National Art Library: Services and Expansion

An Interactive Qualifying Project Report

Submitted to

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London Project Center

by

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In Cooperation With

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Abstract

The goal of this report is to assist the National Art Library with their upcoming expansion and refurbishment. We performed case studies of comparable institutions, conducted interviews with Library Staff, and researched products related to library management and technological displays. We were then able to provide our sponsor with a number of recommendations to improve the quality of service to the current customers and to broaden the user base during the re-opening the West Room.

Authorship

James MacDonald was the primary author of the RFID research and analysis. Kaitlyn Parker was the primary author of the Displays sections. Nick Rackliff was the primary author of the integrated library systems and computer systems sections. Jason Tondreau was the primary author of the West Room expansion, general recommendations sections and conclusion. All of the remaining sections were contributed to equally and edited by all four group members. In addition the entire paper was also edited by all group members.

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Executive Summary

Our project consisted of two main objectives. First, we identified options for services that would help to modernize the National Art Library and increase its efficiency. By implementing some of these options, the Library will be able to serve their current customers more effectively and improve the general user experience. Our second objective was to determine what types of displays and systems would be useful during the expansion of the West Room, and to create general recommendations for the layout and use of space. This will help create an inviting, practical, and flexible area that will help broaden the user base and make the library an information gateway to the contents of the museum.

We began by performing case studies of comparable institutions. These helped us determine what types of exhibits were or were not effective, and provided us with a list of suggestions for the design of the West Room. Secondly, we conducted interviews throughout the organizational hierarchy of the NAL and the Word and Image Department in order to learn about topics that the staff thought to be important for both services and the West Room expansion. From these interviews, we generated a list of common topics that should be addressed in our research of library services and West Room expansion options. Finally, using the information from our interviews and case studies we developed an in-depth knowledge of all the available product options that may be suitable for the NAL.

After gathering all this information, we were able to make specific recommendations for each product area we researched. These topics included integrated library systems, RFID technologies, computers and software for a creative design studio, and modern display technologies. Our analysis took into account any costs that each option would include, as well as the benefits that the Library would receive from those products. First, we recommended that the Library continue with their upgrade to the Horizon library system, and suggested they include the Wireless Gateway, Remote Patron Authentication, and E-Commerce modules. We also recommended that the

Library implement RFID technologies for only the open access collections in order to keep costs down and introduce the technology to the Word and Image Department.

The third topic we researched was a computer studio that would appeal to professionals in the creative industries. After researching both hardware and software, we found that Apple computers, Adobe Creative Suite 2 premium edition, and Nemetschek Vectorworks Industry version would be the ideal setup. The final area of research was modern display technologies. The Turning the Pages program offered by the British Library and Armadillo Systems would be the best option for the NAL. This would include one of their treasures as a Virtualbook version on a kiosk, with additional TTP 3D books contained on workstations throughout the Library. All of these would be offered on all three platforms: kiosk, CD, and online.

In addition to these product-specific recommendations, we developed a list of general suggestions for the West Room based on the information we obtained from our case study and interview processes. These included topics covering the atmosphere of the West Room, the exhibits contained within it, the flexibility of the space, and the room's role as an information gateway to the Museum. The list will help provide basic guidelines for the National Art Library throughout their expansion process.

In the future, the West Room will serve as the liaison between the Word and Image Department and the visitors to the Museum. The information we gathered, along with the recommendations we made, will assist the Library with their upcoming project. If implemented correctly, the West Room and improved service quality will provide a more educational and enjoyable experience to visitors of both the National Art Library and the Victoria and Albert Museum.

1. Introduction

Throughout history, libraries have served as repositories of information and knowledge. Today, as technology advances, library users are finding that they can retrieve information more easily and quickly through sources such as the internet, rather than through the more traditional methods of card catalogues and bound publications. As times change, libraries still have the responsibility to provide those traditional print services to users but they also need to keep up with current technologies in order to be useful to a changing audience and to remain an educational destination.

Such a balance is often difficult to find and going too far one way or the other will only decrease the popularity, practicality, and success of the library. To address the issue of retaining appeal to a more technologically savvy population, many libraries have started to apply modern solutions to keep current users satisfied and to attract new users. Particularly, libraries with special collections, such as the National Art Library, are continually challenged to improve processes in order to better satisfy their users' needs. Many of their materials, for instance, are difficult to display to users, due to their fragility or value. To increase the appeal of the National Art Library to a more dynamic set of users and to improve efficiency in the library's aging delivery system, the directors of the Library decided to conduct a renovation and expansion of the Library. By talking with library and museum employees at the Victoria and Albert Museum as well as other London museums, we can make recommendations to help the National Art Library become a more inviting and flexible place for a broad range of users.

Digitization of books and other written materials is one technique that libraries are using today to modernize their institution and increase its appeal. For example, in 2000 a group of WPI students worked for the National Art Library for their IQP to transcribe the Robinson reports, one of the Library's collections, into an electronic format (Holt, Kiffer, Peterson, 2000). In 2001, a second group developed a way to allow these documents to be accessed through the Internet (Brancato, Modisett, Tang, 2001). By improving access to these important materials, the student groups may also have heightened public awareness of the Library and its available services.

To further build upon the aforementioned improvements, the National Art Library administration would like to begin developing new, innovative services and displays. The Library, however, still uses many traditional methods, such as a paper-based request system, that have remained unchanged from the era in which it opened. In addition, the lack of knowledge of available library technologies has further kept modernization at a stand still. Providing our sponsor, Martin Flynn, Head of Access for the Word and Image Department, with recommendations for developing modern technologies and techniques will aid in the overall goal of transforming the library into a flexible and inviting space suitable for research, education, and business.

Also, studying the use of technology in other London libraries and museums, as well as gathering more information from NAL staff, can provide valuable information about interests, opinions, and ideas for improving efficiency and user experience. More specifically, this data can assist the Library during their expansion by providing the administration with resources related to potential service technologies or methods, potential means of developing a flexible West Room, and techniques for displaying special collections. We will employ a variety of methods to accomplish the outlined research, including the use of interviews, researching products targeted towards libraries, and performing case studies at existing libraries in London.

After gathering all the necessary information, we will then analyze the costs and benefits of any potential solutions. Through this analysis, we will come up with a comprehensive list of possible options from which we will make suggestions for use in the National Art Library. This project will give the Library a better idea of how they can provide for the needs of their readers, while attracting new types of users as well. It will also provide the Library with a higher quality of service that will be necessary for their expansion and future plans.

This report was prepared by members of the Worcester Polytechnic Institute London Project Center. The relationship of the Center to the National Art Library and the relevance of the topic to the National Art Library are presented in Appendix A.

2. Background Research

The staff of the National Art Library has expressed several concerns about their library's operations including efficiency issues, the need to implement innovative technologies, and the organization of the library's expansion. In this chapter, we will present background information about libraries in general and also information that is specific to the National Art Library. These topics also provide a basis for points that should included in the methodology chapter.

2.1 National Art Library Collections

The holdings of the National Art Library fall into two categories: the General Collection and Special Collections. Since recent renovations to the Library, as part of the National Art Library Heritage Project, most of the materials from both the General and Special Collections can be searched using the Library's online catalogue. When requesting items from either of these collections the user must fill out a request slip, and wait for one of the Library's staff members to retrieve the book. Some users may not be permitted to view items from the Special Collections, depending on the nature of their research.

The General Collections include most of the Library's materials. The subjects of many of the collections are related to the work of the museum. This means that the collections are based on information about each of the categories of arts within the Victoria and Albert Museum. Much of the material, though, is supplemented from a far broader field, giving the library its celebrated diversity.

The Special Collections contain materials that are rare or unique, and materials that need to be preserved in their original format. These items are stored and issued to readers under much more controlled conditions. Some of the types of materials that are held in the Special Collections are archives, artists' books, letters or manifestos, early printed books, fine printing, and documented manuscripts. These delicate and priceless

objects need to be handled with care and cannot be circulated the same way as other books in the library. For example, readers may be asked to use a cradle to support a book with a weak binding, or to wear white gloves so that the oils of their skin do not affect the delicate pages (NAL website, 2005).

Within the Special Collections are some collections called Closed Collections. These are collections that are put together by individuals, or are related to a single subject acquired at one time. These are called "Closed Collections" because they are kept separate from the rest of the library materials, and they are no longer added to (NAL website, 2005).

2.2 National Art Library Layout

The National Art Library consists of three main rooms of equal size (see Figure 1). Currently two of the rooms are being used to serve customers and one is housing materials and staff offices. The two rooms in use by the public are the Reading Room and the Center Room. The Reading Room is the main area for users to review their requested materials. Users looking at special collections are required to work in this room which is monitored by a member of the staff (the Invigilator) to ensure that the materials are being treated with care. This room is reserved for users who prefer to work in a quiet environment. Currently the Reading Room also acts as the entrance for the rest of the Library. This creates a substantial amount of traffic in the room set aside for those looking to work undisturbed. This is a product of the Center Room's location and function.
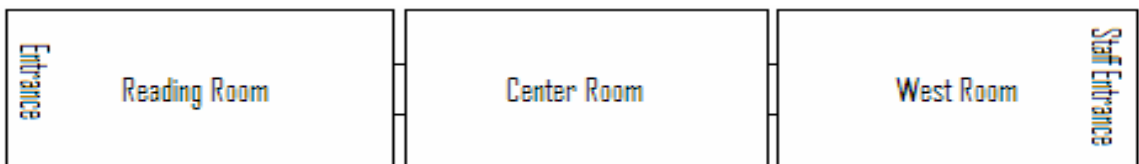
Figure 1: Layout of the National Art Library

The Center Room serves as the administrative room. Here users can browse the online catalogue, pass in book requests, and inquire about various materials or issues they are having. This room is significantly louder than the Reading Room due to phone call inquires and the staff consistently helping customers asking questions. Also, having the Circulation Counter and Enquiry Desk in this room requires that all of the daily readers walk through the Reading Room to search the catalogues and fill out book requests.

The third room in the Library is the West Room. This room has been reserved for storage and offices since 1940. The Library's goal for the upcoming expansion and renovation is to re-open the West Room and to use it to create an interactive and inviting environment. The room should also be a space that can be enjoyed by the visitors of the Victoria and Albert Museum in addition to researchers and students. By doing so, library administrators also hope to increase their user base and encourage visitors take a closer look at the Library's vast collection. In order to accomplish this objective the Library must review its current service and administrative processes while examining various organizational options to support the expansion.

2.3 Library Re-Organization

Space planning and organization are an essential part of any successful library. Creating room for books, materials, people, and services seems to be a constant problem in library management. Optimizing space when dealing with physical size constraints while operating under a budget can be a difficult task. The National Art library administrators have expressed concerns with these issues, and are seeking ways to expand. In order to satisfy more users the administrators are planning the renovation and opening of this room for public use. This expansion will increase the Library's user capacity by approximately 40%.

The first step in the reorganization of library layout is developing a space plan. Libraries planning to expand generally experience problems in several categories (Fraley, 1990, p. 15). First, they may lack space for their current collection and growth of

materials. Second, they may lack space for users. Lastly, they may want to introduce new services. The National Art Library is experiencing each of these problems in varying degrees.

2.3.1 Creating Space for Users and Collections

Accommodating people's needs is the most fundamental of library services. The National Art Library has expressed concerns with a lack of space for existing users, which limits their ability to satisfy customers and their capacity to acquire more. Creating space for collection growth is one of the major catalysts for the reorganization of libraries. Various solutions exist to help improve this problem, such as using compact shelving techniques, converting print materials to online materials using technology (Fraley, 1990, p. 16). Inadequate seating is also often a problem for library visitors. The National Art Library currently can hold 72 users at a time (V&A website, 2005). The number of people who can access the collection at any one time is quite limited. Wait times customers usually experience for material requests are around 20-45 minutes, but can take up to an hour during times of increased activity (V&A website, 2005). Reorganization of libraries and materials can often reduce wait times for delivering materials to library patrons. A poorly organized collection can make it difficult for users to find materials and can discourage continued usage (Fraley, 1990, p. 19).

Evaluating the use of space, storage, and organizational structure in the library may reveal redundancies and inefficiencies in the delivery and retrieval processes, leading to a significant reduction in wait times. Unfortunately, due to physical constraints the National Art Library's entire collection cannot be stored locally. One alternative in use by the National Art Library is the storage location called the Crypt located on the opposite side of the museum. Staff members make three trips to the Crypt each day for materials requested by users. The Library also has some off site storage in various parts of London. Requests can still be made for these materials as well however it could take several days to retrieve.

2.3.2 Technology, New Services, and Space Planning

Technology has become an increasingly popular and efficient solution to many libraries' space needs. The conversion of materials to electronic formats has gained momentum in libraries with the advances in library software and technology. Today more and more computers are being made available for use in libraries and many users rely on them for materials and research. Advanced software and technological packages are available to help improve users' access to materials. Electronic copies of library materials provide an effective means of reducing space needed to store materials (Fraley, 1990, p.57). However, converting to electronic collections can be costly, because much time and effort is needed for the conversion process.

The National Art Library has also expressed some interest in the introduction of new services. Advancements in technology have led the way to various new services that could be beneficial to the National Art Library during the development of the West Room. These services include administrative services that help simplify and smooth the internal operations in the Library; others involve some interactive and educational display services. As a result some of the organizational issues to be considered include: the intended market or who they want to serve, when the service will be available, security, staff requirements, maintenance, and cost (Fraley, 1990, p. 22). When implementing new services it is important to evaluate the possible effects the new services will have on the space utilization and organization in libraries.

