recorded in the database following the best practice of bibliographical and archival description, MARC and ISAD(G) standards, as well as cataloguing archival and museological artefacts. The catalogue will offer a new topic map searching interface which will link users to related areas about Dickens through their initial search and can be used as a teaching tool to expand people's knowledge. Information about Dickens is interlinked throughout his work and his private life, which can be characterised as associations. The librarian and archivist will also be hired to work with a Museum staff member to make a complete record of these associations. The integration of the topic mapping scheme will create an intricate web of links in the database that will assist the user in discovery of related areas that are lesser known to non-Dickensians.

Outcome:

The catalogue will be available via the internet. Currently twenty-five percent of the collection's contents are contained in a card catalogue which has proven to be a valuable resource despite its need of organisation. The OPAC will contain the many items that are rare or unique and have not yet been recorded anywhere in the world. The **full-time librarian and part-time archivist** will be able to enter these items into the catalogue, making a first time record for them, but will also be creating MARC records which did not previously exist. Once the project is complete, one-hundred percent of the Museum's holdings will be electronically recorded and organised. Researchers will be able to ask for specific items requiring less time to locate the information and turn over. Staff members' time will not be tied up with spending an extraneous amount of time and energy locating these items, and will be available to help greater numbers of researchers. A printed copy of the catalogue will be published by AMS Press in New York and London, who specialise in Dickensian studies. In addition, the authoritative MARC records will also be produced. (Another aims of the project will be to edit existing MARC records from other Libraries and to create new ones, which will have authoritative status. The staff at the Museum will be able to create the best MARC records available due to their expertise in the area from

working in the Museum)

Methods:

The Museum had a group from Worcester Polytechnic Institute, an engineering university from the United States, to conduct a feasibility study on the implementation of the proposed project in a three year period and the possibility of the innovative topic mapping search interface. They also aided the Museum with the selection of the new software needed for the catalogue out of 7 possible vendors, in addition to making recommendations for hardware and server support needed to create. In their considerations for the software special attention was paid to the ability for the software to meet the needs of the Museum, ease of customisations and the feedback of previous and existing customers. In order to get the project completed in the three year time frame it was determined that a librarian/cataloguer and an archivist will be hired to catalogue the collection and to link associations for the topic mapping tool, in addition to the research assistant in Belfast. The entry into the database will begin with entering the purchased 7,000 MARC records and will be the librarian's responsibility. The librarian and archivist that will be hired must be Dickens experts in order for them to work with the Museum's staff to create the associations. It will then be possible to begin the process of making authoritative records and authority files on new Dickens items following the best practice of cataloguing standards. It would not be feasible to catalogue every item in the collection (approximately 100,000) separately, however, if articles such as newspaper clippings are maintained in a large organised folder the project can be completed within the three year grant schedule. By following General International Standard Archival Description (ISAD(G)) standards the newspaper clippings can be entered into the sixth level of fonds which describes repository holdings, but does not require each clipping to be entered individually. For example, for the year 1965 there could be over 1,000 articles in existence but the entire folder containing the 1965 articles will be recorded as one for entry into the archives making it easier for researchers to locate them.

After the initial associations have been completed, the cataloguer will begin the process of entering the records into the database. Mr. Xavier and Mr. Schweizer will be collaborating with the librarian and archivist to ensure the project stays on the projected schedule. Dr. Litvack will be monitoring the research assistant, who will be required to be an IT specialist, in Queens University. The main task of the research assistant will be to work with SSL in creating the customisations needed to implement the topic mapping search interface.

Dissemination:

The OPAC will be available through the Museum's website, which is currently under construction to be more user-friendly than the one in present use. The database is intended for use mainly by scholars, but is a useful tool for anyone interested in learning about Dickens. There will be two search options in the catalogue, a keyword search and the topic map association search. The customised search module will allow the user to item they entered, and will include the photographs, illustrations, etc. directly related to the article. If the user chooses the topic map, they will be guided through a web-like chain of categories that are linked to an initial category search.

Scheme of work, continued

Total number of words

11. Ethical aspects of the proposal

Does your institution have a policy on good conduct in research?

Yes ☐ No ☐

If the answer to the above is Yes, please indicate below where the policy can be accessed (eg website address)

If the answer to the above is No, are there any ethical implications arising from the proposed project?

Yes ☐ No ☐

If yes, please give details below of what they are and how you intend to address them.

12. Duration of the project (please refer to guidance notes for earliest start date)

Duration of current proposal (max 3 years)	Start date				End date			

13. Budget summary

Give a summary of the total costs that will be incurred; then complete the detailed breakdown in Section 14.

Summary	Project Year 1	Project Year 2	Project Year 3
Staff salaries			
Travel and subsistence			
Consumables			
Equipment			
Special costs			
Indirect costs (46% of staff			
Total in each year			
FOR OFFICE USE ONLY *Profile type:*		GRAND TOTAL	£

14. Detailed budget statement

(a) Staff costs

Particulars of Post						
Postdoctoral Researchers	Grade	Starting point on salary scale	Increment date	Starting salary	NI and superann.	Year 1 Total
Technical/ other staff						

(b) Total costs to project

	Effort on project		Cost to project (£)			
Postdoctoral	%	Months	Year 1	Year 2	Year 3	TOTAL

Technical/ other staff						

(c) Other costs

Please itemise and justify other expenditure requested for (a) travel and subsistence, (b) consumables, (c), equipment and materials and (d) special costs (under this heading please identify external advice ; specialist training; and costs of preparation of research for public output and preservation separately)

Description and costs	Justification	Total
Project Year 1		
Project Year 2		

Project Year 3		

15. Nominated evaluators

Please supply **full contact details** of 6 nominees. In signing the application form, you confirm that these nominees have no direct connection with your proposed project, with your own employing institution, with individuals specified in the application, or with their employing institutions.			
(1) Name: Address: Email:		(2) Name: Address: Email:	
Evaluator's area of subject expertise Your relationship to this evaluator if they are personally known to you: Why have you chosen this evaluator?		Evaluator's area of subject expertise Your relationship to this evaluator if they are personally known to you: Why have you chosen this evaluator?	

(3) Name: Address: Email:		(4) Name: Address: Email:	
Evaluator's area of subject expertise Your relationship to this evaluator if they are personally known to you: Why have you chosen this evaluator?		Evaluator's area of subject expertise Your relationship to this evaluator if they are personally known to you: Why have you chosen this evaluator?	
(5) Name: Address: Email:		(6) Name: Address: Email:	
Evaluator's area of subject expertise Your relationship to this evaluator if they are personally known to you: Why have you chosen this evaluator?		Evaluator's area of subject expertise Your relationship to this evaluator if they are personally known to you: Why have you chosen this evaluator?	

16. Signatures and date

I have read the Terms and Conditions and agree to be bound by them if the application is successful

Signature of applicant | | Date | |

On behalf of the institution

The institution agrees to abide by the Terms and Conditions of the Resource Enhancement scheme if this application is successful.

Name and signature of the Head of Department (or equivalent)

Signature	Print Name (including title)

Institutional Authorisation (for example the Head of the Research or Finance Office). Please note that we will notify this person if the application is successful.

Signature		Address details if different from section 1
Print Name (including title)	Date	
Position		
Institutional Stamp		

The completed form (signed and dated) and appendices plus 10 copies (double sided if possible), should be returned to the Resource Enhancement Team, The AHRB, Whitefriars, Lewins Mead, Bristol, BS1 2AE by 5pm on the closing date. The hard copy of the application must be received by this deadline: faxed versions will not be acceptable in the absence of a hard copy. Late or incomplete applications ***will not be accepted***, and will be returned to you.

17. Application checklist

You are invited to use this checklist to make sure that all the appropriate documents are being submitted with your application.

Have you included***:***

the original application, completed and signed by you and by someone within the institution? ☐

your summary curriculum vitae and publication list? ☐

a summary curriculum vitae and publication list for any co-applicants? ☐

a summary curriculum vitae and publication list for any research assistant(s) to be employed? ☐

completed Appendix 1 indicating the panel(s) which should consider your application? ☐

completed Appendix 2 if your project involves the creation of an electronic resource? ☐

10 copies of all the above, double sided (if possible) and stapled? ☐

completed Equal Opportunities Monitoring form (optional)? ☐

a stamped, self-addressed postcard if an acknowledgement is required? ☐

A · H · R · B

arts and humanities research board

Appendix 1

Panel Structure

The Board has a structure of eight subject panels for the assessment of applications. Please indicate which subject panel(s) should consider your application. You should select either one panel or two panels for applications that cross subject boundaries. Your application will be sent for assessment only to the subject panels you have specified.

Panel 1:	Classics, Ancient History and Archaeology	
Panel 2:	Visual Arts and Media: practice, history, theory	
Panel 3:	English Language and Literature	
Panel 4:	Medieval and Modern History	
Panel 5:	Modern Languages and Linguistics	
Panel 6:	Librarianship, Information and Museum Studies	
Panel 7:	Music and Performing Arts	
Panel 8:	Philosophy, Religious Studies and Law	

Please state briefly why the panel(s) selected is/are the most appropriate to assess your application.

For our monitoring purposes you are asked to indicate below the subject area(s) of your research, and specify with an asterisk the primary subject area of your project.

Ancient History		History of Art, Architecture and Design	
American Studies		History of Ideas	
Archaeology		History of Science	
Art and Design		Iberian and Latin American Languages	
Asian Studies		Italian	
Celtic Studies		Law	
Classical Languages (Greek and		Librarianship, Information & Museum	
Communications and Media Studies		Linguistics	
Comparative Literature		Medieval History	
Cultural Studies		Middle Eastern and African Studies	
Dance Studies		Modern History	
Drama and Theatre Studies		Music	

Early Modern History		Oriental Languages	
English Language and Literature		Other Languages and Literature	
European Studies		Other Performing Arts	
Film Studies		Philosophy	
French		Practice-based Creative Writing	
German		Russian, Slavonic and East European Languages	
Hispanic Languages		Theology, Divinity and Religious Studies	

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arts and humanities research board

Appendix 2
Technical Appendix

Please complete this appendix if your application proposes to create an electronic resource(s). In advance of completing this appendix, you should read the guidelines for the scheme, the Board's ICT Policy, AHDS guidelines on depositing electronic resources and the notes for guidance on completing the technical appendix. You are strongly encouraged to contact the AHDS for information and advice at all stages of preparing your application.