2.4 Library Technology

The National Art Library is looking to implement a number of technological improvements in order to address the problems or issues that they are currently facing. First, the Library is seeking technologies that will improve the services provided to users. There are a number of systems now available to libraries that can not only improve existing services but provide new ones to end users. These software packages provide

libraries with a number of automation solutions. The common capabilities that these systems include assist with circulation, acquisitions, serials, and cataloguing. Many other have additional features as well, such as ordering of materials, reservations, and remote access.

Radio Frequency Identification, or RFID, is a relatively new technology that aims to make areas such as stock control, tracking, and even transportation (as seen with the new Oyster Cards on the Underground) more efficient. It also has great potential in libraries to help with security, check-ins and check-outs, and retrieval and replacement of books. There are a couple of options that would be compatible with the planned upgrade to the Dynix Horizon catalogue system produced by the 3M Corporation and Bibliotech. Before discussing these options, though, a brief introduction to how RFID works and where it has been used will help to display its usefulness in such a setting as the National Art Library.

RFID systems can be divided into two parts: a transponder and a transceiver. The first part consists of "tag" which can be placed inside a book or other material. The common tag is about 40mm square, as then as a sheet of paper, and contains an extremely small (~0.3mm x 0.3mm) chip as well as a larger antenna. A current induced from the radio waves of the transceiver powers the chip and the small amount of memory that the tag stores can be read. The tags usually have an adhesive applied to them so they can be permanently attached to a given material (such as the cover of a book) but there are other options available for more sensitive resources that cannot necessarily be tagged.

The transceiver, or reader, part of the system is more complex. A handheld or desktop reader retrieves the information (such as a Pressmark) from the tag in a book and then can reference the basic information to a more detailed computer database. Depending on the power of the reader, the information on the tag can be obtained from as close as a few centimeters to as far away as 1.5 meters. This wide range of configurations makes the job of locating books and inventories easier with the help of a small palm-sized computer. Security sensors placed at doorways can also ensure that materials do not exit the library.

Several libraries around the world have already made the transition to RFID tagging systems. In London, the Hendon Library at Middlesex University has implemented a full scale system complete with automatic, self check-outs and returns as well as compatibility with their Dynix Horizon catalogue. Summaries of a few of these products, as well as the companies that offer them, are provided in the Product Research section of the Findings chapter.

The Library also wishes to look into possible display technologies that could be added to the West Room. A number of developments in computer display techniques are being used to improve the visual experience of library users, and the Library would like to take advantage of this. Computer monitors, displays, and computer graphics are some of the display technologies found in libraries. Also, digitization of materials is an increasingly popular solution to the problem of preservation and display of both regular and special collections.

3. Methodology

The project is divided into two main parts to accomplish our objective of helping the Word and Image Department during the upcoming expansion and refurbishment. The first goal is to identify services that would help to modernize the library and increase its efficiency. By implementing these options, the Word and Image Department will be able to serve their current customers more effectively and improve the general user experience. The second goal is to assist in the re-opening of the West Room by researching what types of displays and systems would be useful during the renovation. Producing an inviting, practical, and flexible space is essential for broadening the user base and making the library an information gateway to the contents of the museum.

To identify options for the services and the West Room expansion, we outlined three areas of research. We first performed case studies of comparable institutions to see how they dealt with similar projects. By performing these visits with no preconceptions, we were able to independently determine what types of displays worked well and also

identify common problems. We then conducted a series of interviews with several Bands of library staff to address current inefficiencies in library services and identify areas for improvement. Next, we received staff opinions on the future plans and purpose for the West Room. In addition, these interviews helped to gather background information on library operations. During this stage we also shadowed some of the employees to evaluate the services and learn about the day to day activities in the Library. Finally, the information we gathered from our case studies and interviews provided a basis for our product research stage.

After completing the three aspects of the research process, we were able to analyze our findings and produce a number of recommendations that will help the Word and Image Department. The analysis of the case studies was based on a practical evaluation of exhibit effectiveness and layout. In analyzing the interviews, we generated a list of common areas of concern and interest that were mentioned repeatedly by National Art Library employees. Lastly, we analyzed the products based on immediate and long term costs and benefits as well as the relevance and usefulness of the products for the Library.

3.1 Case Studies

To examine the effectiveness of interactive exhibits and displays we visited several museums and libraries in the London area as well as exhibits and galleries found in the Victoria and Albert Museum. The institutions we visited included the Natural History Museum, the Science Museum, the British Museum, the National Gallery and the British Library. These organizations provided us with an easily accessible means of acquiring knowledge about their different approaches to presenting materials to users in an interesting and effective way. These case studies allowed us to produce a list of specific products that could be researched in depth.

During our visits we also examined each institution as a whole to formulate general recommendations for the Library. We gathered information about each exhibit, as

well, through observations and discussion with staff members. During this time we assessed topics such as:

- Lighting
    - How dark does the room have to be to preserve the materials?
    - How does this effect viewing materials?
- Exhibit flow
    - Does the exhibit lead you through some intended tour?
    - Are things arbitrarily placed?
- Interactivity
    - Is the exhibit hands on?
    - Can users gain a better understanding of the materials through technology?
- Effectiveness
    - Do visitors use the exhibit?
    - Is the location conducive to attracting common museum visitors?
    - Is the exhibit or display educational?

Answering these questions provided the basis of our analysis and also helped bring up specific points to mention in our interviews that related the displays to the National Art Library and West Room.

3.2 Interviews and Focus Groups

We also interviewed several staff members at the National Art Library. Those who work in the library are capable of seeing flaws in the current system, possible problems in any recommendations to be made, as well as what they would like to see in the expansion. With limited time available, and in order to reach an audience representative of the library, two members of each Band were suggested by Martin Flynn. We then selected, at random, one employee from each Band to be interviewed.

By interviewing the staff at the National Art Library, we were able to find out what services are currently offered at the library. We also discovered what types of

additional services the staff members think would be useful. Additionally, through the interview process, we were able to get a sense of the opinions of the staff on what could be included in the West Room in order to satisfy the goal of creating a more flexible area.

This information was most efficiently collected through the use of a semi-standardized interview with each member of the staff. This type of interview followed a solid framework of planned questions but it also allowed us to ask additional questions based on what we learned during the interview. This ensured that we asked all of the necessary questions and also gathered as much information as possible that was related to our project (Berg, 2004, p. 81).

As part of our interview process, we spent a day shadowing employees who were performing two main tasks of the National Art Library's services: the Enquiry Desk and the Circulation Counter. This enabled us to get background information on how the Library operates and how it serves its customers. Throughout the process we asked specific questions regarding advantages and disadvantages in the processes. This allowed us to specify what areas of the Library's services needed further attention and improvement on a first-hand basis.

3.2.1 Focus Group

It should be noted that one of the last steps of our planned process was to hold a focus group consisting of talking to several staff members at once. The group was to be chosen by our sponsor, Martin Flynn. These employees undoubtedly have differing viewpoints of how the project and expansion should be carried out and discussing their ideas as a group could be beneficial to all involved. We planned to facilitate this meeting by providing the group with preliminary ideas that we had compiled from our previous research, case studies, and interviews and also ensure that the pros and cons of each option were brought to the table. This method, much like a semi-standardized interview, would allow for all opinions to be considered while keeping the meeting on track.

During the later stages of our research, however, we decided against holding this focus group. In reviewing our work, we concluded that the information gathered during the individual interviews was adequate for our needs, and the ideas collected through these interviews were very beneficial to our analysis. Through discussions with our sponsor as well as our advisors we decided that it would be more likely that individuals would be less willing to state their honest opinions in the presence of their colleagues and superiors. Such a trend would be counterproductive for our research, and therefore a focus group is not the ideal method for our purpose.

3.3 Product Research

To aid the National Art Library during its expansion and renovation, we needed to develop a comprehensive knowledge of a wide range of options to improve the services and displays. These areas of research included such facets as library management systems, computer systems for design industry professionals, Radio Frequency Identification (RFID) technology, specialized library furniture, and options for making spaces flexible. We then divided this list into two main sections: services and displays. To provide recommendations to the National Art Library, we gathered information about applicable products along with details relating to the costs and benefits.

We obtained the required information through a number of methods. We collected information from pamphlets and handouts, the internet, phone, email, and talking to representatives in person. A number of catalogues are on file with our sponsor at the National Art Library, and those provided us with contact and product information for many businesses who market to the Library and Information Technology fields. The internet was also a good basic source of information on several companies' product specifications. We obtained further information, including more detailed pricelists and product features, through email and telephone correspondence. Finally, we attended the Library and Information Show in Birmingham, England on April 20th, 2005. There, we were able to talk to company representatives in person and gather final information about selected products.

Our analysis of product research was both qualitative and quantitative. We compared the costs of various technologies and alternative renovations on a numeric price-basis. After that, the pros and cons of the proposed options were mostly composed of qualitative data, including how users and staff would be affected be the implementation of any specific product. We then produced a list of the best possible options to recommend to the National Art Library based on cost, functionality, and effectiveness.

3.4 Conclusion

Our research and data collection process consisted of three different stages. First, we gathered information through various visits to museums and libraries in the London area. This was supplemented with interviews that would broaden our understanding of technology used in these establishments. Gaining more knowledge about some of the best practices being used for library services and display techniques provided us with a foundation of information which we researched further.

After organizing and developing our initial research we conducted various interviews of staff members involved in the National Art Library's expansion. These interviews allowed us to get feedback on our results from our previous research. By interviewing a staff member from each of the eight Bands of library employees, we were able to collect ideas from the point of view of individuals at all levels of management. We incorporated the thoughts of the upper level staff, which are familiar with the budget and politics of the library, with the thoughts of the lower Band staff members who work most closely with the Library users.

Lastly, we researched products, a process which consisted of various forms of contact with distributors. Applying our previous research, we inquired about the specific products that best suited the needs portrayed by the National Art Library. Our research included a cost benefit analysis keeping budget constraints in mind.

4. Findings

This chapter describes the results gathered from completion of the methodology and has been divided into three sections: case studies and visits, product research, and staff interviews. The Case studies section includes written evaluations of six libraries and museums that outline both good and bad aspects of the displays and technologies in each institution. Product Research shows results including technical details and costs that were determined through contact with manufacturers and distributors. Interviews will contain written summaries of discussions held with eight members of the staff from all levels, or Bands, in the Library.

4.1 Case Studies and Visits

The case studies consisted of visiting a number of libraries and museums in London and recording information about the available displays, making observations on how these displays worked, and identifying any obvious problems. The evaluations of each organization focused on interactive and non-traditional exhibits as they are most relevant to what the National Art Library would like to accomplish during their renovation. We visited The British Library, the Science Museum, the Natural History Museum, the British Museum and its Reading Room, and the National Gallery.

4.1.1 National Gallery

The National Gallery houses about 2000 paintings created mostly by Western European artists from the year 1250 to 1900. This museum is very traditional in the sense that paintings are hung on walls and visitors can stand or sit and look at the piece. Next to each painting is a small tag with the title, artist, date, and a small bit of information about the history or importance of the piece. The wide range of artwork on display from such famous painters as Vernet, Picasso, and Van Gogh in addition to free admission and great

location at Trafalgar Square makes the museum a popular destination. This collection does not house any exhibits or displays relating directly to books but it does have a multimedia center, known as "ArtStart." This program lets users explore the vast collection of paintings and provides a searchable database with enlargeable images of the paintings and more information than the wall-tags allow. The application was created by the NYKRIS software company and was funded by American Express and by hardware donations from Hewlett Packard. The main room for the systems is located in the Sainsbury Wing and is large enough to house about 15 Hewlett Packard computers. Each system features a 17" digital video, touch-screen, LCD monitor which runs at 1280 x 1024pixel resolution. The final plans call for 26 to 30 of these systems to be located throughout the museum. To ensure constant stability of the systems, "each PC operates as a standalone server and contains a full copy of the ArtStart application and database on its local hard-drive" (ArtStart, nykris.com). See section 4.2.2.7 for more detailed information on NYKRIS and ArtStart.

The systems are built into small desks with no other peripherals except for a single-cup handset so users can listen to audio clips. The terminals are very easy to use and were designed using a control audience of 17 to 70 year olds (ArtStart, nykris.com). Features, such as a large "back" button, helps prevent the user from getting lost while navigating the collection and large, simple fonts along with a crisp layout keep confusion to a minimum.

While the software and hardware are very nice, the room set up is a little lacking in many areas. The desks are small and only about a foot and a half off the ground placing the monitors around one's waist when they enter the room. The seats were comfortable but also short and appear as if they were designed for a younger user-base. The level of the seats forced even a short user to uncomfortably hunch over in order to view the monitor correctly. The monitor could be easily rotated but it was not able to be adjusted vertically further adding to the problem. Also, there was no room on the desks to write notes or place belongings while using the system.

Finally, the room was very quiet and tucked away. We nearly forgot to visit the ArtStart room before leaving the Gallery, and found it necessary to ask an employee

where it was located. Upon entering the room and evaluating the system for about half an hour on a fairly busy day in the museum (on average, there were about 20 visitors in each of the painting galleries), only two other users were at the 15 terminals and by the time we exited the room, there were none. While in the foyer before we had entered the ArtStart room (and only being about 10 feet from the door), two museum visitors were overheard saying they could not locate the room either while viewing a museum map. We did not see any visitors in the exhibit during our visit. Better placement and signage would probably add to its success but this is also difficult to determine since it was not near an information desk where users might be able to ask for further information.

Advantages	Disadvantages
Touch screen display	Limited work space at each station
Easy to search by various categories	Seats and desks low and restricting
Easy to find more information on paintings/artists	Room not well advertised
Painting locator feature	Difficult to find
Develop own tour of gallery and print	
High quality digital images with zoom capabilities	

Table 1: National Gallery

4.1.2 Natural History Museum

The Natural History Museum is located in South Kensington next to the Science Museum, where is has stood since becoming independent of the British museum in 1864. The building was designed and built over a 12 year period beginning in 1864, originally with a Victorian-style Italian-Renaissance look, and then toned down to give it a German

Romanesque feel. The Natural History Museum now houses a massive collection of artifacts, ranging from dinosaur skeletons to meteorites to the evolution of man. One of the first things noticed is that the general look of the building itself matches the feel of the objects being displayed, yet many of the rooms are quite contemporary. The structure of the building is very historical, and has a simple beauty that is fitting for the display of the natural exhibits. The main entry hall is very large, with the skeleton of a diplodocus featured in the center, and is a very good use of open space to display one of the highlights of the collection. The Natural History Museum is held within a beautiful building and does a good job of integrating some modern technology into its exhibits without taking away from its historical feel. This is the type of harmony that needs to exist between history and technology in the National Art Library.

The displays were, for the most part, very effectively set-up and organized. First, they combined elements of both traditional and non-traditional display methods. This included the traditional style of displaying artifacts in glass cases, as well as accompanying screens with videos or interactive content. Some exhibits also had background sounds playing, to enhance the atmosphere. Many of the interactive elements were very quick and simple, but informative and fun. Some of the interactive elements included buttons that lit up signs, informing the user of the answer to a question, and also buttons to rotate artifacts in displays to allow the user to compare similar objects from a number of different angles. These displays were also organized in such a way that it encouraged a certain traffic flow, facilitating user movement throughout the exhibits. While following this flow, the exhibits seem to tell a story about the artifacts, educating the visitor about relationships between the different types of materials. Another aspect of these displays is that the descriptions of the artifacts or exhibits are often contained within the glass cases, as opposed to on signs located outside of the case. This type of display helps make the glass between the user and the artifacts seem less obtrusive. It also allows the creators of the exhibits to include more educational, informative content along with the artifacts, such as maps, accompanying illustrations, etc.

One negative observation that can be made about the museum is the lack of, or poor use of, signage. Maps were not posted, making it difficult for the user to locate the

gallery that they would like to see. Signs became both more common and more informative as you moved further into the museum. Another negative element is that a number of the interactive, technological displays were out of order or under repair. This seems to be a common problem within museums, so maintenance will most likely be a very crucial issue. Finally, a few of the displays were placed directly adjacent to main hallways, making access difficult due to the large number of visitors crowding the area.

Advantages	Disadvantages
Atmosphere – building matched content	Many out-of-order tech. displays
Exhibits were educational – told a story	Lack of signage, mainly maps
Good use of space	Placement of displays
Quick, useful interactive elements	One case of bad use of space (one-sided exhibit in middle of a hall)
Caption inside cases, with supplementary material	
Good flow through exhibits	

Table 2: Natural History Museum

4.1.3 Science Museum

The Science Museum, located in South Kensington, holds a very impressive and diverse collection, dealing with scientific topics from agriculture to transportation to computing. The museum features many technological computer displays. Unfortunately, the technological displays were not well maintained. Some of them were outdated, and a large number of them were out of order or not functioning correctly, possibly even more than were functional. The museum also features an extensive number of hands-on, interactive displays. In fact, nearly every room in the museum has at least one interactive

display. Interactive displays often captivate the visitor far more than simple exhibits with text descriptions. However, these displays are mostly geared towards younger visitors, as is the museum on the whole.

While navigating the museum, we noticed that many of the exhibits seemed to be placed ineffectively. As an example, there was one exhibit with a video giving details about the object displayed. However, the display was placed about 10 feet away next to a column, blocking it from view, and therefore it was not obvious that it was associated with the video. Finally, many of the interactive displays were hidden in corners, and were difficult to notice.

The signage was also lacking in effectiveness. Signs throughout the museum were rare, and tended not to be very useful. Maps were not very readily available, making it much more difficult to navigate the exhibits and find what you like. Also, many of the tags that described materials in exhibits were very cheap slips attached to walls or stands by thin chains, and many of them were also outdated. These factors tended to detract from the attractiveness of the exhibits.

Upon entering the museum, it has a relatively flashy, cheap aura. It seems more like a place of entertainment than like an educational museum. The attractions, such as the IMAX theatre with shows lacking in scientific information, add to this feel. Also, the lighting was not very effective, often too bright, and the museum was also extremely loud. The noise level did not come only from the amount of children present, but from many unnecessarily loud exhibits. The building did not seem to fit the content, either. Since the museum contains scientific materials, it seems that the intent was to make the building seem more futuristic. However, it feel of the building is somewhat more industrial, as if it was hastily put together. In general, the atmosphere produced was not fitting for what the type of museum and the impression the museum is trying to portray.

Advantages	Disadvantages
Interactive exhibits	Often simple and child based
Content organized well	Signs and maps not clear

Impressive Content	Lacked scientific content
Attempted to have technological displays	Not Maintained, exhibits were out of order/broken
	Displays were out dated
	Loud displays and exhibits

Table 3: Science Museum

4.1.4 British Library

The British Library is another government funded organization in the London area. Its vast collection provides the public with access to a wide variety of materials. The British Library also has space allocated to temporary exhibitions that are replaced bi-yearly. These exhibitions are comprised of special collections of books displayed in a traditional manner (i.e. glass cases with books opened and low lighting to reduce damage to the materials).

The British Library also has a more permanent display of some of their most valuable collections. Within this exhibit is the Turning the Pages display which contains high quality digital images of the actual book. Here the user can examine pages of the book using a large monitor with touch screen capabilities. This technology allows the user to simulate flipping through the book by sliding their finger across the screen. This unique display system captures various page movements which provide the user with a lifelike experience without compromising the preservation of the book. This innovative technique for displaying books provides an alternative to the traditional method of displaying books behind a class case, while giving the user a better understanding of the material. See section 4.2.3.1 for more information about this innovative technology.

Contained in the permanent exhibit are a number of other special collections. Most of these are displayed in a traditional manner. Some of the books containing orchestrations are accompanied by audio playbacks of the music written in the books.

These exhibitions are also quite dark which sometimes makes it hard to view the small captions located near each book. Overall, the British Library has a modern atmosphere, although the materials being displayed are mainly historical.

The reading rooms are separated from the rest of the Library which provides the users with a secluded and quiet area for study. However, the process for receiving materials specifically special collections is timely. Users have to go through a registration process before they are allowed access to the Library.

Advantages	Disadvantages
Very modern, while retaining some traditional elements	Lighting in some places was too low – hard to read some captions
Extensive collection	Short, uninformative descriptions
Turning the Pages display	Difficult to receive books, long process
Audio to accompany some exhibits	
Reading room separate from collections and exhibits	
Lighting was effective in some exhibits – protected books, but didn't seem dark	

Table 4: British Library

4.1.5 British Museum

The British Museum is a government-operated public museum focusing on the display and preservation of ancient artifacts from around the world. Despite having a very large and magnificent reading room, though, the museum is federally financed and it does not house any exhibits or galleries on books. Printed materials and especially those of importance are housed at the British Library which is more suited to care for such

valuables. The reading room will be discussed in more detail below. The Museum is a very large structure, with large amounts of open space throughout. This helps to improve the atmosphere, and makes visitors more comfortable. The Museum also offers an array of different display methods. For instance, a large number of artifacts, such as those in the Parthenon galleries, are not behind glass, but surrounded by a low barrier to discourage visitors from walking close enough to touch them. The objects in some galleries had no protection at all, except signs throughout asking the visitors to refrain from touching the exhibits.

Also, each exhibit had its own atmosphere to match its contents. For instance, the main room in the Parthenon galleries had elements from each side of the Parthenon organized as they would have originally been found, and the design of the room seemed similar to that of the Parthenon, with white marble and Ionic columns. Finally, the Museum offers audio devices that provide further information on artifacts throughout the exhibits, which is very useful for self-education purposes.

The Museum had a few elements that we did not like. One of these is that in a small number of galleries, some of the artifacts were placed in a rather arbitrary manner. This interrupted the flow of visitors throughout the room, making it more difficult to view all the materials.

Contained within the British Museum is a large reading room with a substantial collection (15000 volumes as well as an anthropological collection). The large, circular library is also available to the public free of charge and it does not require registration for use. Also, while the stacks in the library are open to the public, the materials must stay in the room. With the books lining the walls, the center of the room is made up of several rows of desks at which users can read and research with a setup very similar to that of the National Art Library. Several users can sit at a single, long desk of which some seats have computer terminals and some do not. Upon entering the room, the first two rows of desks closest to the entrances all have computer systems loaded with the library catalogue or the COMPASS system, a database of about 5000 items.

COMPASS (**Co**llections **M**ultimedia **P**ublic **A**ccess **S**ystem), which is an interactive information access program developed by the British Museum, was featured

in the Reading Room. There were several problems with the computer systems available at the library. Many of the computers were disabled either due to system crashes or slow connections. Waiting for links to open quickly became annoying. Also, while there were no keyboards on the systems, some that were not touch-screen displays did have mice attached to the systems. The ball mice were dirty and did not function well which was also an irritating inconvenience. Overall, the system concept was interesting and unique and worth looking into but the implementation was not successful internally on both a hardware and software end.

COMPASS is also available online in two forms: COMPASS and Children's COMPASS. The main program is identical to what is provided on the Reading Room computers. With a good internet connection, the database is accessible and fast. The children's version is aimed at teachers and young students by using cartoons, characters, and images to help lead children through activities and learning rather than relying just on words. Both versions access the same database of materials and both are boldly linked from the main page of the British Museum Website making them easy to find and use. More information on COMPASS can be found in section 4.2.3.3.

Outside of being a library, there are other aspects to the reading room that make it a popular destination for visitors of the museum. One of its unique features is an upper level café where museum visitors can sit down and enjoy a snack or drink.

Advantages	Disadvantages
Information audio devices for exhibits	Some exhibits arbitrarily placed
Variety of display techniques	
Artifacts not all behind glass	
Fitting atmosphere for each exhibit	

Table 5: British Museum

Advantages	Disadvantages
easy to access collections	Not clear that it is open to everyone
Touch screen database (Compass)	Most screens out of order
Security system (sensor in each book)	Screens that worked were very slow
Traditional feel with modern displays	No separate quiet room for readers

Table 6: British Museum – Reading Room

4.2 Product Research

We conducted product research through a variety of methods including internet research, sending emails to company contacts, and talking in person to company representatives. This section has been divided into two main sections of interest focusing on library systems and services, and displays and technologies. The first division discusses a number of available software packages marketed to libraries for the purpose of improving such things as circulation and checkout practices. "Displays and technologies" investigates companies who market computers to designers and artists, offer digitization of materials, and produce systems to display rare books.

4.2.1 Library Management Systems and Services

Library automation through available software and hardware packages can greatly increase the productivity and efficiency of library operations. The companies and systems described below help the library keep track of books, provide security, and help manage the day to day activities. Additional product research can be found in Appendix D.

4.2.1.1 The Horizon System by Dynix

The National Art Library currently uses Dynix ILS, the predecessor to Horizon, to serve their library software needs. The Library has a contract, however, in which an update to the Horizon system is included. Therefore, with a switch to this more up-to-date package, we thought it would be a good idea to look into some of the capabilities of this system, including both basic functions and standalone modules for increased functionality. This may help the Library address some of the issues and dislikes that the staff members have with the services.

The Horizon system that is beginning to be implemented at the Library contains a number of different capabilities. It includes all the basic functions inherent to the Horizon system, such as acquisitions, serials, cataloguing, and circulation. It will also provide standalone modules, which include Closed Stack Access, Horizon Information Portal, and Web Reporter. A number of modules are not being included in the package, such as Wireless Gateway, Remote Patron Authentication, and Debt Collect.

First, there are several features inherent to the Horizon system that could be beneficial to the Library. The first is a self-registration feature. With this, any person who visits the Library's webpage, and would like to be a reader, can go through the registration process beforehand. This can also be accomplished on any of the computers on the Library's network. Once this process is complete, a quick verification by a staff member will finish the registration. The system has the potential to improve the request process as well. In combination with the Closed Stack Access module, which will be explained in the next paragraph, a user can reserve materials through the online catalogue prior to their visit.

One standalone module which is included with the system, and could be very useful at the Library, is Closed Stack Access. During the staff-shadowing period, many of the personnel brought to our attention that the paper-based process, by which users request materials, consumes valuable time and resources. The Closed Stack Access Horizon add-on addresses this exact issue. When a user views the Library catalogue on a computer in the Library, they can request the materials that they are viewing simply by

pressing a button. This information is then relayed to the employees behind the scenes, who can immediately go gather the resources and deliver them directly to the user's desk. It eliminates the need for users to fill out a paper requisition form and deliver it to an employee at the circulation desk. Closed Stack Access can also record information about materials that are requested through the system. This module has the potential to increase the speed and ease by which the request process is accomplished, improving the quality of service.