1. PROJECT MANAGEMENT

The project will be directed by the applicants, Dr. Leon Litvack, Andrew Xavier, and Florian Schweizer, and counseled by the Dickensian Advisory Board. The project will be directed by the applicants, Dr. Leon Litvack, Andrew Xavier, and Florian Schweizer, and counselled by the Dickensian Advisory Board. The applicants will manage the archivist, librarian and research assistant over the course of the project. The research assistant has two years to complete the customisations and help with troubleshooting for any potential problems that may arise.

Upon completion the project will provide a complete database and catalogue of the contents of the Charles Dickens Museum as well as world wide access to the priceless resource. The OPAC will also contain an innovative topic mapping search interface, designed to explain associations from Dickens life as understood by Dickensian scholars. The Schema breaks down information about Dickens with extreme specificity, but can be adapted as a generic categorisation tool for any typical Victorian personality.

Project Timetable

First two months	**Museum Staff and Research Assistant**-Contact software vendor and discuss needs for particular database layout and design. **Librarian and Archivist**-Review Dickens Museum Classification.

Third month	**Research Assistant and Software Vendor**-Begin installation of necessary cataloguing software. **Librarian and Archivist**-Begin outlining possible generic topic map of collection and apply Classification to it.
4^{th} to 10^{th} month	**Research Assistant**-Design and program topic mapping implementation. **Librarian and Archivist**-Works with IT specialist on design and begins entering records.
10^{th} to 12^{th} Month	**Museum Staff**-Begins testing topic mapping scheme, attempt to find potential issues. **Librarian and Archivist**-Begins populating association file for the links to create the topic map while continuing to enter records. **Research Assistant**-Finish coding the topic mapping software component. Begin troubleshooting and continue customisation for topic mapping scheme.
From 12^{th} until end of project/grant time frame	**Librarian and Archivist**-Continue to enter items, while also completing the topic mapping associations and ensuring each item is associated with at least one topic of association.

2. DATA DEVELOPMENT METHODS

Content Selection

Cataloguing the entire collection of the Museum is the goal of this project. One large factor which could potentially delay the entering of records is the installation and configuration time required for the catalogue software. Until this occurs, no input of records can begin and so it is crucial that the installation of the cataloguing system be done as quickly as possible at the start of the project.

Copyright

The contents of this system are strictly for cataloguing purposes. Therefore, copyright should not be of concern as the system will only be showing topics and records of individualised holdings, neither of which is copyrighted material.

In the event pictures or other media are associated with a record for public display, the appropriate copyrights will be obtained prior to posting. Much of the library's collection falls outside of copyrighted dates. However, in the event something is to be included in the database and to be made available to the public, written permission will first be obtained.

Data format

The individual records will be stored in a software toolkit and database known as Index+ which has been developed by System Simulations Ltd. The Index+ database has been designed

specifically for catalogue entries and speed. The system is highly reliable and fast, with the ability to return thousands of records in seconds.

This toolkit will allow for data of various formats to be both imported and exported, including ASCII, CVS, and XML. It also has the ability to interface with the ODBC standard for data interconnectivity. The proposed software package also includes an HTTP web server, which will allow for requests to be fulfilled online and responses to be returned in either HTML or XML format. Should the need arise, an ODBC module may be added to the proposed SSL software package, which will allow for standard communication with other applications through interface exchange methods such as SQL. While not currently necessary, it is beneficial to have an alternate means of importing and exporting data if the need arises.

All associated images and media files (JPEGs, PDFs, Word Documents, etc.) will be contained in a centralised area of the server, and will be available to all necessary database, topic mapping module, and web server needs. These files will not need to be reentered later due to access limitations or file-format conflicts. As aforementioned, the Museum will obtain all appropriate copyright permission before making included media files available to the public or online.

The concept is to store the topic each record is associated with in an individual record, using the ability of Index+ to add custom fields to each record. From there, each topic will be linked to all others (topics) using an association file. The association file will be independent of the actual programme, allowing staff and cataloguers to edit after the actual topic mapping software has been written. Along with easy to edit authority files, having one system-wide authority file will allow for simultaneous changes in linking throughout the system. By having each record simply link to its specific topic, it allows for the topics to be moved around and linked to from multiple sources without the need for each individual record to have these links recorded in it.

Software Coding

The development of the topic mapping software will be done by the IT specialist, whilst being overseen by the project leader. The IT specialist will be charged with multiple tasks, including:

- Working with SSL and the staff to ensure the necessary customisations occur.
- Design a software concept map, which plots out on paper which features are to be implemented, and which parts of the software shall be dependant upon other parts.
- Ensure that any code written has the ability to interface with the database which powers the catalogue.
- Document all code as well as keep a log of work done and steps taken to finish the project.

Documenting

The entire project shall be documented, recording the steps taken, problems encountered, and solutions used to finish the project. The process of adding the records and development of the topic mapping scheme will be fully documented, allowing others to understand the steps taken to reach the final product.

The benefits of documentation are twofold. First, it will record all of the steps the Museum has

taken to configure and make the catalogue and topic mapping operational.
Secondly, a simplified version of the steps taken to configure the SSL catalogue and use the topic mapping software will be helpful for general users and staff of museums or libraries who might be interested in learning more or implementing the software with their own catalogue. Others will be able to obtain the documentation and reference it for direction in installing and configuring the topic mapping software for use with their own collections.

Advice Sought and Consultation with similar projects

To ensure the feasibility of the project, authorities in the fields of library cataloguing and museum collections were consulted. Representatives from Chartered Institute of Libraries and Information Professionals (CILIP) and the National Archives provided advice to the Museum regarding best practices of cataloguing methods and technological resources to integrate with the cataloguing project. Further advice was sought from museums with similar experience undergoing a cataloguing project, including the Victoria and Albert Museum, the British Museum, the London Transport Museum, the Wallace Collection and the Freemasons Museum. Their counsel included information regarding the process of creating a digital collections management system and difficulties encountered throughout the project. Staff members of these museums, who were integral in the collections projects, provided suggestions on the necessary resources of labour, time and technology to complete the scope of the project within the allotted three years. Their information on the rate of cataloguing, staff responsibilities and available software capabilities was integrated into the project plan. The enquiries of other museums that have completed similar projects and consulting authorities on cataloguing were an essential part of ensuring the feasibility of the collections management system.
-Douglass Dodds, Head of Collections Management for the Victoria and Albert Museum
-Matthew Cock, Creative Editor at the British Museum
-Bryan Wills, Networks System Manager at the London Transport Museum
-Andrea Gilbert, Librarian and Archivist for the Wallace Collection

3. INFRASTRUCTURAL SUPPORT

Hardware

The proposed server hardware for the project is to be located in Queens University Belfast's own IT department.

SSL's cataloguing software requires a minimum of:

Unix or Windows Operating System
PIII 700
128 Megs of RAM
20 Gig drive

These requirements could easily be met by a small to medium grade server from a vendor such as Dell, and so the price of a midrange server setup has been evaluated for the proposed budget.
The Topic Mapping implementation is very much like that of the SSL software, and so it is feasible for one server to host both software packages. By hosting both on one system, the Topic Mapping system will have direct access to the SSL database, therefore reducing the time required

to exchange information as well as the amount of traffic generated on the network.

System backups will be made on a regular basis, and maintained both on and off site. Redundant power and RAID storage systems have been factored into the system costs, and therefore should provide the system adequate protection from both power and hardware failure.

All server hardware support and maintenance will be provided by the system administrators at the University, alleviating the needs of the Museum staff to provide or find IT staff for support.

As for software instruction, SSL has included two days of extensive training in the proposed software package. During this time, staff will be taught many of the extensive features included in SSL and will be ready to deal with any standard issues which may arise once they have received the training. The IT specialist is expected to document the completed topic mapping system, as well as teach the staff how its features work and how to troubleshoot any minor problems which might arise.

4. DATA PRESERVATION AND ACCESS

Are there any obstacles to offering for deposit with the AHDS data resources that you propose to create in this project?

Yes ☐ No ☐

If you cannot offer to deposit with the AHDS, have you agreed a waiver of deposit?

Yes ☐ No ☐

Please provide details of proposed data preservation and access arrangements below

The entries contained within the database of the Museum will be a combination of pre-written and in-house composed MARC records. Many of the pre-written MARC records will come from resources, such as the Library of Congress, where appropriate ownership rights have been declared and the data has been made available to museums such as the Dickens Museum. In the event the MARC record is written by the staff of the Museum, then it shall be considered property of the Museum itself. In either case, all MARC records, regardless of their source, shall conform to all necessary laws and copyright terms.

The software package purchased by the Museum for the cataloguing component is property of the software company. All software written by the Dickens Museum to interface with the software package and ultimately create the topic mapping system shall follow the *Terms and Conditions of*

Award document, but is designed with the intention of being made available to any organisation which wishes to implement it for their own catalogue.

The only issue currently foreseen regarding the full disclosure of the final deliverables to the AHRB could potentially be copyrighted materials used as part of the database. In the event this occurs, those copyrighted materials will simply be removed from the final deliverable for the organisation.

Data preservation is of the utmost importance to this collection. Standardised backup procedures will be in place to safely maintain working copies of the database in case of incident, and protect the work from being lost in the event of hardware failure. Current possible backup methods which are either factored into the cost list or are possible via the Museum's computer infrastructure include RAID storage, back up copies stored on another machine, and on/off site backup tape/CD storage. As currently envisioned, the largest data storage will be dedicated to the catalogue software, records, and any associated media. The software to empower the topic mapping solution should not require considerable storage space. Depending on how many media resources are included, the entire collection should fit on one CD or DVD.