The Horizon Information Portal is another add-on offered by Dynix that may be useful at the National Art Library. This module provides a way for the Library to share all of its resources with the users. It allows users to access the databases and online journals to which the Library subscribes not only on the Library network, but through the internet. When a user visits the Library website, they can log in to be authenticated as a reader at the Library. Once this is accomplished, the user is allowed access to the set of user services, as well as being allowed to view their own personal library records.

Information Portal has a feature called Consolidated Searching. This allows the user to search through the catalogue and all of the library's databases with a single query. Information Portal also features Enriched Content. This increases both the content and usability of the catalogue, by adding cover art, summaries of books, literature reviews, and lists of titles related by theme, author, etc. The online site for the Information Portal can also be changed to fit the current look of the catalogue.

If the Library decides to implement a wireless network, it can use Horizon's Wireless Gateway. This module has a number of security measures that ensures that no malign attempts are made to access or manipulate the network. It can manage the capabilities of each person who accesses the network through the use of "roles." For instance, two roles could be user and staff member. The user would have access to the catalogue and databases, as well as being able to request materials and view their personal records. Staff members would have these capabilities, as well as the ability to access staff functions such as circulation, etc. In addition, the module can be set to limit the bandwidth allowed for each user, to prevent inappropriate use of the network.

Dynix is also planning the release of a new module next month, called E-Commerce. With this module, the Library could set up its own types of online transactions. It would allow users to pay for materials or services online, which could then be sent to them in a digital format through e-mail. This would help aid those users from different countries, who would like to use Library services from abroad.

Presently, the latest version of Horizon that is released is version 7.4. Approximately 6 months from now, Dynix plans on releasing an improved and updated version 8. This version contains mostly the same software, and is easily upgraded to from previous releases. However, this version will include a number of changes on the user end, which will make their experience with the system much better.

4.2.1.2 RFID Solutions by 3M (From 3M website)

3M is a leading supplier of library related products world-wide. While still offering traditional electromagnetic strip security and barcode systems, they have started marketing complete RFID systems under the brand-name "One-Tag." 3M has also produced a number of RFID technologies that work in conjunction with their existing "TattleTape" brand security strips that make a transition from the older system to the OneTag system easier than starting from the beginning. Since the National Art Library does not have a book-based security system implemented already, the information provided below is based solely on the OneTag system and the prices are 3M list prices converted from American Dollars.

Security is one of the most important aspects of library operations and one of the best reasons to implement an RFID system. The Detection System is the physical sensory gate placed at a door that detects if a tag is being passed through the sensors. The cost for the gateway ranges from about £5,000 to £7,500 and depends on how many aisles (at about 1m width each for wheelchair access) would need to be included at each door.

The Digital Library Assistant would probably be the most helpful of the components to the National Art Library. This device is a handheld, cordless scanner is aimed at speeding up search, re-shelving, and inventory times. At 700g and with

dimensions of about 24x18x10cm, it is a tool that an employee can actually bring to the shelves with them. It runs on a rechargeable battery that takes about 4 hours to charge for every 6-8 hours of use. The Digital Library Assistant can hold about one-million records, enough to fit the entire National Art Library collection catalogue information on each scanner. The cost of the device is broken down into three sections: hardware at £2,500, software at £1,500, and service agreements at £350. Adding these three figures produces a total cost of the Digital Library Assistant of about £4350.

The most basic and most necessary part of the RFID components is the tag itself. An RFID tag is a paper thin label with a tiny chip and antennae printed directly onto it. The tags measure about 45x55mm and have an adhesive backing by which they can be applied directly to a cover or a page of a book. Each tag holds 256 bits of memory, or 32 characters, and is re-writable so that information held in memory (such as a pressmark) can be updated if necessary. Individual tags are relatively cheap at about £0.45, but supplying them to an entire library can quickly add up, making it the primary cost of the implementation. Outfitting the entire National Art Library at 900,000 volumes with RFID tags would cost about £400,000 in tags alone. Due to the number of rare, fragile, and book-art volumes, however, the cost would be significantly less and depend on exactly how many volumes would need to contain tags.

The three components outlined above (detection gate, handheld reader, and tag) make up the basic library RFID system. By only implementing these three systems, a rough estimate of the total cost for two gates (two aisles as each door), two scanners, and 450,000 tags (half the collection for an estimate), would be about £225,000. This price does not include installation, service contracts, labour of conversion, or training which would more than likely be quite considerable. 3M is a large corporation, however, and would probably be willing to negotiate with costs associated with setting up such a system. We were unable to find out what any such negotiations would result in, however.

There are also a number of devices that are part of the same overall system that have not been reported on here because they are not directly related to library operations at the NAL. Such devices include the Digital SelfCheck System to allow customers to check out their own books, and the Digital Conversion Station that "rapidly converts all

items from traditional bar code technology to 3M digital identification technology." More information about these systems can be found at the 3M Website.

4.2.1.3 RFID by VTLS

VTLS also offers a comprehensive RFID solution to libraries independent of its library management software. Some of its unique features make VTLS a strong competitor to both 3M and Checkpoint. The chip is manufactured by TagSys, a Philips subsidiary, and features a 74bit memory and operates at a standard 13.56MHz frequency. The tags are 45x50mm and can be read from up to 1m away, as is also standard. While the total is much less than the 256bits that 3M offers, the VTLS system has a number of components that set it apart. The memory, for instance, is divided into three parts: a single bit that makes security very efficient, 40 bits of lockable, permanent memory, and 33 bits of read/write memory. The security bit is probably the most helpful feature. In normal operation, when a book is checked out the bit is turned off. The gate sensors then only need to read this single bit in order to set off an alarm for unchecked material rather than query the main system to determine the status of a book. This produces a faster response and fewer connections between the gate and the library system that can malfunction. In the case of the National Art Library, the security bits could be set permanently to always trigger an alarm when material is within their half-meter range.

It is important to keep in mind, though, just how much 74 bits of information is. Any information needed to be stored on a VTLS tag would need to be nine characters, or less, in length. Therefore, the system might not be compatible if the library has pressmarks longer than nine digits for some of its materials. What VTLS lacks in chip-memory, it claims to make up for in read speed. On their website, VTLS states that their handheld reader can scan up to 20 books per second, ten times faster than what 3M is reportedly capable of. At this rate, a 250,000 volume collection could be inventoried in about 3.5 hours. It is important to note that while fully documented, these figures

comparing VTLS and 3M are marketing claims produced by VTLS and are probably biased towards their own products.

The reader associated with this system only has 512kbytes of memory making it less effective than its 3M equivalent. If only the information that was programmed on the tags (just the nine characters) was stored on the handheld reader, only about 50,000 volumes could be included. This number would continue to drop as more catalogue information was included and in either case is substantially less than 3M's million volume storage capability. Finally, VTLS has not provided any specific price information for each component of the system but did state that their tags were comparable in price to its competitors at about £0.50 per tag.

4.2.2 Computer Systems for Creative Industry Professionals

The National Art Library is looking to use the renovation of the West Room as an opportunity to add features and services that will appeal to a broader range of users. One type of user that the Library is trying to attract is members of the design industries, including architects, artists, photographers, etc. One way to accomplish this is by creating a computer studio that is suited for these individuals.

4.2.2.1 Apple Macintosh Computers

Over the years, Apple computers have proven to be powerful and reliable tools for designers, with a wide array of software options that are suitable for members of the design community. For this reason, we decided to look into the available options for Apple computers, as well as licenses for software packages.

Apple offers a number of different types of computers, including the iMac, the Powerbook laptop, and the Mac mini. However, the computer that is best suited for designers is the new Power Mac G5. This computer has the highest capabilities for memory and processor speed of all the computers offered by Apple. It also features a

more advanced set of graphics cards. These components are necessary for the intensive system requirements demanded by people in the design industries.

Power Macs can be purchased with a wide range of capabilities, with a large price difference to match. A basic system can be purchased for about £1,330.00. This setup consists of a 1.8 GHz processor, 256 MB of RAM, and an 80 GB hard drive. It has an Nvidia GeForce FX 5200 Ultra graphics card, with 64 MB of memory. It also includes a 20-inch flat panel LCD display. At the other end of the spectrum is the top-of-the-line model. This computer features dual 2.5 GHz processors, 2 GB of RAM, and a 160 GB hard drive. For a graphics card, it has an Nvidia GeForce 6800 Ultra with 256 MB of memory. It also has a pair of 30-inch Cinema high-definition monitors. This impressive model costs £5,270.00.

In order to attract designers into the National Art Library, this computer studio would also have to include an array of software packages to cover the design spectrum. For architects, a program such as Graphisoft ArchiCad or Nemetschek VectorWorks could be offered. These programs are some of the more advanced 3D modeling software packages on the market today. For ArchiCad, a single license costs £2,800.00, with additional licenses costing £2,660.00 each, excluding VAT. A license for the Foundation version of VectorWorks can be purchased for £749.38, with additional licenses costing £523.43. For the Industry version, which includes Vectorworks, Architect, Landmark, Mechanical, Spotlight, and Renderworks, a license costs £1,577.57.

Adobe Creative Suite 2 is a solid choice for individuals in the graphic design community. Creative Suite comes in both standard and premium packages. The standard edition includes full versions of Photoshop CS2, Illustrator CS2, and InDesign CS2, while the premium edition also includes GoLive and Acrobat 7.0 professional. This suite of programs offers industry-leading solutions for image-editing, art design, graphic design and compilation, and web design. The standard edition retails for £828.37. The premium edition sells for £1,051.62.

4.2.2.2 Dell Computers

Apple computers are a viable solution for a computer design studio, but there are other options in the market as well. For this reason we thought it would be prudent to also look into PC's. One of the leading manufacturers and distributors of PC's is the Dell Corporation. They offer reliable computer solutions, which are all backed with award-winning technical support. They also offer some of the most competitive prices in the market.

Dell has a wide array of Desktop computer options. Among these is the Precision series. Precision desktops are the most high-end models offered, with hardware capabilities for the intensive applications necessary for those in the design industry. The most basic computer in this series retails for £539.00. This model includes a 2.80 GHz Intel Pentium 4 processor, with 512 MB of RAM. It has a 40 GB hard drive, a 64 MB Nvidia graphics card, and a 48x DVD/CD-RW drive. It also includes a 17" CRT monitor. A top-of-the-line model sells for £4,579.00. This system consists of dual 3.6 GHz Intel Xeon processors, 4 GB of memory, and a 400 GB hard drive. It also has a 256 MB Nvidia FX3400 video card, and a 16x DVD-RW/CD-ROM drive. For design software packages, the prices would be the same both for Apple and Dell computers.

4.2.3 Displays

As part of the expansion, the library is interested in including an exhibition space that would be used to draw users into the library. Such an area might include interactive information systems that would provide a modern way of displaying and describing the library's materials. This section discusses the Turning the Pages system as well as other options that local museums and libraries have recently implemented.

4.2.3.1 Turning the Pages

One of the main display technologies that was researched in depth is an interactive library program called Turning the Pages (TTP). This program, which was

started in 1997, was developed by and originally for the British Library. TTP is a way for libraries to display valuable and historical books without the danger of damaging the book. Through the use of Turning the Pages, the user can get the sensation of handling the actual book as they turn the pages with their hands on a touch-screen monitor. After realizing the potential of such a system, the British Library began working with an outside company, Armadillo Systems, and together they have jointly developed two new generations of the software. The British Library now has a dozen books published and on display on location, and they also created customized programs for other institutions, including the National Library of Medicine, and the National Library of Ireland. There are now two versions of the Turning the Pages system available, each having their own advantages.

The first version is called TTP VirtualBook. In this version a curator is first filmed as he or she turns the pages of the book. After the video has been analyzed with a book dynamics expert, a 3D computer model can be produced that mimics the exact movements of the particular pages. The pages of the book are then photographed and scanned at high resolution, and mapped onto wire frame pages of the model. These scans are color-corrected to ensure that the pages are of the exact quality of the original. VirtualBook is the more complex of the two programs and is, therefore, more expensive. Depending on the amount of custom features the price of VirtualBook can vary, but the average is about £1,000 per page. This state of the art program creates an extremely realistic virtual book, so it is most often the case that it is used to show only the highlights of a book, in order keep costs lower with fewer pages. The average cost of VirtualBook programs created by the British Library range from £30,000 to £50,000.

The second version is called TTP 3D. This version was created to be a more cost effective way of creating a virtual book. For this program sophisticated imaging models are produced using mathematical algorithms. This software is used to create the pages and warp the images as the page is turned, as opposed to a 3D computer model used in VirtualBook where each page must be scanned and photographed at a number of different positions during the turn. Just as in the other version, there are several options for customization and the image scanning quality is just as high. Since this process is

significantly less expensive, more pages can be easily made. For this reason TTP 3D is often used to create virtual facsimiles of entire books, or collections, and the amount of pages is unlimited. On average, TTP 3D can be produced for £100 per page. The average cost of TTP 3D programs made by the British Library range from £10,000 to £15,000.

Each of these products can be produced for four different platforms, which include kiosk, narrowband internet, broadband internet, and CD-ROM. The British Library, as well as other libraries that have Turning the Pages program, offer it on each of these platforms. Each of these brings a unique service to the library that they are created for. The kiosk version draws users into the library, which helps raise popularity and usage of the library. When the British Library first launched Turning the Pages in 1997, it brought in 3,000 viewers to the library per day. There are some technical specifications for the kiosk hardware. The program must run on a Windows PC with a Pentium P4 processor or an Apple Macintosh G4 with 1GHz or above. The touch screen is suggested to be between 18" and 30" with at least a 1024 x 768 resolution. The online version of the program allows users from around the world to have access to books that they otherwise would probably never be able to see. This will also dramatically increase the usage of the Library's website, therefore spreading the name of the Library. The online platform is available for broadband (512k cable or DSL) or narrowband (56k) internet, so users are not limited based on their connection speed. Offering the CD-ROM version of the program allows users to purchase their own copy of a Turning the Pages book. These CDs usually offer extra features not included on the kiosk version, such as extra commentary or essays on the book. This is also an excellent source of revenue for a Library. For example, in the first two weeks that one of the books was available on CD-ROM at the British Library, they sold 6,000 copies at £12.00. With revenue from sales such as this, (more than £70,000) the program can eventually pay for itself. The CD-ROM is designed to run on a Windows Pentium II processor, with at least 64Mb of RAM, and an 8X CD-ROM drive. The British Library also offers a one year service warranty on the software, but the product has proved to be very durable and self maintaining, so minimal repairs have been necessary, saving libraries from the cost of maintenance.

As stated before, the cost of a Turning the Pages program varies for each unique virtual book that is created, based on the size of the book, as well as the special features that are chosen for the book. When working with the British Library and Armadillo Systems to develop a Turning the Pages program, the customer can be as involved or uninvolved as they wish. The customer is free to produce their own scans, text, commentary, and hardware, and come up with all the specifications, but leaving the designers to their own creativity is also an option. Armadillo and the British Library are willing to produce a TTP program given nothing but the book itself. It is up to the customer to make as many requests as they would like. The possibilities for features are endless. The creation of a page includes zoom, text, and audio commentary. Some examples of possible extra features include, mirror image, as is helpful in the Leonardo da Vinci notebooks, or 3D rotation of the closed book, as to show the massiveness of Joyce's Ulysses, as well as music clips, hot spots, multiple languages, web links, and quizzes. Not only this, but the British Library can even go further to create a customized kiosk design to match the décor of the library in which is will stand.

4.2.3.2 NYKRIS and ArtStart

NYKRIS is a digital media company that designs and builds innovative, high quality products for a number of organizations in the UK and abroad. Some of their products include websites, CD-ROM, wireless applications and interactive kiosks. NYKRIS has been producing award winning, creative websites since 1997 for a wide range of companies, including EGG, Oxfam, National Gallery, Tate, and the BBC. They also produce many CD-ROM projects that are both stimulating and informative. Some past CD-ROM projects have been completed for companies such as New Opportunities Fund, and ITV. These programs are designed to be easy to use, and to work across a broad range of computer specifications, as to keep from limiting the user base. Some of the products that are most interesting and useful for museum applications are the wireless devices and interactive kiosks. For the purpose of this project for the National Art Library, we will look more closely at the options for interactive kiosks.

The National Art Library is looking to integrate some interactive technological displays into their plan for the renovation of the West Room. One of their goals to achieve through these digital displays is to provide further information relating to the museums collections. NYKRIS has created a product that serves a purpose similar to this for the National Gallery. ArtStart is an interactive touch-screen system that provides access for users to many of the museums galleries. The program includes high resolution digital images of the paintings in the Gallery, as well as other information sources such as floor plans, tours, and Gallery events. Users can search for paintings by subject or artist, and find information on any topic of personal interest. The ArtStart program has zoom capabilities as well as text and audio commentary. The user can access information about a painting, social and historical related content, as well as artist biographies. Another useful feature of ArtStart is the option to print out a tour of specific paintings within the Gallery. The user can choose from a list of tours by theme, or create their own tour of up to ten paintings free of charge.

NYKRIS works closely with clients to plan and develop digital media projects, paying close attention to objectives, expectations, timeframes, and budget. The costs of these projects span a wide range, based on complexity and scope. Smaller scale website and touch screen projects fall broadly into a range of £25,000 to £100,000. Larger scale projects, such as ArtStart fall approximately into the £300,000 to £500,000 range. The details mentioned above, including timeframe and budget, are set out at the beginning of the project, and NYKRIS ensures that the product will be delivered as specified. The time it takes to develop a unique program will also range based on complexity. ArtStart, for example, is an extremely complex program which was developed over a three year span.

4.2.3.3 System Simulation Ltd. and COMPASS

System Simulation Ltd. is a software engineering company that was founded in 1970. This company specializes in text and multimedia information systems, which more specifically include museum information systems, commercial and archival image library systems, and information management. The software is intended to provide support for

small and large scale applications on networked and stand alone systems. SSL develops information products for many professional and commercial clients, including the British Museum, the London Transport Museum, the V&A Museum, Getty Images, SCRAN and The 24 Hour Museum.

System Simulation Ltd. develops these information systems through their highly developed software toolkit called Index+. This software runs on several platforms, including MS-Windows, UNIX, NT and mixed environments, also features fast searching, high storage capacity, and a broad range of application development tools. This range allows the software to be simple enough for an inexperienced user, but can be powerful enough for a demanding professional. SSL implements information systems for many museums using their Museum Information Management System (MUSIMS), which is built on Index+. MUSIMS provides collections management facilities, library and archive catalogues and creative support for a range of accessible public services. This system has several modules which allow for easy data entry, inventory, access and image management.

The Victoria & Albert Museum's Collection Information System (CIS) was implemented by SSL using Index+. CIS is an information system that provides full control over acquisitions, inventory and catalogues for each of the departments of the V&A. SSL has also helped to integrate the CIS system with the V&A's Picture Library in order to create an online access infrastructure so that the museums images can be searched through the website. New content can easily be added to each of these systems, to keep them up to date at all times.

System Simulation has also used MUSIMS to implement the British Museum's Merlin Collections Management System. Data was taken directly from the Museum's previous management system, and upgraded to comply with modern museum standards. With the resources provided by this Merlin System, SSL then helped the British Museum created a public access system with Index+ for the British Museum called COMPASS.

The COMPASS program, which stands for Collections Multimedia Public Access System, was launched in June 2000 at the British Museum. This database is accessible from kiosks in the reading room of the Museum, as well as online. Each of these versions

provides interactive access to around 5,000 objects, and within the Museum Reading Room there are also larger touch-screen kiosks. The image quality and animations on the touch-screen kiosks are far superior, and also show 3D reconstructions of objects. Museum users, or researchers at home, can use COMPASS to search through a wide range of the museum's collections, and obtain information on these objects. The system allows users to search for museum items by object, subject, gallery, or keywords. Users can also view a tour of several museum exhibits by category. For each object in the collection, the system allows users to view pictures, and order prints if desired. It also gives a text description, as well as a list of related objects. Many of the articles also reference books where the user can find more information on a topic. To ensure that all museum visitors can benefit from COMPASS' possibilities, there is now a children's version of the program. The children's version features an interesting object and tour of the month for younger minds, as well as a simple search method.

Collection information systems, such as COMPASS, can be presented on websites, interactive kiosks, computer workstations, CD-ROM and prints. These programs can be updated often when revision is necessary. SSL also offers comprehensive support packages based on user requirements. These support packages range from email or telephone support to 24-hour pager support. SSL also provides training for database administrators, application builders, and end users.

4.3 Interviews and Focus Group

Upon the completion of our interview process we developed a list of common topics or issues that were mentioned by a number of the National Art Library employees. We found that there are several issues or areas of concern involving the current services in the Library. First, the services are paper-based and out of date which makes the daily operation of the Library staff intensive. There is also no efficient way to track material use statistics. In addition the catalogue is difficult to navigate especially for new users who are unfamiliar with the Library's collection.

The questions asked about the West Room were geared towards the future goals of the room and the audience is should market to. Again, the interviews revealed several similarities for both the purpose and options for the West Room. One of the primary suggestions was that the West Room should have an inviting atmosphere that should cater to all types of Museum visitors. It should also provide an open access collection where casual visitors can get more information about the Museum's collections. Lastly, many of the National Art Library staff would like to see the West Room become the information gateway for the museum and its contents. For further information and detailed summaries of each interview we conducted, refer to Appendix C.

4.3.1 Library Staff Shadowing

One of our initial methods for gathering information about the Library's operations was observing some of their daily tasks and services. Each member of the team took a shift (approximately 1hr 50 minutes) at both the circulation counter and the enquiry desk. One of the services the National Art Library provides is answers to written (email), telephone, and face to face enquiries regarding their collection. The enquiry desk, located in the Center Room, is used for incoming calls and face to face contact with the customer. The enquiry desk is always staffed by a professional librarian who provides bibliographical information to customers about specific books. They can also redirect their enquiry to another department in the museum that can provide the customer with additional information if necessary. The National Art Library also does detailed enquiries for customers which take two weeks to complete. Each member of the staff is required to do these in depth enquiries to gain knowledge and experience about the Library's collections.

While shadowing the daily workings of the Library we were able to discuss both positive and negative aspects of the operations with the employees. Employees expressed several areas of concern with the enquiry process. The most significant was the lack of separation between phone and face to face enquiries. Since the enquiry desk is staffed by only one employee, they frequently find themselves backed up with customers. Generally

phone enquiries take longer than those asked in person. Users are often frustrated trying to ask simple questions while the employee is occupied by the phone enquiry. Many times customers will leave before the staff can provide them with assistance. Customers also find themselves being sent back and forth between the counter and enquiry desk do to the different types of questions they have. These two separate services being located in the same room and in close proximity of each other can cause confusion for customers.

The other service we shadowed was the circulation counter. This is where most of the administrative processes are carried out and is usually run by two or three employees. Here book requests and registrations are processed for the Library patrons. The counter staff also monitors and assists in the photocopying and digital photo services available to the customers. Each customer is allowed to have six books at a time and must fill out a separate hand written forms for each of the books. The staff at the counter then processes the form and passes it to another employee who retrieves the book. There are also three different registration types; a three month pass, three year pass, or five year special collections membership.

The request is a carbon copy form, with one of the slips being used to replace the book when it is removed from the shelf. Once the books have been brought to the counter the customer is notified that their materials are available. Customers who wish to access the special collections must fill out an additional form which has to be signed by a member of the senior staff or duty officer. The customers must then leave their ID card at the counter while viewing the material and can retrieve it when they are finished and the books have been returned.

During the shadowing process of the circulation desk employees outlined a number of problems affecting the quality of service they are able to provide. Since a good number of the daily visitors are new members the staff spend a lot of time explaining the process of searching for and requesting books. Much time is spent correcting requests and interacting with the customer to inform them of delays or complications in the process. The counter is also accompanied by a lead or more experienced employee whose purpose is to improve the service process, however, when training new employees or working with less experienced staff, the services are comprised. Furthermore, employees were

either quite busy helping customers, or without anything to do during times of reduced activity. Another concern expressed by the employees was the inability to track usage of materials in an effective manner. In order to generate information on book request frequencies and topics each slip has to be analyzed and recorded by hand, recently there was a two month period where this occurred. The information they found was useful in improving their services however it proved to be very labour intensive to create.

5. Analysis and Recommendations

The analysis includes three subsections that examine our findings and provide recommendations on the products, technologies, and services that we have researched. The Services section reviews the catalogue and RFID options for the library as well as discussing problems with the outdated service and delivery methods found in the Library. The Displays section makes recommendations on software and hardware such as Turning the Pages and Art Start. The Expansion section analyzes the appropriateness and practicality of furniture options for the West Room.

5.1 Services

Before determining specific product-related recommendations for services options, there are some more general problems that need to be addressed. It should first be noted that there is something to be said for tradition and often habits become traditions for good reason. Sometimes the habits happen to be the method that works the best to solve a particular problem, sometimes there aren't any options except for the one developed or used by an institution, and sometimes an idea is so good that it is adopted as a standard.

There is also a human interest side in the development of tradition where, due to the length of time that the tradition has stood, the people who go by do not have an interest in finding a better way to do things. The National Art Library, despite being a unique institution with many good, self-developed methods for service and delivery, seems to suffer from the latter in several key but easily fixable points. An entirely paper-based retrieval process, outdated computer systems, and an archaic user registration method all decrease efficiency and pull resources away from helping customers.

By streamlining the registration and request processes, the staff of the Library could put resources where they need to be for more efficient operation. This is easily accomplished through a variety of methods such as making upgraded computers a part of

the expansion plan or developing a simple webpage that would let users fill in most of their registration information online before having it quickly checked over by a library employee. Being able to request books online as part of the catalogue search would also decrease the frustration of users.

Implementing solutions to these common annoyances is absolutely essential prior to completion of the refurbishment. Without modernizing the most basic services, it is likely that the problems will only become exaggerated with the introduction of the number of new users that the library wishes to support. Fortunately, there are also some prepackaged, third party service systems that makes some of these tasks even easier. They will be discussed in the following sections.

5.1.1 Integrated Library System

The library computer system is an integral part of the functionality of any library. The National Art Library currently uses the Dynix ILS system, and has been using it since the late 1980's. Due to the outdated nature of ILS, the Library has begun to look elsewhere for a more powerful and user-friendly software solution.

In order to analyze the options present for the Library, it will be necessary to look at the costs and benefits of each system in turn. For costs, there is a monetary value for the package itself, and also an issue of staff required to implement the change. Benefits refer to the improvements that could be found with the system. The analysis must also include opinions voiced by the staff members during the interview process.