8.6 Appendix F: ISAD(G) Notes

ISAD(G) (General International Standard Archival Description) NOTES

Abbreviated version of full explanation

A Vast Majority is quoted from:
ISAD(G) General International Standard Archival Description 2nd Edition
Adopted by the Committee on Descriptive Standards
Stockholm, Sweden, 19-22 September 1999
ISBN 0- 9696035-5-X

- The standard contains 26 elements which can be combined to constitute a description of an archival entity.
- The standard does not define output formats
- "Multilevel Description"

General Rules
- Describe from General to Specific (2.1, pg 12)
- Information relevant to each level of description should accompany each level (2.2 pg 12)
- Each description is linked to the next higher level of description (2.3 pg 12)
- Information should not be repeated (2.4 pg 12)

Levels
- Fonds
- Subfonds
- Series
- Sub-series
- File
- Item

UOD = Unit of Description

Identity Statement Area

Reference Codes:
- identify uniquely each UOD and provide a link to the description it represents
    - ie – country code, repository code, local reference code (as needed)

Title
- name the UOD
    - formal or concise
    - a formal title can be abridged if necessary
- At higher levels record name creator should be supplied
- Higher levels may include author of unit of description and form/material/function/activity/subject/location/theme
    - Distinguish between titles formal and supplied by national conventions

Date
- identify the record date of the UOD
- record at least one of the following types of dates
    - Date unit of description in accordance with level of description
    - date accumulated
    - date when document or item was created
        - edition
        - copies
        - versions
        - attachments
    - identify the type of date given

Extent and Medium of the UOD
- To identify & Describe
    - Physical or logical extent
    - Medium of the unit of description
- Record the number of units, and unit of measure
- Media description
- Shelf Space/cubic storage can be explained

Name of Creator(s)
- Identify the creator of the UOD
- Record the name of the organization/individual responsible for the creation, accumulation, and maintinence of the records in the UOD.
- Name should be presented in a standardized form according to national and international conventions (ISAAR(CPF))

Administrative / Biographical History
- To provide Admnistrative History of the Object, including:
    - Origin
    - Progress
    - Development and work or the organization
    - Life and work of the individual
    - Cite if additional information is available somewhere.

Archival History
- Provide information on the history of the UOD that is significant for its authenticity, integrity and interpretation
    - Record the successive transfers of ownership, responsibility/custody
    - If the archival history is unknown, state that information plainly
    - If acquired from the creator, state that as : Immediate source of acquisition

Immediate source of acquisition or transfer
- Identify the immediate source of acquisition or transfer

- Record the source from which the UOD was acquired and the date and/or method of acquisition if any or all is not confidential. If the source is unknown, record that information
- Optional to add accession numbers or codes

Content and Structure

Scope of Content
- To enable users to judge potential relevance of the UOD
- Summary of the scope:
  Scope:
  - Time
  - Periods
  - Geography

  Content
  - Documentary form
  - Subject matter
  - Administrative process
- make appropriate for UOD at level of description

Appraisal, Destruction and Scheduling Information
- providing information on any appraisal, destruction or scheduling action
- records:
  - appraisal
  - destruction and scheduling action _____ for the UOD
    - taken
    - planned
  - Especially if they affect interpretation of the material
  - Where appropriate record the authority for the action

Accruals
- Informing the user/viewer to foreseen additions of the UOD
- Idicates if accruals are expected
- If possible explain quantity and frequency

System of Arrangement
- Provides information on the internal structure, system, or order of UOD
- Specify the internal
  - Structure
  - Order
  - System of classification
- Include any information in the **Scope & Content** element according to national convention

Conditions of Access and Use Area

Conditions Governing Access
- Provides legal information or other regulations of UOD in regards to access
- Specify the
    - Laws
    - Regulations
    - Contracts
    - Regulations
    - Policies

    … which affect the access
- indicate the extent or period of closure and the date which

Conditions Governing Reproduction
- To show restrictions on reproduction of the UOD
- Give information about
    - Condition
    - Copyright
- If conditions are unknown, or none exist, then that should be stated plainly

Language/Scripts of Material
- Identifies language, script or symbol system employed by UOD
- Record
    - Language
    - Script
- Note all/any distinctive alphabets, scripts, symbols or systems of abbreviation used.

Physical Characteristics and Technical Requirements
- provides information about physical characteristics or technical requirements of UOD
- Indicate any important physical conditions
    - Preservation requirements
- Note any software/hardware required to access UOD

Finding Aids
- Identify any finding aids to the UOD
- Give information about
    - Finding aids
    - Repository
    - Records
    - Information related to context and contents
- If available, include information on where to obtain a copy.

Allied Materials Area

Existence and Location of Originals
- To indicate
    - Existence
    - Location

    - Availability
    - Destruction of original UOD
- If original is available, or description of original record its
    - Location
    - Significant control numbers
- If original no longer exists or location is unknown give this information.

Existence and Location of Copies
- To indicate existence, location and availability of copies of the UOD
- If a copy of the UOD is available record its location as well as any significant control numbers

Related Units of Description
- Identify related UOD
- Record information about UOD in one repository or elsewhere which is related
- Use appropriate introductory wording and explain the nature of the relationship
- If the related is **Finding Aid** use the finding aid element of description to reference it.

Publication Note
- Identify any publications that are about or based on
    - Use
    - Study
    - Analysis
    … of the UOD
- Record a citation to, or information about a publication that is about, or based on the use, study of analysis of the UOD
- Include references to published facsimiles or transcriptions

Notes Area

Note
- Provides information no accommodated for in other areas
- Record specialized or important information not otherwise defined by elements

Description Control Tool

Archivist's Note
- Explains how the description was prepared, and by whom
- Record notes on sources consulted in preparing description and who prepared it.

Rules or Conventions
- Identifies protocols on which the description is based
- Record the international, national or local rules or conventions followed in preparing the description.

Date(s) of Description

- To indicate when the description was prepared/revised

Record the date(s) the entry was prepared/revised

8.7 Appendix G: SPECTRUM Standards Notes

SPECTRUM NOTES

Abbreviated version of full explanation

A Vast Majority is quoted from:
SPECTRUM – The UK Museum Documentation Standard 2nd Edition
Museum Documentation Association
Cambridge, 1997
ISBN 1 900642 01 8

SPECTRUM represents a common understanding of good practices for museum documentation established in partnership with the museum community.

It includes:
- procedures for documentation
- documentation on the process
- description of the information needing to be recorded

SPECTRUM allows for an awareness of a multitude of implementations while at the same time ensuring a reliable and consistent approach which can be built upon in the future.

SECTION 1 – Using SPECTRUM

- Legal & Management Issues for Collections and Information
    - Description of how to physically safeguard information recorded within the museum
    - Explanation of the Data Protection Act
        - How it affects the museum
        - Regarding acquisition
        - Regarding access
        - Information storage
        - Use
- Documentation Issues for Collections Management Policies
    - A Checklist of areas needing documentation within the collections management policies.
- Glossary
    - Definition of terms used in SPECTRUM
    - Not Enclosed in this document, See SPECTRUM
- Bibliography and Addresses
    - Sources of help and advice referred to in the Document
    - Including publication details for bibliographic information and contact information for organizations.
    - Not enclosed in this document, See SPECTRUM
- Procedures
    - Describes the process of documenting objects as well as all the collections management activities in a museum

    - Listed, but not explained in this document, see SPECTRUM
- Information Requirements
    - Describes and defines information required to support the procedures
        - Including basic object description

"What is a Procedure?"
- Definition
- Minimum Standards
- Procedure
- Notes
- Sources for Help/Advice
- Groupings of related information

Types of Units of Information
- those which describe the recording process
- those which identify and describe the object
- those which record the process undergone by the object to be part of the collection

Repeating Units of information
- lookup repeatability in **Descriptions of units of information**
    - eg. – object number : cannot be reused; material : can be reused

Associated Units of Information
- items grouped together in the overview should be associated with each other

Units of Information with multiple parts
- see end of **Overview**

SECTION 2 – Legal and Management Issues for Collections and Information

A. Looking After your information

Key records to copy
- Entry Records
- Accession Records
- Catalogue Records
- Current Dispatch Records

B. Access to and Provision of Information

Areas to consider restricting access
- Names and addresses of living people
- Information from the museum catalogue
    - Location
    - Acquisition

    - Information
    - Valuations
- Site Information

Enquiry Information
- setup a clear procedure for staff who will be expected to deal with enquiries

Receiving and Answering Enquiries
- ensure inquirers are aware of services available
    - fees
    - policies
    - standards of operation
- Record details of any enquiry
    - Reference number
    - Information on the nature of the enquiry
    - Significant information
    - Enquirers information
    - Staff member responding
    - Proposed use of information
- Method for retrieval of enquiry information
- Fee Policy

C. Museums and the Data Protection Act

Basic Explanation of the Act
- Gives rights to individuals about whom information is recorded, and places obligations on those who record and use personal information
- Allows individuals the right to view information about themselves and challenge it when appropriate
- Users must be open about how they use personal data and follow proper practices
- Ratified the Council of Europe's Convention on Data Protection

D. General Legal Issues Common to More Than One Procedure
- The Treasure Act of 1996
- Exporting Licenses are required for all objects above a certain age and monetary value
    - See Department of National Heritage notice
- Importing Requirements
    - See Customs Notice 361 for duty relief
- Objects without records
    - All methods to seek records should be sought
- Contractual Obligations
    - All legal documents must be approved by legal representatives of the museum.
- Copyright
    - Patents
    - Trademarks
    - Copyright
    - Moral rights

        - The right to object to derogatory remarks
- Determining if something is still under copyright:
    - When was it created?
    - Was the work commissioned?
    - When was it first published?
    - Was it created by an employee as part of their employment
    - Is the creator the copyright owner?
        - If not, who is?
    - Who created it?
    - Is the creator still alive?
        - If not, when did they die?
    - What is or was the creator's nationality?