5.1.1.1 Horizon System

The National Art Library is currently awaiting a switch from their current Dynix ILS system to Horizon. In fact, the process of switching systems has already begun. Dynix has begun to migrate data between the old management system server and the new Horizon server, and Horizon should be in place sometime between June and the end of

the year. This is a major consideration for the analysis of options. Since the NAL has an existing relationship with Dynix, and has already begun to implement the new system, a change to this software would be much easier than it would with any other system.

An important factor in choosing an integrated library system is its cost. In this case, the Library has a preexisting contract with Dynix, in which an update to Horizon is included. Therefore, there will be no future monetary cost for this system, apart from regular maintenance. This makes the Horizon option very attractive, especially for an organization with limited funding such as the NAL.

The Horizon System has a large number of benefits as well. One of the features built into the system, when coupled with the Closed Stack Access module, allows users who view the catalogue online to reserve materials for their next visit. When the user gets to the Library, they can approach the circulation desk and retrieve their materials, without having to take up staff members' time. This would help immensely with the retrieval and delivery process. Another capability that is intrinsic to Horizon is self-registration. With this, a user can register to be a reader in the Library electronically, either on a computer at the Library or through the internet. To finish the process, the reader visits the circulation counter, where a staff member makes a quick verification of their credentials, after which they are free to use the Library. The current registration process requires users to fill out a paper form, which they then deliver to staff at the counter. However, the users often require guidance with the process, and it can take a great deal of time to assist them. Self-registration, along with online reservation of materials, would help increase efficiency at the circulation counter by decreasing the number of unnecessary tasks for staff to accomplish.

The Closed Stack Access module, as mentioned before, allows users of the Library to request materials directly from the catalogue on a computer. This would eliminate the need for users to fill out a paper requisition form and deliver it to the counter. This module addresses a number of problems that have been mentioned throughout our interview process. First, many have mentioned that the old, paper-based process is frustrating to users, and inefficient for staff. Closed Stack Access would be a more efficient and user-friendly way for readers to order their materials. It would also

help reduce the amount of both errors and misunderstandings that can occur when users fill out requisition forms on paper. Another issue that was commonly discussed in interviews was the fact that the Library has no way to track usage of materials. When materials are ordered through Closed Stack Access, Horizon can track the number of times that materials have been requested. By reviewing how frequently or rarely certain materials are requested, the Library could learn how to reorganize the collections in such a way that those materials most commonly used were stored closer to the circulation counter. In this way, the delivery process could be made more efficient. It also means that the Library should seriously consider removing the paper requisition form entirely from the request process once Horizon is implemented. If it is retained, it will lead to errors in tracking usage statistics, and will give the Library false data whenever it creates usage reports through Horizon.

Horizon Information Portal is another module that could benefit the National Art Library. This add-on allows users of the library to access the entirety of the Library's resources, and also improves the content that is accessed. A valuable feature of Information Portal is that it will allow the Library's catalogue to include elements such as cover art, summaries, tables of content, reviews, etc. Many interviewees mentioned that users of the Library often find the catalogue difficult to navigate and use effectively, due to a lack of forgiveness with subject search terms. By including a larger volume of specific content, the Library could make the catalogue much easier for readers to use. The number of errors that readers make when requesting materials would decrease, improving the experience of users.

There are also three modules not included with the package currently planned for the NAL that would be useful in addressing issues that have been mentioned by staff. The first of these is Wireless Gateway. One of the future improvements that our sponsor has suggested is the implementation of a wireless network in the Library. Wireless Gateway, in conjunction with Horizon Information Portal, will allow readers to bring their own Wifi-compatible laptops to the Library and log on to a network. Through this network, the readers would be able to access the resources that are available in the library, including the catalogue and all subscribed services. Recently, the Victoria and Albert

Museum has been looking into the possibility of implementing a museum-wide Wifi network. Because of this, there is no real possibility for the NAL to independently create and implement its own wireless network. If the Library is seriously considering a wireless network, they should negotiate with the Museum to determine the project's feasibility, and discuss possible timelines. However, as preparation for a future implementation, we recommend that the Library consider Wireless Gateway with the Horizon upgrade.

Another component that may prove very useful is Remote Patron Authentication. RPA allows members of the Library to log in to the Library's network from a remote location, and access available resources. This would be very convenient for readers at the Library, who would not be required to visit the Library to search through subscribed services such as databases. Also, it would help lessen the number of phone enquiries with which the staff must deal, as many of these enquiries ask for information from these sources, and that data would now be readily available. This would only reduce the number of enquiries by current Library members, as only they would be able to access the databases, but it would still prove very useful. Therefore, the Library should also consider this module with the upgrade.

The Library should also look into the E-Commerce module, which will be released in the near future, possibly as soon as next month. As was mentioned in the findings, this add-on lets a library set up its own types of transactions, and allows users to pay for those transactions online with a major credit card. This would be very useful at the NAL. One example of a problem that this could solve for the Library is international purchase of reprographics. Currently, if a user in a different country would like to purchase photocopies from the Library, they would have to mail a check drawn against a British bank before they can receive their materials. This, under the best of circumstances, is difficult. However, E-Commerce would allow the transaction to be made online, with a credit card, instantly. The NAL could then mail or e-mail the materials to the user. This would result in a much quicker process for the Library, and a much simpler and more satisfying experience for the user. Therefore, we recommend that the NAL purchase and install this upgrade upon its release.

5.1.1.2 Other Library Systems

   Although the National Art Library is currently upgrading to the Horizon system, they would still like to look at other software packages that are offered, in order to determine whether or not another system might better suit its needs. As is mentioned in Appendix D, three other companies that offer library systems are Endeavor Information Systems, Innovative Interfaces, and Ex Libris. The systems that they offer are Voyager, Millennium, and Aleph 500, respectively. Also, it would be pertinent to look at Corinthian, the new system by Dynix to be released later this year.

   Corinthian will be released around the end of 2005. On the software end, this new integrated library system will be nearly identical to Horizon version 8. It would therefore be relatively easy for the Library to switch to Horizon 8 or Corinthian from an older release of Horizon, such as 7.4. Corinthian is designed to provide an improved experience for academic libraries specifically. One example of a difference between Horizon and Corinthian is that Corinthian places less of an emphasis on stock rotation and control. There are a number of other differences as well, but it is not truly necessary to look at them all in depth because the Horizon system will be more suitable to the NAL. Also, if there are any specific capabilities of Corinthian that the Library desires in the future, these could be implemented in the new version of Horizon, due to the flexibility and interoperability of the two systems.

   The Voyager system is comparable in functionality to Horizon. It has a number of features that would be useful at the NAL, that are also included with the Horizon package. For instance, Voyager allows requests of materials in closed stacks. It also allows readers to reserve materials online ahead of time. However, the system does not have any features not included in Horizon that would warrant consideration of this system as a replacement for Dynix ILS.

   Aleph 500 is much the same as Voyager. It allows reservation of materials prior to a reader's visit. It also has a Reading Room sub-module, which tracks and manages the transfer of materials loaned to patrons within the Reading Room. As with Voyager,

Aleph 500 does not address any issue critical to the National Art Library that Horizon does not.

The last system is Millennium. As with the other two systems, Millennium allows for the same critical functions that are inherent in Horizon. Also, it does have a very attractive inventory control capability, which allows librarians to scan shelves and determine specific information about misplaced, missing, or incorrect materials that are present on those shelves. However, due to the fact that about half of the collections in the NAL lack barcodes, this feature would provide a very limited positive effect. It would not make up for the increased cost of purchasing a new system, either. In addition, Horizon can be implemented in such a way to allow for this functionality. Therefore, this is not a real selling point for Millennium.

5.1.1.3 General Recommendations

After reviewing the Horizon system that is currently being implemented, and other systems available that could be used instead, we have determined that the National Art Library should remain with Horizon. This recommendation is motivated by a number of very influential factors. The first of these is that Dynix has helped libraries switch between ILS and Horizon many times. This means that the process of changing library systems will most likely be simpler with Horizon than it would be to implement an entirely new system with a different company. Another important consideration is that the upgrade to Horizon has already been arranged with Dynix, and has been included in a prearranged contract. Therefore, this system will be implemented with no additional future fees or payments, while if another system was chosen instead the Library would incur a large cost.

Apart from these convincing reasons are the capabilities of the library software packages. Horizon allows users to reserve materials before their visit. It also allows users to register themselves on a computer, which only requires a brief verification by staff. Both of these capabilities will save the service staff at the circulation counter valuable time. Closed Stack Access allows users to order materials through the public access

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catalogue, which eliminates the need for the paper-based system. Horizon Information Portal allows the Library to include a richer variety of content in the catalogue. These are all problems listed explicitly by library staff during our interviews, and Horizon addresses each one. Other software packages may be comparable in these capabilities, but none exceed the package offered by Dynix.

The only other package that could be seriously considered by the Library is the Corinthian system, which is also offered by Dynix. This system could be implemented in the future much easier than systems by other companies, due to the similar software architecture between Horizon and Corinthian. However, Corinthian is designed for academic libraries, and many of its features would not be as useful at the NAL. Also, Horizon includes many capabilities that the Library requires. After upgrading to Horizon, a future switch to Corinthian, if desired, would be a very simple process.

In the future, if the National Art Library is not satisfied by the Horizon product or its relationship with Dynix fails, we would suggest that the Library consider the Voyager system by Endeavor Information Systems, or the Aleph 500 system by Ex Libris. However, given its current status, we are of the opinion that the NAL should remain with Dynix and continue its switch to Horizon.

5.1.2 Radio Frequency Identification

Radio Frequency Identification is a great technology for libraries to have and it helps speed up many labour intensive and routine tasks. Implementing a system now would be beneficial for the National Art Library for two main reasons. A partial integration, at least, of this system would provide the ground-work for a modernized library and give room for further expansion of services in the future. Also, the renovation would be the perfect time to allocate funds towards this new technology and would be the perfect setting in which to add a new piece of technology to its services. It is important to keep in mind, though, that RFID is a fairly new technology and still in a developmental and expensive period.

It would be very easy to recommend an RFID installation simply based on how impressive and appealing the technology is. It is our opinion, however, that a full implementation of RFID throughout the National Art Library is probably not worth the initial investment to the National Art Library at this point in time. Until the costs (at several hundred thousand pounds) associated with implementation and maintenance of such a system come down which, with any new piece of technology they eventually will, and until RFID is shown to be the standard for a vast majority of libraries, it is simply too risky for a library with a limited budget and limited personnel to undertake the installation of such an operation on a full scale basis. Beyond the budget alone, there are other issues that make the installation of an RFID system more difficult than first imagined.

While the transfer to RFID is supposed to be an automated and simple process, the unique collections at the NAL might pose a major problem. Stand-alone workstations are normally used to scan bar-coded books and program RFID tags in one step. When any entire collection is bar-coded to begin with, this transfer process is fairly quick and painless with the turnaround time from scanning a book to programming a tag being only a few seconds. With only part of a collection having barcodes at the NAL and with such a large number of special collections and book-art, the process would prove to be much more difficult and the specially designed workstations would not be as useful. Instead, making tags would be much more manual in nature and require more human resources than a normal open-stack, public library might need for a similar task.

While partial implementation of RFID for the entire NAL is also an option, doing this would undermine the purpose of having a full RFID system. By having only some of the books contain tags the entire collection will not necessarily be more secure than it currently is or make operations more efficient. Trying to find the one book that does not have an RFID tag would still take just as long as it did previous to the installation. Security also becomes less effective when the assumption is made that an automated system is protecting materials when, in fact, it is not. In addition, placing tags onto some books is not possible due to their value. In such cases, tags might be placed onto slips of paper and then placed inside the book for cataloguing and retrieval reasons, but by doing

so, the books would not be protected by the RFID tags since the tag could easily be removed from the book. In general, the materials given to users would still have to be invigilated to prevent theft.

Partial implementation would work, however, within the West Room. If a small reference collection was created and isolated in the West Room for the use of helping museum visitors, and the entire NAL collection did not need to be tagged, the usefulness of RFID would once again be apparent. This would add security to a more open collection of books with a higher volume of users, and if the books were still kept in closed stacks, RFID would aid in tracking which ones were used. The latter would be essential for maintaining a collection that is useful while not keeping unnecessary books on hand in a smaller library space like the West Room. This type of implementation would probably be the only circumstance, however, in which the installation of an RFID system would be effective in concurrence with the planned expansion. Such an implementation would save on costs as well. With a collection of 12,000 books, as was stated in the "Development of the NAL Reading Rooms and Re-Opening of the West Room" document provided by Martin Flynn, tagging the entire collection would cost less than £6,000. With a total cost of being roughly £30,000 (without service contracts), this method would be a cost effective way to introduce RFID to the National Art Library, protect the collection in the West Room, as well as ease personnel constraints. Further implementation could then be installed for the main collection, if desired, over the course of a given time period such as five or ten years.

5.2 West Room Expansion

There are many different features and characteristics that need to be addressed during the development stages and opening of the West Room. Determining the function and purpose of the room plays a significant role in the design and creation process. By interviewing a member from each level of the staff at the National Art Library we have

created a foundation for possible purposes of the West Room. In many cases we received similar feedback as to the purpose for the room's construction.