SECTION 3 – Documentation Issues for Collections Management Policies

Object Entry – acquisitions, loans, enquiries, etc.

- Circumstances in which deposit will be accepted
- Conditions which the museum will apply to the return of the deposit
- How long, and in what form, enquiry information is held

Loans In

- Reason borrowed
- Conditions it will observe
- Min and max length of load
- Way in which loans are authorized
- How museum will establish lender's title to objects
- Steps for dealing with loaned objects for which the original lender cannot be contacted

Acquisition

- collecting policy regarding what is acquired
- authorisation policy
- statement of terms and conditions under which objects are normally acquired
- guidelines for additional storage, transport, and conservation costs
- reproduction rights
- processing times normally expected for accessioning and cataloguing
- format for numbering system
- preferred marking/label

Inventory Control

- who is allowed access to inventory information
- who is allowed to update inventory information
- required security measures for inventory

Location and Movement Control

- requirement to maintain up-to-date location of all objects
- identification of the staff with authority to access location records

- identification of the staff with authority to edit location records
- identification of the staff with authority to request and approve object movements
- identification of the staff with authority to move objects under what circumstances
- a statement of physical security required of locations
- conditions for storage and display of objects

Cataloguing
- the content of a minimum or 'core' cataloguing record for different types of objects
- the content of a full cataloguing record for different types of objects
- the maximum time permitted to elapse between acquisition and cataloguing

Objects Condition Checking and Technical Assessment
- who is allowed to check on object condition
- what standard of checking is required for each procedure
- the frequency of condition checks for objects of different risk categories

Conservation and Collections Care
- Care of Collections Standards
- The instances where conservation will be considered
- Acceptable types of conservation techniques and the extent which they can be employed
- Who is allowed to authorise conservation
- Requirements for external conservators
    - references to be checked.
- The level of detail to be recorded

Reproduction
- Occasion on which reproduction is required
    - Types of reproductions required
- Steps to be taken to establish copyright to objects and reproductions
- Response to claims regarding breach of copyright
    - For the museum
    - Against the museum
- The institutions use of external photographers, and the museums arrangement for copyright of their work

Risk Management
- Museums policies dealing with such instances as fire, flood, pests, accidental damage and theft
- See Procedures 10 RISK MANAGEMENT

Insurance Management
- what must be insured
- Objects which it is prudent to insure
- Objects subject to public liability legislation

Indemnity Management

- Generally controlled by indemnifying body

Valuation Control
- For ethical reasons the museum will not carry out valuations for commercial organisations or private individuals
- A clear authorisation policy for valuation
- Measures to ensure security of valuation information
- Method and frequency of updating valuation information

Audit
- Storage location(s) of object(s)
- Historic significance
- Scientific significance – if applicable
- Monetary value of objects
- Accessioned, loaned, or deposited
- Security of storage/display arrangements
- Type of object information
- Responsible party to conduct audit

Use of Collection
- Levels of access allowed for different objects based on a set of criteria
- Identify staff allowed to permit access to outside users
- Provision to catalogue and indexes of collection
- Set response time for confirming presence or absence of objects
- Period within which an appropriate study of the object(s) can be offered
- Suitable facilities
    - security of objects
    - restriction of sensitive information

Despatch
- Standards of Transportation
    - When a courier is required
- Who is bears risk during transit
- Steps for dealing with objects whose owner cannot be contacted or has perished

Loans (from the Museum)
- Categories of what is/is not allowed to be loaned
- Categories of who is normally allowed/not allowed to borrow
- Reasons a loan will not be considered
- Conditions for loan out:
    - Timetable requirements
    - Number and type of objects
    - Maximum term
    - Maximum number of items
    - Public access to objects
    - Provision of valuation

    - Insurance/indemnity
    - Handling requirements
    - Restrictions
        - Preparation
        - Conservation
        - Analysis
    - Packing requirements
        - Shipping
        - Transport
        - Customs
        - Courier requirements
    - Display use
    - Security
    - Environment object is kept in: smoking, eating, drinking
    - Borrower's contingencies
    - Terms of monitoring object
    - Payment costs
    - Catalogues required from borrower

Loss
- Who is responsible to take action
- Who must be informed
- Media liason
- See RISK MANAGEMENT

Deaccession and Disposal
- the conditions and limitations of destructive research

Retrospective Documentation
- Response to problems found during an audit.

SECTION 4 – Glossary

See SPECTRUM

SECTION 5 – Bibliography

See SPECTRUM

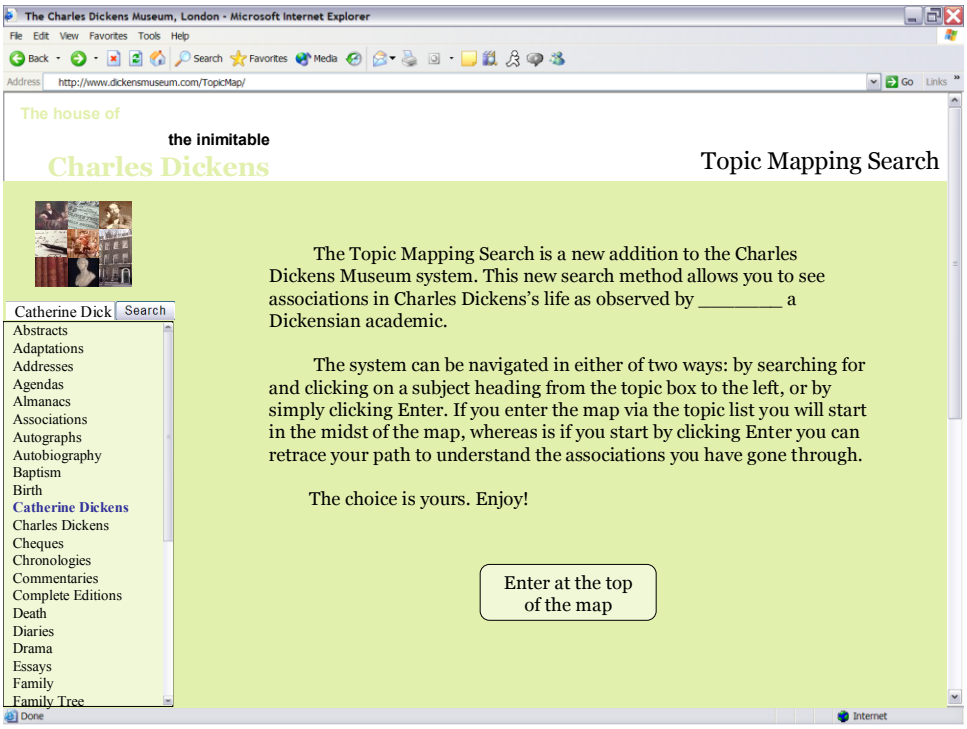
SECTION 6 – Procedures

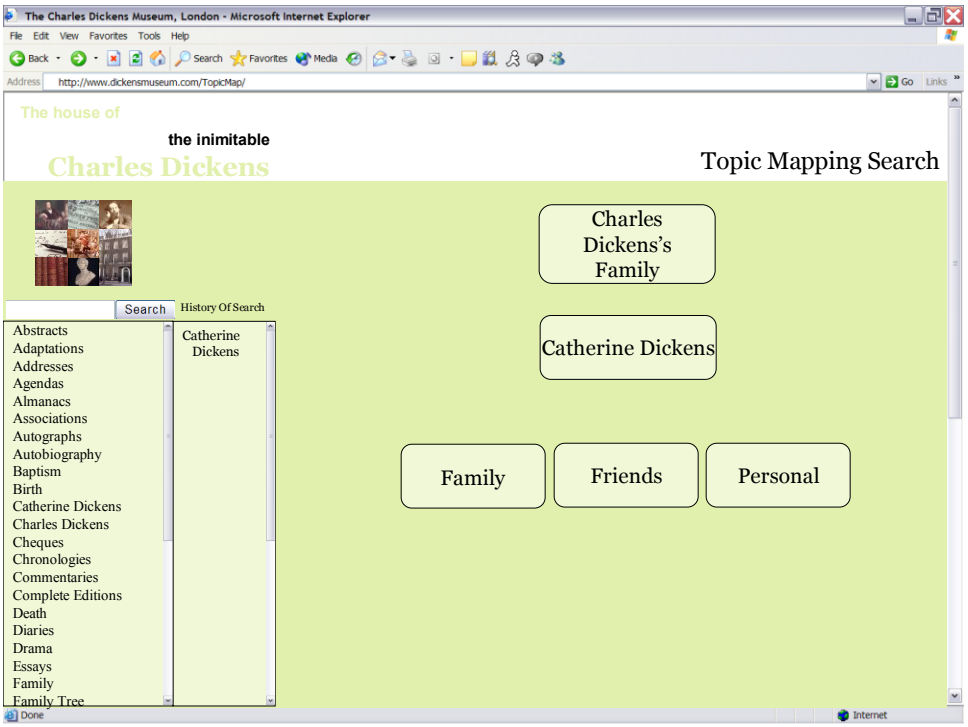
- Briefly explained in SECTION 3

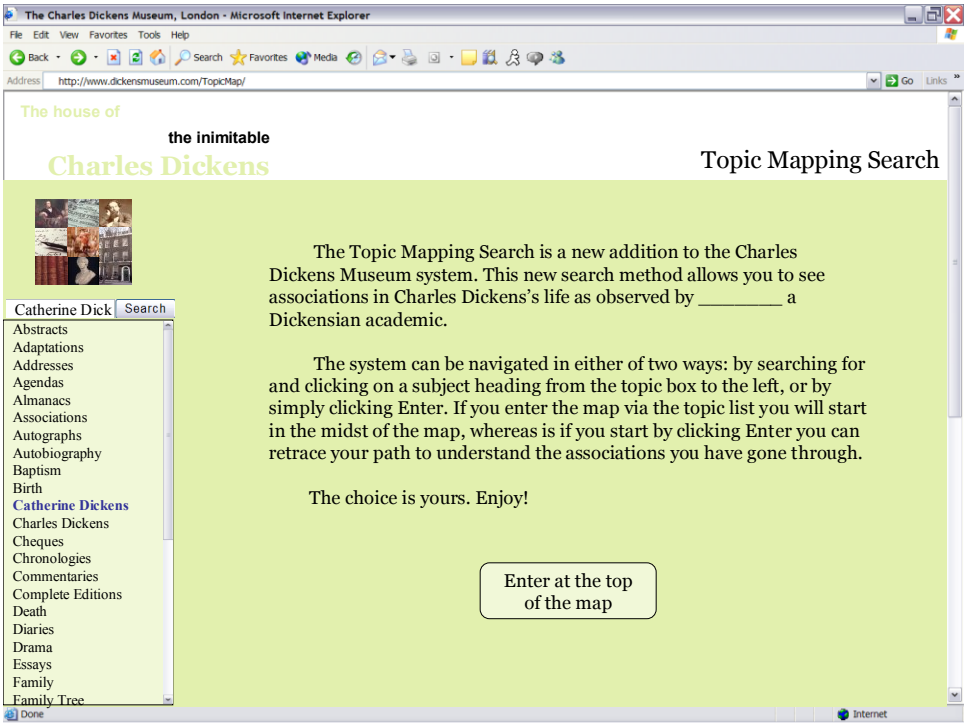
1. Object Entry
2. Loans In
3. Acquisition
4. Inventory Control
5. Location and Movement Controls
6. Cataloguing
7. Object Condition Checking and Technical Assessment
8. Conservation and Collections Care
9. Reproduction

10. Risk Management
11. Insurance Management
12. Indemnity Management
13. Valuation Control
14. Audit
15. Use of Collections
16. Despatch
17. Loans Out
18. Loss
19. Deaccession and Disposal
20. Retrospective Documentation

8.8 Appendix H: Topic Map Example




The Charles Dickens Museum, London - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://www.dickensmuseum.com/TopicMap/
Go Links
The house of
the inimitable
Charles Dickens
Topic Mapping Search
Search
History Of Search
Abstracts
Adaptations
Addresses
Agendas
Almanacs
Associations
Autographs
Autobiography
Baptism
Birth
Catherine Dickens
Charles Dickens
Cheques
Chronologies
Commentaries
Complete Editions
Death
Diaries
Drama
Essays
Family
Family Tree
Catherine Dickens
Charles Dickens's Family
Catherine Dickens
Family
Friends
Personal
Done
Internet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File Edit View Favorites Tools Help
Back Search Favorites Media
Address http://www.dickensmuseum.com/TopicMap/
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Topic Mapping Search
Catherine Dick
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Associations
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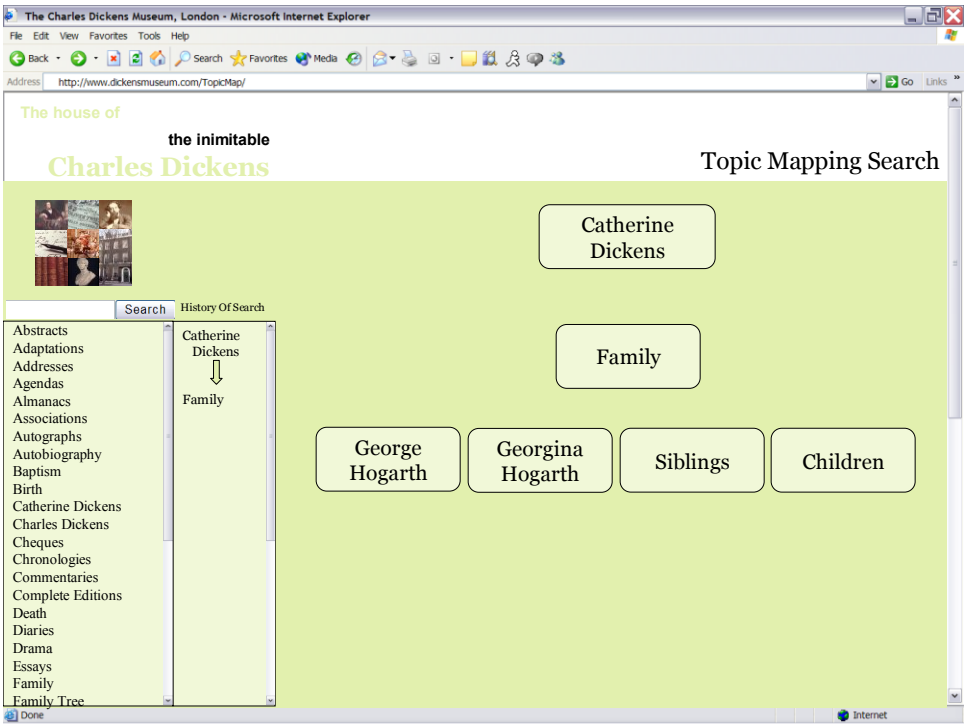
Autobiography
Baptism
Birth
Catherine Dickens
Charles Dickens
Cheques
Chronologies
Commentaries
Complete Editions
Death
Diaries
Drama
Essays
Family
Family Tree
The Topic Mapping Search is a new addition to the Charles Dickens Museum system. This new search method allows you to see associations in Charles Dickens's life as observed by _____ a Dickensian academic.
The system can be navigated in either of two ways: by searching for and clicking on a subject heading from the topic box to the left, or by simply clicking Enter. If you enter the map via the topic list you will start in the midst of the map, whereas is if you start by clicking Enter you can retrace your path to understand the associations you have gone through.
The choice is yours. Enjoy!
Enter at the top of the map
Done
Internet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Topic Mapping Search
Catherine Dickens
Family
George Hogarth
Georgina Hogarth
Siblings
Children
Search
History Of Search
Abstracts
Adaptations
Addresses
Agendas
Almanacs
Associations
Autographs
Autobiography
Baptism
Birth
Catherine Dickens
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Cheques
Chronologies
Commentaries
Complete Editions
Death
Diaries
Drama
Essays
Family
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Family
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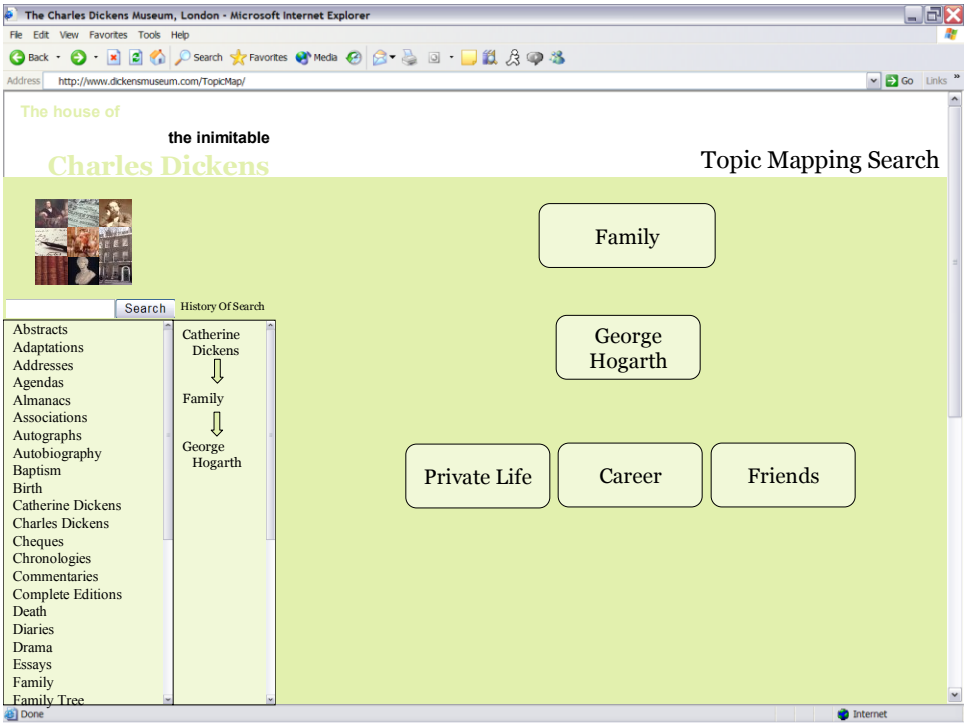
Internet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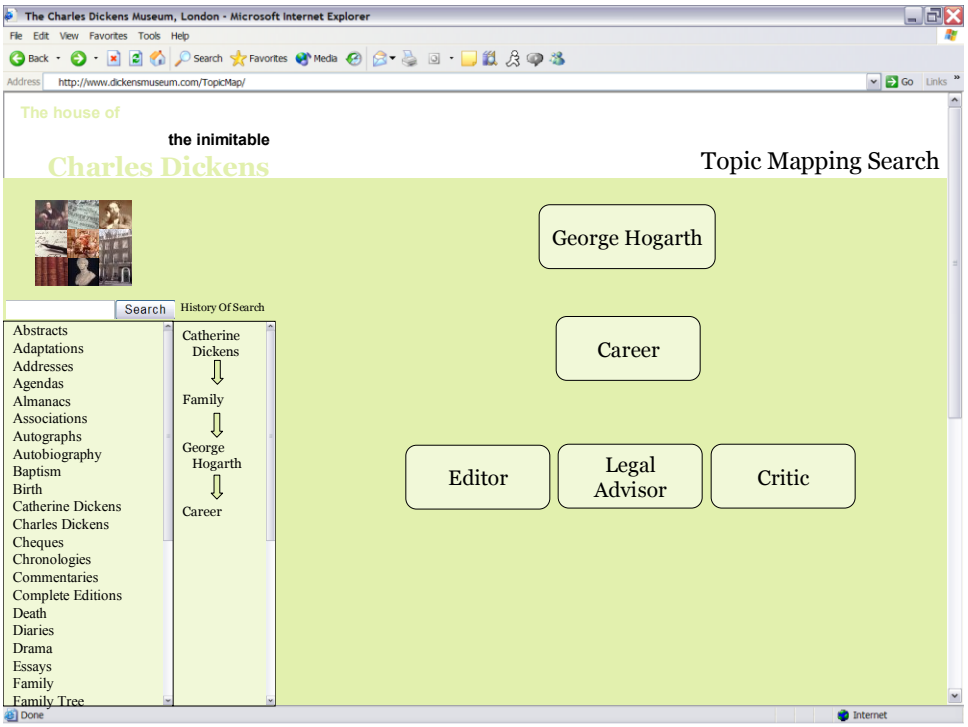
Done
Internet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Charles Dickens
Topic Mapping Search
George Hogarth
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Critic
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History Of Search
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Adaptations
Addresses
Agendas
Almanacs
Associations
Autographs
Autobiography
Baptism
Birth
Catherine Dickens
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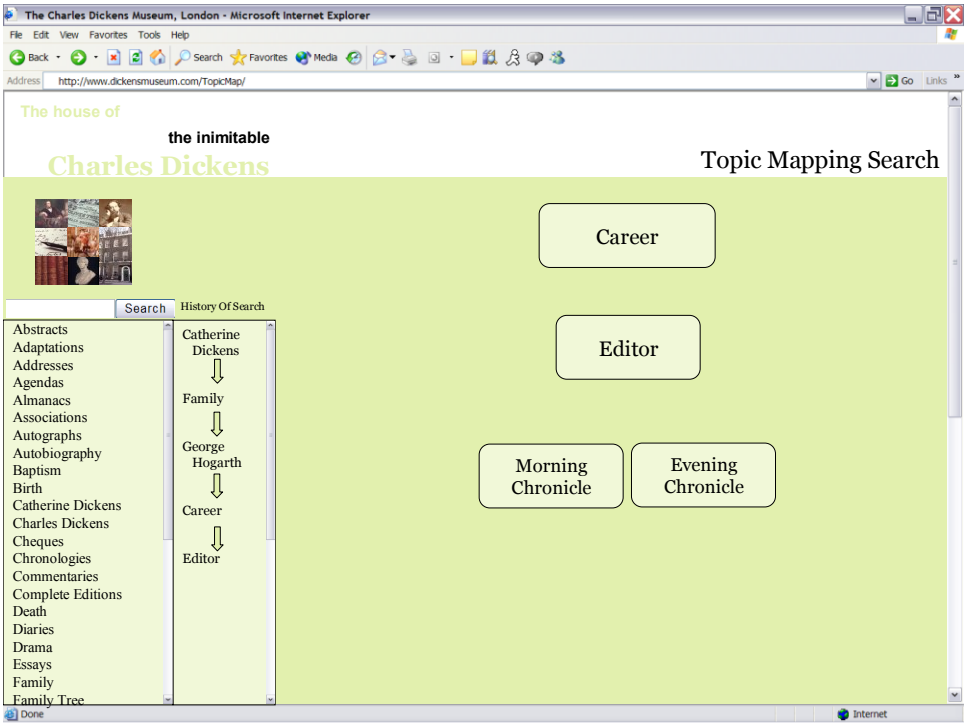
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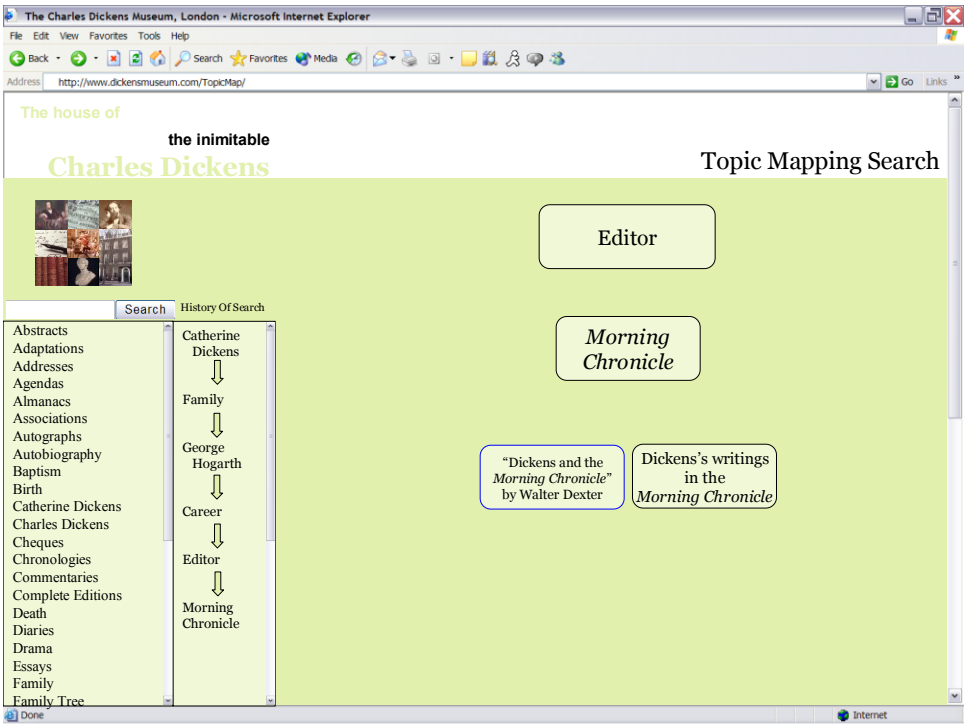
The Charles Dickens Museum, London - Microsoft Internet Explorer
File Edit View Favorites Tools Help
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Address http://www.dickensmuseum.com/TopicMap/
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The house of
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Charles Dickens
Topic Mapping Search
Editor
Morning Chronicle
"Dickens and the Morning Chronicle" by Walter Dexter
Dickens's writings in the Morning Chronicle
Search
History Of Search
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8.9 Appendix I: Topic Map Overview