5.2.1 General Recommendations for the West Room

The most common response we had referring to the West Room with respect to its purpose for the Library was that it should be an inviting place. Oftentimes casual museum visitors who come across the National Art Library find themselves looking into a very quiet and intimidating environment and simply walk away. This is primarily due to the placement of the entrance to the Library. Currently the Reading Room is being used as the Library's entrance. This room is reserved for silent study and is used mainly by researchers and students. Opening the West Room and using it as an entrance gives the Library the opportunity to create a place where visitors can come in and get a sense of what the National Art Library has to offer without disturbing those working in the Reading Room. Creating a room that is engaging and informal will help to attract a much larger variety of users than the Library usually gets. A "drop-in" room would give many audiences including school groups, families, and casual visitors some exposure to the Library's collection of historic and educational materials.

The staff would also like to see the National Art Library become the Museum's information center. This could be accomplished by developing a reference section based on the museums galleries and collections. Similarly, the West Room should contain books and materials specific to exhibitions that are being held in the V&A Museum. Temporary exhibitions are a good source of publicity for the Museum. Coordinating a collection in the West Room that supplements these exhibitions will provide enthusiasts a place to continue their research. This will help to promote the Library's use and give many of the Museum's visitors a reason to go to the Library. The West Room should also be well staffed and should contain clearly marked areas where visitors and users can have their questions answered readily.

The renovation and refurbishment of the West Room should be developed with respect to the existing atmosphere of the Library. The types of materials displayed in the

West Room should make visitors aware of the impressive nature of the Library's collection. This can be accomplished through a number of traditional displays, supported by some modern display technologies as well. These displays come in a variety of forms, such as pull out drawers, traditional glass or acrylic cases, or more modern displays. When implementing these display technologies it is important to keep in mind access and placement. Showcased materials should be placed in such a way that they do not clutter the room or restrict access for disabled visitors. Some suggestions for this issue include setting up displays along the walls or constructing recessed cases built directly into walls. These displays, which include modern techniques using kiosks, should be placed in areas where they are easily accessible and can be viewed by many users at a time. The materials on display should also be linked in an intuitive manor, leading visitors on a tour of the Library's materials, or organized by theme or content, and avoiding the arbitrary display of a mix of books and materials.

Lighting is another concern for the Library in displaying materials in the West Room. Exposure to light can damage materials over time and needs to be monitored carefully. Because of this and the nature of the West Room, where users will want plenty of light, books should be displayed in a separate section of the room away from the Room's main sources of light. Flexible lighting focused on specific books on display will help make sure items are visible and clear. There is some discrepancy as to the amount of light that these rare books should be exposed to, but they generally are displayed in areas with no more than 100 lux. Changing these displays regularly will reduce extended periods of exposure to light and help to maintain the preservation of the materials as well as expose visitors to an assortment of the Library's materials. In the case of the National Art Library allowing users hands on access to such materials is not possible. Using technology such as Turning the Pages in the West Room would allow visitors with access to these rare and valuable materials.

The West Room should also have comfortable seating and refreshments for those looking to browse the reference collection and other reading materials such as journals, magazines, and newspapers. The West Room's layout and furniture should allow for flexibility in use of space. One of the goals put forth for the West Room was to create a

room that could be used for different forms of corporate hospitality. Through the use of fold away furniture and stackable chairs the room would have the ability to be converted quickly and easily to make hosting these corporate functions possible. In order to do this we looked into several companies that provide a design consultancy service and work in conjunction with the architectural development of the room. These companies include Demco Interiors, Folio Library Solutions, and Remploy Furniture. Folio Library Systems has recently released a line of fold away desks. The CompuDesk supports a 17" LCD flatscreen monitor, computer tower, and keyboard which can be tucked into the desk when it is not being used. The CompuDesk costs approximately £400 and can be accompanied with a basic computer system (17" LCD Monitor, 256mb RAM, 2.8 GHZ Processor, and 40 GB Hard Drive) for an additional £500. We recommend that the Library involve one of these companies to help create a room that is both flexible and inviting while maintaining the traditional feel of the National Art Library.

5.2.2 Displays

With the expansion into the West Room, the National Art Library is looking to create a space that is more modern and interactive for the library users. The Library Administrators would like to find ways to open up the Library's capabilities and make the West Room a place that is inviting and useful for all types of users, from the general museum visitor to the diligent business person. In searching for ways to make this happen we have researched and analyzed several interactive, technological display methods. These Displays include the British Library's Turning the Pages program, as well as some interactive information systems that are currently being used at other libraries and galleries.

5.2.2.1 Turning the Pages

Turning the Pages is an interactive library display program that has proved to be a big hit for its creators, the British Library, and now several other libraries as well. This innovative technology has created a way for libraries to be able to offer their most treasured books for the public to explore, while still making sure that these books are not damaged. Turning the Pages would be an excellent asset for the National Art Library as well. We would recommend this technology for the National Art Library, to satisfy the library administrators' desires to draw a broader user base into the Library, and to let the public know about the collections that they have to offer.

This program would be very beneficial to the National Art Library, as a part of the design of the West Room. The Library could benefit from each of the platforms that TTP is available on. The kiosk version of TTP would serve as an exhibit within the Library, which would attract the attention of museum visitors. Once inside, these visitors will be more likely to want to find out what else the Library has to offer. The online version of TTP would serve as advertisement for the Library. This would let the public know that the NAL exists and has much to offer. This would also allow people who are not able to visit the NAL to have an opportunity to have access to some of the Library's collections. The CD-ROM version of TTP would serve as a way for users to take a book home with them, whether for research or as a gift, and would also serve as a source of revenue for the Library. Once a TTP program has been produced on one platform, it is very easy, and relatively inexpensive to produce the same book on each of the other platforms. For this reason, we would recommend that the National Art Library look into purchasing each of these platforms.

Although Turning the Pages can be quite expensive, there are many options for making sure that the development of the program fits into the Library's budget. One way to decrease the expense of the TTP development is for the customer to (if possible) produce their own digital scans of the pages. The NAL now has a digital camera that could be capable of producing these digital images. Another option for creating these images is to consult a digitization company like the ones mentioned in section 4.2.2. These companies include Sun Microsystems (section 4.2.2.1), Luna Imaging (section 4.2.2.2), or VTLS (section 4.2.2.3). There are also several other aspects of the program

that can be self-produced, such as text and audio commentary. It is also recommended that the Library purchase the hardware for the program to run on from their usual supplier, as opposed to having the British Library purchase this component for the customer. Specific requirements for this hardware are outlined in section 4.2.2.5.

Another factor that has a great effect on the price of the program is the version of Turning the Pages that is purchased. TTP has two versions, VirtualBook and TTP 3D, which are also described in detail in section 4.2.2.6. VirtualBook, which is the more complex and lifelike version of TTP, would be ideal for showing highlights of popular or historic books, or books with great detail and color. TTP 3D would be ideal for books that would be more useful if the entire book was digitized. One recommended option to make the purchase of Turning the Pages useful and cost-effective would be to have one kiosk display of TTP VirtualBook, and have several other books or collections made with TTP 3D at work stations with touch screens. The VirtualBook could be one of the Library's greatest treasures made into an interactive display with many options, while the work stations could each hold several books that would be of great interest to the Library users. The British Library offers deals for having multiple TTP books produced at once, therefore making this method very cost-effective.

5.2.2.2 Interactive Information Systems

There are many software engineering companies today who create custom digital media systems for libraries and museums. Two examples of these companies that were researched in great detail are NYKRIS and System Simulation Ltd. These companies work with museums to create interactive programs that allow users to search the museums collections in a digital format and learn more about each of the subjects. The National Gallery has worked with NYKRIS to create ArtStart, and the British Museum has worked with System Simulation Ltd to create COMPASS. See sections 4.2.2.7 and 4.2.2.8 for more in depth information on these products.

These interactive information systems can be very useful for helping visitors navigate the museum and for encouraging museum visitors to further research a topic of

interest. These programs do have many benefits; however it can be very expensive to have a customized digital media system produced by one of these companies. The cost of a program like this will range depending on the complexity of the project, but even the most basic option can be quite expensive. For example, programs of all sizes and complexity produced by NYKRIS have ranged from £300,000 to £500,000. The organizations discussed above who have worked with the mentioned software engineering companies are government funded, and sponsored by other organizations as well. A project such as this does not fall within the National Art Library's budget, and therefore we would not recommend the implementation of it.

Although we will not recommend the production of a program such as ArtStart for the National Art Library, it is important to connect the Museum as a whole to the Library. The V&A has already worked with System Simulation Ltd (SSL) in the creation of their Collection Information System (CIS). With many of the museums objects and images already in a digital format, it could be easy and relatively inexpensive for the V&A to work with SSL to create an interactive information system that extends to the Library's collections.

Another option that would allow a product like this to benefit the Museum as well as the Library, would be to place kiosks in the library, as well as several throughout the museum, that would encouraged museum visitors to drop into the library to inquire about further information. The program could, for example, suggest books that the National Art Library holds to a visitor who is interested in a particular exhibit. It is our recommendation that, if possible, the Library work in collabouration with the V&A to create a program that both extends the Library's collections into the Museum as well as allows museum visitors to further their learning. By creating such a program, the library would come closer to achieving its goal of becoming an information gateway.

5.2.3 Design Computer Studio

When considering the different options for computer systems in the West Room, it is necessary to examine the purpose of this computer studio. First of all, it should

attract members of the design industry into the Library so that they can learn about the resources available to them. It should also offer state-of-the-art equipment and software to those people who cannot necessarily afford it, but would find it helpful if they were given the chance to use it. Therefore, the computers should be powerful, offer the best design software available for a number of different disciplines, and be visually attractive.

The first step is to determine what hardware is needed to make each computer perform adequately while using the demanding design software. To accomplish this, we chose a system with comparable specifications, both from Apple and Dell. The Apple computer has dual 1.8 GHz processors, with 512 MB of RAM. It has an 80 GB hard drive, and a DVD-R/CD-RW drive. The graphics card is an ATI Radeon 9800 XT with 256 MB of memory. It also features a massive 30" Apple Cinema high-definition display. A monitor of this size will not only be helpful for individuals dealing with large graphics such as architects, it will attract users to the computers as well. The computer also features wireless networking capabilities, in preparation for the possible creation of a wireless Library network. This model retails for £3,976.01.

The Dell computer has a single 3.6 GHz processor and 512 MB of RAM. It has 160 GB of hard drive space, and a DVD-RW/CD-RW drive. The graphics card is an ATI Radeon X850 XT Platinum with 256 MB of memory. In addition, this computer offers a set of speakers, an optical mouse, and a 17" monitor. As with the Apple computer, it has a Wireless network card. This model costs £1,949.00. However, it does not include a similar monitor to the Apple system. The NEC LCD3000 30" display is similar to the one offered by Apple, and sells for about £2,066.62. This brings the total price of the Dell system to £4,015.62.

When comparing the prices, it is obvious that the Dell computer costs somewhat more than the Apple version. However, this computer is technically more powerful than the Power Mac. It has twice the hard drive capacity, a more advanced graphics card, and also comes with a 17" monitor, which could be excluded to save a small amount of money. This means that in reality, the Dell is a slightly better value for the money. However, Apple computers are recognized for their power, flexibility, and dependability when it comes to graphic applications. We believe this quality more than outweighs the

slightly higher cost, and recommend the Apple systems for the National Art Library. At the suggested prices, a studio with 2 computers would cost £7,952.02, and a setup with 3 computers would cost £11,928.03.

Software licenses are the second component to the design studio. For each software package mentioned, the price between Macintosh and PC version is identical. However, the prices between different products that accomplish similar tasks are not. Two 3D-modeling and architecture packages that are commonly used today are Graphisoft ArchiCad and Nemetschek Vectorworks. A single license for ArchiCad costs £2,800.00, excluding VAT, with additional licenses costing £2,660.00. The Industry version of Vectorworks, which includes Architect, Landmark, Mechanical, Spotlight, and Renderworks costs only £1,577.57. For this reason, we recommend that Vectorworks should be purchased for the design studio.

Another software package that supports a number of different design fields is Adobe Creative Suite 2. CS2, which contains a wide range of software products from Adobe, is set to be released in May of this year, as an improved version of the current Adobe Creative Suite. The standard version of this package retails for £828.37, and includes Photoshop, Illustrator, InDesign, Version Cue, Bridge, and Stock Photos. The premium version costs £1,051.62, and includes two additional programs, GoLive and Acrobat. Photoshop is for digital image editing, and would be ideal for photographers or graphic designers. Illustrator is for professional image creation, which would be useful for graphic designers and computer artists. For web designers, there are InDesign, for layout design and creation, and GoLive, for web content creation. Acrobat has capabilities for creating, controlling, and delivering PDF files, and would be suitable for a range of fields. Version Cue, Bridge, and Stock Photos all help users of Creative Suite organize, track, and manage their assets, making for a very productive experience. Due to the wide appeal this program offers to designers, and to its relatively low price, we recommend that the Library purchase the premium edition of Creative Suite 2.

4.2.4 Summary of Recommendations

In summary, we have compiled a list outlining the basic components of our recommendations. It describes our specific recommendations based on our product research, as well as general recommendations developed through our visits to museums and our interviews with staff members.