1. What are Topic Maps?

For years, indexes have been the primary means of finding resources in catalogues, libraries, and collections. They help to find specific information quickly and easily, but make assumptions that those using the index know exactly what they are looking for. There is little to no assistance if one is looking for the link between one topic or subject and another, and so users of the index might not know or find all of the possible associations. A new method of association has been created, known as topic mapping, and provides those links and associations which other methods of searching (indexes, keywords, etc.) do not.

Topic maps are comprised of three main concepts:

Topics – The concepts which group various items together.
Associations – The relationships of one topic to another, allowing for interconnectivity and navigation.
Occurrences – The various information resources that relate to the topics.

The true benefit of topic maps is that they allow a museum to enrich their information and records with specialist knowledge. Instead of simple keyword searches, where irrelevant results may appear or associated items without that keyword are missed, topic mapping guarantees interconnectedness and many more associations between items because it is based upon topic selection and relation. Thanks to the dedicated work of the specialists who populate the information databases, a user of the topic mapping system is much more likely to find what they are looking for as well as possibly learn about connections and related information which they may not otherwise have known about or found.

2. The Charles Dickens Museum and Topic Maps

The Dickens Museum has proposed a new method of searching, wishing to create the link between traditional searching, index listings, and topic groupings with those of the topic mapping concept. The notion behind joining these two concepts is that it will provide visitors and researchers a new method of searching through the collections of the Museum, illustrating links and new information they might not otherwise have known about. Currently, while topic maps do exist, an implementation for museum and library collections is not known to exist. The Dickens Museum hopes to change this by designing and implementing a system for their very own collection, possibly becoming the first museum in the world to have this type of search method, thus leading the way for other museums and libraries to do the same.

In a traditional cataloguing solution, a user might search for a topic such as *David Copperfield* and only find results with the search words as the title or keyword. With the implementation of a topic mapping system, researchers would be offered a myriad of related items, including the proven links between *David Copperfield* and William Makepeace Thackeray's *Pendennisi*, as well as information about the actual table it was written on, which the Dickens Museum owns. These interrelated search results allow researchers to learn more about Dickens, his personal life,

and his correspondence with others of the time period. The hope of implementing topic maps into a catalogue of the Dickens Museum's collection is that those who use the system will benefit from the associative results, learning more about Dickens' own life and times and perhaps increasing their interest in the topic.

3. The Harris Classification

Kevin Harris developed a new method of categorising the collections of the Charles Dickens Museum, and his method has since become known as the Kevin Harris Classification Scheme. The scheme gave the Museum a new means of categorising the collection, and allowed for a "tiered system" of topics and indexing which gave a researcher a greater ability to find what they might be looking for, as well as other related works and information they might otherwise not have found, known about, or made associations with.

The classification scheme is specifically designed and altered around every collection, but has been designed to be applicable to most museum and library collections. In other words, rather than being a system which could be generically applied to any museum , such as the *Dewey Decimal System*, it requires some focused development and alteration to apply specifically to each collection it is to be used to classify. The true benefit for researchers using the Kevin Harris scheme is that the classifications are very specific to the Museum and therefore much more detailed and informative for researchers who might use it once it has been implemented with a collection.

4. Combining the Harris Classification Scheme and Topic Maps

As described in Section 3, the Harris Classification is designed as a "tier system". Topic maps, as described in Sections 1 and 6, also have a tier system of linking which helps to illustrate why the classification scheme would lend itself well to the topic mapping method. One of the objectives while implementing the topic mapping system here at the Dickens Museum is to use the Harris Classification Scheme when entering data and creating records, hopefully creating strong links between the various entries in the Museum and helping to strengthen the topic mapping system. The scheme is a tried and true method, surely benefiting the topic mapping system and helping to create some of the linkages which are the essential concept behind the topic mapping design.

It is important to point out here that the Harris Classification Scheme is not what empowers the topic mapping system's method of associations. The associations can be made for various different reasons, with just one of them being due to the classification scheme. The scheme's benefit is that it allows for associations otherwise not normally made, enabling the topic map with even more associations than it might otherwise have.

5. Where Does the Data Come From?

The concept of topic mapping has been explained, but not what enables it to happen and where the records will come from. The group from WPI investigating the feasibility of this project have recommended the cataloguing software solution by System Simulation Ltd (SSL), which

provides standard library cataloguing functions. This system is used by various libraries and museums throughout the world, and allows for record storage in a myriad of formats including MARC and SPECTRUM formats. The concept is that the collection will be stored in this SSL solution, and then the data from it will be queried and used by the topic mapping software to provide the data used to create the topic maps. This software will allow the Museum to complete tasks such as inventory tracking and acquisition records, while also providing both staff and researchers with today's standard search tools such as keyword searching capabilities. Using a purchased software solution to power the backend of the topic mapping software gives the Museum the ability to receive support when necessary from the vendor, while also opening the door for other museums to use the topic mapping software. By designing the topic mapping software specifically for the SSL package, the hope is that libraries and museums currently using this software solution can begin the process of preparing to use the topic mapping solution, and those not using it can use the included import tool to bring their data over to the new system if necessary.

6. Overview of Topic Mapping

The topic mapping scheme is based on the concept of linking individual records in a catalogue together under various topics. As our group envisions the scheme, the system will be designed in a way such that each entry will be associated with one category (or topic). These topics will then be linked together by the topic mapping software based on the specifications of the staff of the Museum, and the software will then use these links created by the staff to generate the overall topic map.

Each time a topic is chosen, all subsequent topics and individual records will be displayed to the users which are associated with that topic. For an example, please see Figure 1.

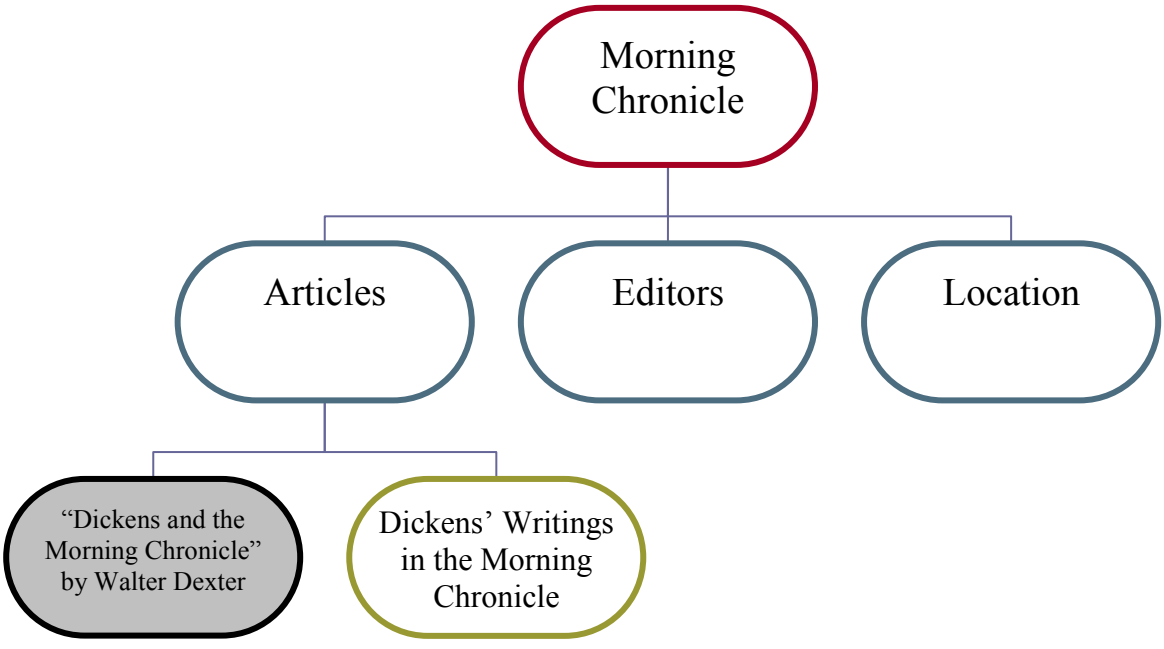


Figure 1

Figure 1 illustrates a small example of topic mapping. The main topic is the "Morning Chronicle", and below it are the three general topics, *Articles*, *Editors*, and *Location*. Under *Articles*, there is one record and one topic. If one were to choose the record, a complete record of the item would be displayed. If one were to instead choose *Dickens' Writings in the Morning Chronicle*, they would be presented with further topics and related records. This is only a small example of how topic mapping associates, and a more complete overview is listed in Section 8.

Another benefit of topic mapping, explained in details in Section 8, is that of cross-linking. This means that a topic listed in the map may link to another set of topics elsewhere in the grand scheme of the mapping. The benefit of this concept is two fold. First, the cataloguer does not have to repeat work by linking to topics elsewhere in the map, there is no repeat of mapping and record information and a change in one will be immediately apparent throughout the whole map. Second, by being brought to another set of topics, one can find related items and concepts they may have not known about. These various associations would not be highlighted in simple keyword searchers that most researchers use today, and help to illustrate the true power of topic mapping for museums.

7. Topic Mapping for All

This document has gone into great detail explaining how topic mapping will benefit the Charles Dickens Museum, but what about other museums and libraries? Every museum and library may implement the system in their own collection, as the topic mapping scheme will be designed to be applicable to any digital collection. Assuming museums who wish to implement this system follow the same steps taken by the Dickens Museum to digitise the collection's records and make the appropriate associations, they too will be able to begin taking advantage of topic mapping in their own collection. The Dickens Museum will obviously have a few additional steps to take, since they will be responsible for also writing the topic mapping software, but once that software is written and fully functional, the steps they use to digitise the collection will be much the same any other museum or library will have to take to digitize and enable topic mapping for their own collection.

8. Example

Explaining the theory of Topic Mapping is very hard to do, and so an example may help to clarify the benefits and strengths of the system.

Let's say that you wished to learn more about Dickens' wife, Catherine.
The program begins by presenting the user with the basic starting map as illustrated in Figure 2.

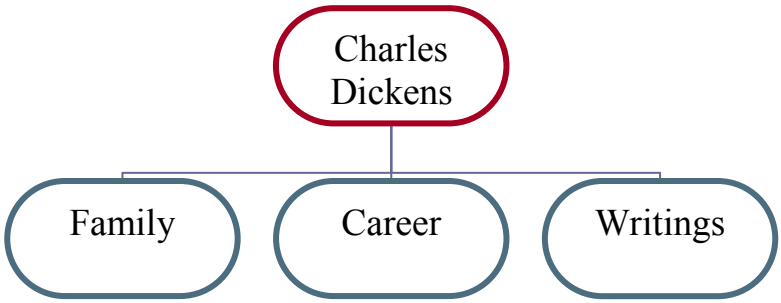


Figure 2

Catherine would be considered family, and so Family would be chosen as the selection. The user would then be presented with Figure 3.

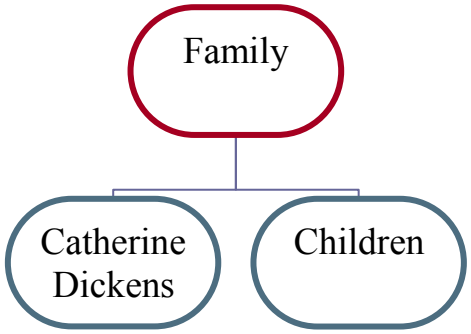


Figure 3

From here, the user could choose to learn more about his children, or his wife. Assuming the user chose Catherine, they would be presented with a map resembling Figure 4

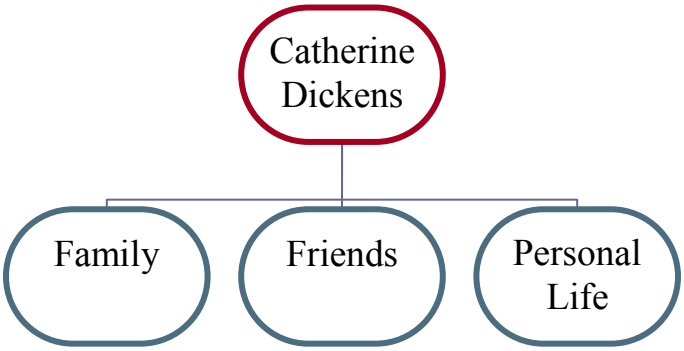


Figure 4

From here, one could choose to learn more about her family, friends or personal life. Let us assume the user chooses Family, they would be presented with Figure 5.

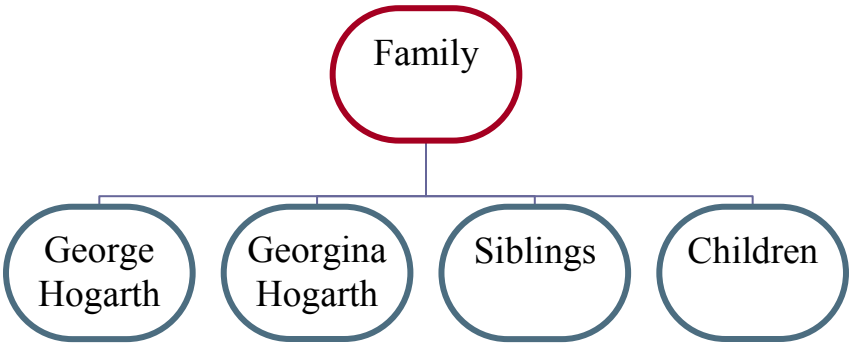


Figure 5

From here, the user could choose to learn more about George, Catherine's father.

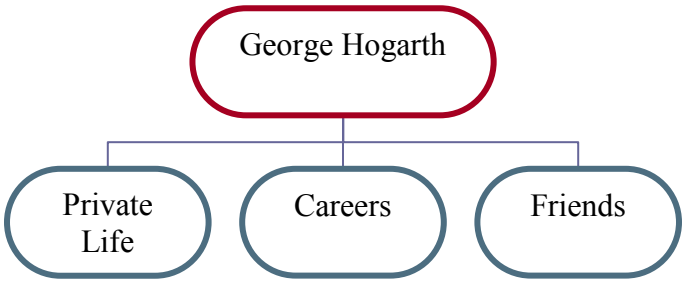


Figure 6

From here, a user could choose to learn more about George's career life.

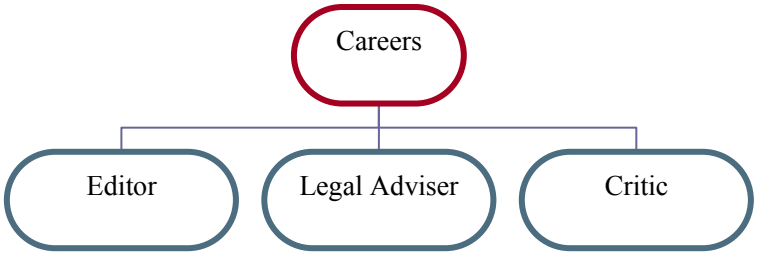


Figure 7

Now, let us assume the user chooses *Editor*. From here, the user would be presented with multiple links to information on his life as an editor. The link we see in Figure 8 is that of the link to the Morning Chronicle.

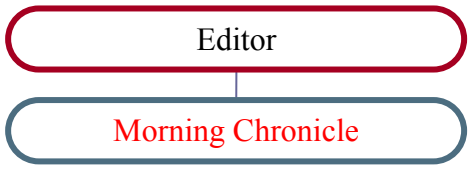


Figure 8

This link, indicated in red text, is special because it links to an entirely separate part of the map. When a user clicks on it, it expands that part of the map, as illustrated in Figure 9 .

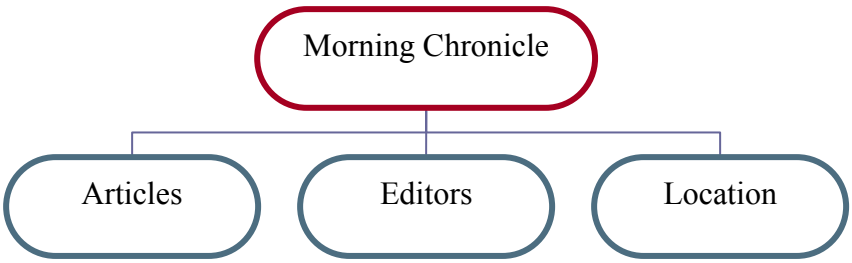


Figure 9

The transition from Figure 8 to Figure 9 illustrates the strength of topic mapping over keyword searching, which is the ability to associate with other information and show the interconnectedness of the Museum's collection and the events, people, and items of Charles Dickens' life.

The final step in the topic mapping process is illustrated in Figure 10. Once *Articles* had been chosen from *Morning Chronicle*, both a topic and an entry were listed. The topic would continue down the map should the user choose it, and the option marked "Dickens and the Morning Chronicle" will take the user to an individual record. The records are retrieved from the cataloguing system, and display both the information as well as any associated pictures or media.

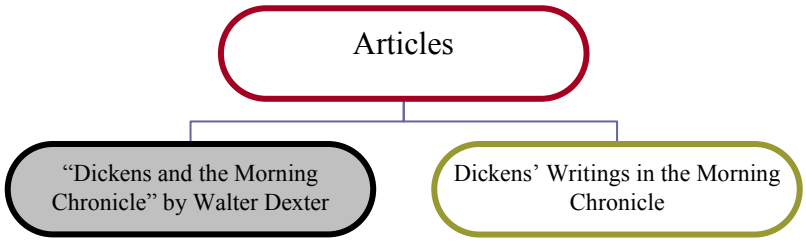


Figure 10

There are hundreds of possible associations which could be made through the topic mapping software, allowing users of the system to learn invaluable lessons about various associations while researching their various topics of interest.

9. Technical Overview

The software solution recommended to the Charles Dickens Museum by the IQP team was based on a number of factors. First, the package had to fit within the price range of the grant which would be supporting it. Second, the software had to support MARC records and the SPECTRUM standard, which eliminated a few proposals. Third, the software package had to be able to export XML for the eventual implementation and integration of the topic mapping. Fourth, the package's benefits and weaknesses were weighed against the other remaining packages, leading to the eventual conclusion of two possible solutions. Finally, various users of the system (nearby museums) were contacted and asked what they felt about each, allowing the pool of proposals to be narrowed down to one final recommendation as the supporting catalogue for the system.

The final system chosen to be recommended is by System Simulation Ltd. (SSL) and meets all of the needs of the Museum for both a MARC compliant, library-focused catalogue as well as having the ability to interface with the XML Topic Mapping Schema described here. The SSL solution has multiple possible solutions for exporting the data from the catalogue's own database to the XML topic mapping software to be developed.

The first is a simple exportation of the data in XML format. This means that an export of the entire database would be done on a scheduled interim, and then used to populate the topic maps. The issues with this are twofold; first, the exportation process can take quite a while; second, the data will not be accessible to the topic mapping scheme until it has been exported. These issues mean that, while exporting the data would work, it would most likely have to occur overnight a few times a week when the server is experiencing less use, and new data will not be available to those using the topic mapping scheme until an updated export is completed and made available to the topic mapping software.

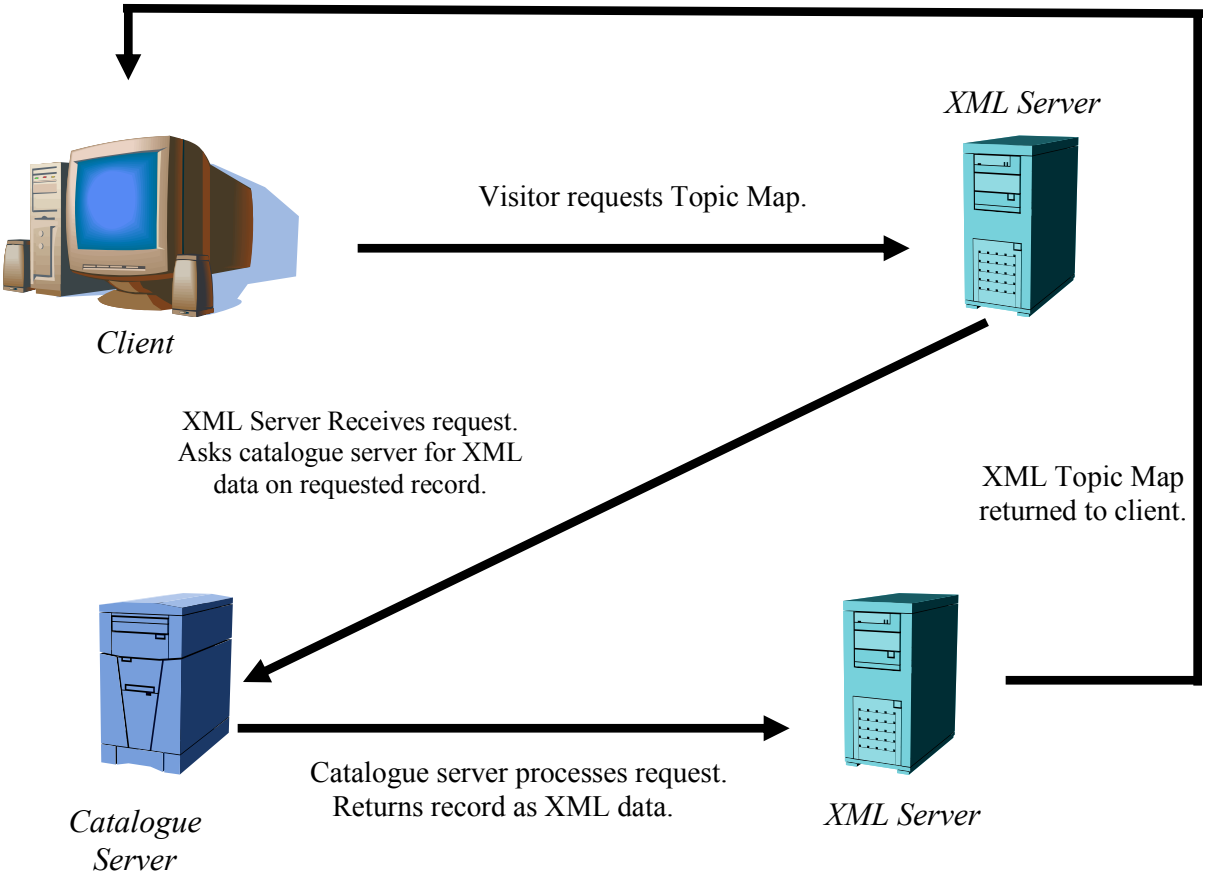
The second solution is an Open DataBase Connectivity (ODBC) solution. The ODBC solution is an interface which allows various different applications and databases to interface and intercommunicate, and has become a standard for today's software solutions. In order to include the ability to interface with the ODBC standard and use it to access data, extra customisation would be required, increasing the cost of the proposed software solution.

The final, and most viable, solution is to use the included web server to interface with the topic mapping solution. The web server has the ability to receive requests for records and the like via standard HTTP requests, and then returns responses in preformatted XML code. By coding the XML topic mapping software to send requests in an HTTP request format and receive the corresponding responses, it will be able to retrieve and interpret live data from the catalogue database. The benefit of using this method is that any data input to the database will be readily

accessible to the topic mapping software, and there will be no need to do scheduled exports of the data to make it available to the topic mapping scheme.

As for linking the records to topics, this will be done through fields in the database. One can create fields in SSL, and so the best way to accomplish the topic mapping would be to create fields for each record to store the topic they are to associated with. After this field has been populated, each time a topic is chosen, all the software must do is search for any records which are associated with that topic. Once all records have been searched, the software may then return a web site with both the current topic and its parent, listing all records which were results of the search as children of the current topic.

Overview of Topic Mapping System



8.10 Appendix J: Software Evaluation Matrix