Integrated Library System:
- Horizon upgrade in contract
- Wireless Gateway
- Remote Patron Authentication
- E-Commerce

RFID:
- Implemented with Open Access Collections

Computer Studio:
- Apple computers
- Adobe Creative Suite 2
- Nemetschek Vectorworks

Technological Displays:
- Turning the Pages
- One Virtualbook and a number of 3D
- Kiosk, CD, and online platforms

General Recommendations:
- Inviting atmosphere
- Cater to all users
- Information Gateway for entire Museum
- Open access collections with information about Museum contents
- Collection that represents current exhibitions

- Well-staffed
- Display treasures of Word and Image Department
- Flexible space for corporate hospitality as well as research and education
- Interior design and furniture companies that provide design consultancy services

6. Conclusions

Keeping in mind the goals of improving the National Art Library's services and assisting in the development of the West Room, we have gathered a variety of information on a number of topics with which the Library is concerned. These topics include: integrated library systems, modern display technologies, RFID systems, computers for design professionals, exhibit creation and layout, and library interior design.

We acquired information on each of these topics through a variety of methods. Visits to other museums and libraries helped us evaluate the effectiveness of exhibits and services being used in similar organizations, while giving us a general background of museum and library operations. We also performed an assessment of the National Art Library's service system and enquiry process. Throughout this process we were in regular contact with a number of companies that provide solutions to the concerns set forth by the National Art Library, as well as issues we identified through our own observations and analysis. In support of our research and visits we interviewed a range of the Library's employees which gave us valuable insight regarding popular opinion pertaining to the future of the library through the expansion process and the current quality of service the Library is providing its customers. The analysis of our research and findings has provided us with a basis for recommendation on the behalf of the National Art Library.

One of the most prevalent areas of concern in the National Art Library is the outdated service process. The current paper-based system is limiting the Library's ability to keep track of useful library statistics that could be used to improve key aspects of the delivery and request process. This method of service is very labour intensive and restricts the overall quality of service. After evaluating the circulation and enquiry desk process at the National Art Library we have developed a number of recommendations that will help improve the Library's services. Separating the phone enquiries from the face to face questions will help to ensure users are getting timely responses to their questions in both aspects of the enquiry procedure. Furthermore, many of the administrative tasks could be automated which would free up staff and additional resources. The Horizon system,

which is soon to be implemented at the Library, will help to directly improve many of the issues that are currently being faced. It will replace the paper-based request process by allowing computer requests, as well as improving the content of the catalogue and allowing for reservation of materials prior to arrival at the Library. It will also allow staff to track the frequency of requests, if materials are ordered solely through the Horizon computer system. For these reasons, Horizon is the best choice for the NAL, and is one of our primary service recommendations. Finally, while the introduction of a Radio Frequency Identification (RFID) system would help to modernize the library, implementation of such a system for the entire National Art Library collection would be difficult and costly. For these reasons, it is our recommendation that the NAL only install a system to protect and keep track of materials that will be housed in the West Room for use by museum visitors while maintaining a system of invigilation for rare or valuable materials used for research in the Reading Room. Introduction of RFID during the West Room expansion would also help provide a basis for future growth of the system throughout the rest of the collection.

The National Art Library's opening of the West Room for public use also raises many questions regarding its function and purpose for the Library and the rest of the Museum. Through our interviews, case studies, and product research we have identified several options for the expansion. These recommendations can be broken down into several areas of research including: display methods (both modern and traditional), computers for designers, layout and organizational structure, library refurbishment and interior design.

Library administrators have expressed some interest in becoming the Museum's information center where visitors can get more information on topics of interest relative to the Museum's collections. To accomplish this one of our recommendations is to create a clearly labeled open stack reference section in the West Room for visitors to browse. The room should also have plenty of staff focused on helping customers who are looking to learn more about what the Library has to offer. Displaying some of the historic and valuable collections is another recommendation we have set forth for the West Room. This will give Museum and Library users exposure to these rare materials while also

providing the visitors with information about the impressive nature of the collection at the National Art Library. Several technologies are available that allow visitors and readers to explore these materials closer without compromising the preservation of these ancient materials. Some of these technologies include Turning the Pages and customized information systems that can be developed with the help of digital media companies such as NYKRIS and System Simulation Ltd. Turning the Pages is highly recommended to serve the purpose of exposing visitors to the Library's rare materials, based on the program's exciting, life-like feel, and the wide range of options for special features and price-reducing possibilities. Customized digital information systems produced by NYKRIS or SSL would be very useful for creating an information center in the library, where visitors can search for more information on Museum exhibits; however, this option is not recommended for the NAL based on its excessive cost.

The Library would also like to use the opportunity of its expansion to attract a number of different types of users, including those in the design industries. In order to appeal to this potential user base, we recommend that an area of design computers be included in the West Room. This area would consist of a small number of Apple computers, with the hardware capabilities necessary to allow designers to perform work in their respective fields, using some of the best software packages on the market.

Through the renovation of the West Room the National Art Library would like to also have the ability to host various events and functions. To assist them in this aspect of the West Room's development we looked into several companies that offer furniture that will allow for a flexible use of space. These companies include Demco Interiors, Folio Library Solutions, and Remploy Furniture.

The NAL's goal for the West Room is to serve as the liaison between the Word and Image Department and the visitors to the Museum. The information and recommendations we compiled throughout the course of our project will assist the Library with the expansion of this room. If implemented correctly, the West Room and improved service quality will provide a more educational and enjoyable experience for visitors to both the National Art Library and the Victoria and Albert Museum.

7. Appendices

Included are several appendices that provide additional information for this report. They have been bulleted below for clarification.

- Appendix A contains information requested by the Worcester Polytechnic Institute about the history, mission, and organization of the sponsor.
- Appendix B includes the basic interview questions that were used for the National Art Library staff interviews.
- Appendix C contains the summaries of the staff interviews.
- Appendix D includes additional research on integrated library systems.
- Appendix E includes the West and Reading Rooms Development Proposal.
- Appendix F includes notes from personal communications, or interviews that took place at the Gordon Library at Worcester Polytechnic Institute and at the Worcester Art Museum Library in early February.
- Appendix G is a list of Key Topics for Education Centers provided to us by Andrew Russell of the National Art Library.

<u>Appendix A Mission and Organization of the National Art Library</u>

As required by the Worcester Polytechnic Institute IQP Guidelines, this appendix outlines the mission and organization of the National Art Library. Budgetary and policy information and Key Objectives were provided by our sponsor, Martin Flynn.

1) The Victoria and Albert Museum

The National Art Library is the official library of the Victoria & Albert Museum in London. The Victoria & Albert Museum (V&A) is recognized as the world's greatest museum of art and design. This name was given to the museum in 1899 by Queen Victoria as a tribute to "her beloved consort Prince Albert" (Baker & Richardson, 1999, p. 11), who had passed away many years earlier. Founded in 1852, the museum was originally called The Museum of Manufacturers at Marlborough House. In its beginning the museum contained art from the Great Exhibition of 1851, as well as collections from the Government School of Design. As the museum expanded, it brought in objects of many other periods and styles. Due to this rapid expansion, shortly after its founding the museum's name was changed to the Museum of Ornamental Art. A few years later, in 1857 the museum moved to its present location in South Kensington, where it became part of the South Kensington Museum. Finally in 1899, the beautiful Victorian building which stands today as the Victoria and Albert Museum, was constructed (Columbia, 2004).

In 1908, the Museum was reopened as purely an art museum. Today, the Museum holds over 3000 years worth of artifacts from many of the world's richest cultures. These artifacts number over 4.3 million, and are separated into a variety of collections, which are renowned for their immense diversity. The collections include architecture, Asia, British design, fashion and jewelry, furniture, ceramics and glass, metalwork, paintings and drawings, photography and sculpture (V&A website, 2005).

1.a) The National Art Library

The National Art Library (NAL) was founded in 1837, and was originally located at Somerset House. In 1857, the Library moved to South Kensington where it joined the

South Kensington Museum. Like the Victoria and Albert Museum, the National Art Library did not always go by the same name. In fact, it was not until the 1860s that the word "National" appeared in the official title. Today, the Library stands on the second floor of the Victoria and Albert Museum, and is referred to as the largest and finest art library in the world (NAL website, 2005).

"The National Art Library is a major public reference library, as well as being the Victoria and Albert Museum's curatorial department for the art, craft and design of the book" (NAL website, 2005). The Library currently serves approximately 150 users per day, 25% of which are new users to the Library (Flynn, 2005). Users of the Library include students, historians, researchers, and members of the general public. These users have access to over a million volumes, as well as almost a million archives and manuscripts. According to the NAL website, "The library's strength lies in the range and depth of its holdings of documentary material concerning the fine and decorative arts of many countries and periods" (NAL website, 2005). The Library holds many other collections as well, including rare materials in other fields, such as literature.

2) Budget

Although the V&A's budgetary situation will remain static in overall terms for the next few years, taking account of inflation, there are two pressures that will have a significant impact. Firstly, because of several recent high profile thefts from the galleries, a major investment in security infrastructure is planned over the coming three years. This will largely be funded from running costs. Secondly, as a result of the Museum's FuturePlan, there will be a major shift of financial resources from running costs to capital investment in new and refurbished galleries. Both of these factors will mean that there will be less funding for staffing. This indicates that we will to achieve our ambitions for new developments by modernizing working practices, changing priorities and maximizing the benefits of new technologies.

3) Policy

Previous the V&A has worked to an Annual Plan based on the financial year April to March. From 2005/06 we have adopted a five year planning horizon to make explicit the links between our high-level, long-term strategic objectives and our day-to-day work. This will hopefully allow us to demonstrate progress towards corporate goals rather than focusing purely on short-term activity. A set of key performance indicators is being developed to take account of the Museum's needs as well as those of our sponsoring Government body, the Department of Culture, Media, and Sport. The V&A Strategic Plan 2005-2010 is compiled by Helen Jones, Regional and Corporate Planning Manager, in conjunction with Mark Jones, the Museum Director. This is then approved by the Museum's Management Board and Trustees.

4) Current Information

4.a) Mission

The Department is an open and inclusive resource for art and design and a gateway to information on the Museum's collections and subject areas. It aims to stimulate creativity, encourage scholarship, and promote enjoyment and understanding of designed objects and how they help us interpret the world, past and present.

4.b) Goals and Objectives

Key Objectives 2005-2010

1. Access and Audiences

   To provide optimum access to collections and services for diverse audiences, now and in the future

2. National and International

   To be acknowledged and respected as the world's leading museum of art and design

3. Creative Design

   To promote, support, and develop creativity in individuals and the economy

4. Efficiency and Effectiveness

   To operate with the greatest possible financial and organizational efficiency

5) Original Letter

This is the original letter sent from the sponsor, Martin Flynn, to WPI to outline the proposed Interactive Qualifying Project at the National Art Library in the Victoria and Albert Museum at the London Site.

<div align="center">

<u>WPI London Centre Project Proposal Form</u>

Paul Davis, Dean, Interdisciplinary and Global Studies Division

Worcester Polytechnic Institute, Worcester, MA 01609 USA

1 508 831 5212 (office), 5485 (fax), pwdavis@wpi.edu

</div>

     The following information will assist us in serving you. Please feel free to alter the format or take more space as needed.

Date: 11th October 2004

Organisation name and address: The National Art Library

                     Word & Image Department

                     Victoria and Albert Museum

                     South Kensington

                     London SW7 2RL

Proposer's name and contact information: Martin Flynn

                     Head of Access

                     Tel: +44 (0)20 7942 2291

                     Fax: +44 (0)20 7942 2410

                     Email: m.flynn@vam.ac.uk

Background:

The National Art Library is planning to increase its public capacity by 40% through opening up and developing its West Room. This has been used as an office and storage area for many years. It has now been identified as having significant potential to support the Department's objectives of:

- increasing take-up of services
- broadening the socio-demographic profile of users
- modernising service delivery methods
- introducing new services
- developing the Department's role as the Information Gateway for the Museum and its users

Problem statement and objectives[1]

- Current facilities are often operating at near-capacity levels therefore there is a pressing need to create potential for expansion. We aim to gain maximum benefit from extending services to our West Room.
- The majority of current visitors are students, academics and researchers. The Department aspires to increase usage by a broader range of customers such as those working in the creative and cultural industries and people pursuing self-directed learning as well as enhancing the experience of the average Museum user.
- One of the ways we aim to develop services for the general Museum visitor is by providing further display areas in the West Room. Books and other materials in our collections are notoriously difficult to display using conventional methods. Information and communications technology offers possibilities for enlivening interpretation of our collections and encouraging greater user interaction. We would aim to learn from best practice in other similar environments as well as anticipating potential benefits from current technological developments.
- At present our service delivery tends to be reactive in nature. We plan to make this more proactive, including setting up a telephone information call centre, new methods

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[1] What are the core issues? What outcomes you seek? If you favour particular approaches, please identify them. Note that careful problem definition and selection of methodologies or approaches are key steps in the preparation phase in the US. You will be consulted regularly when that work begins.

of working and creating a more flexible service area. We also wish to investigate the implementation of increased automation in order to improve the efficiency and effectiveness of our services as well as releasing staff resources to develop and enhance our services.

Project proposal

Students would be required to carry out a survey of the methods currently available for new and exciting object display and innovative and imaginative service delivery methods. We would expect this survey to have a specific focus on electronic developments. We would need an evaluation of the options available and a recommended solution that would be feasible for the V&A taking account of its resource and budget constraints.

7) Organization Chart

The organization of the Victoria and Albert in relation to the National Art Library consists of eight distinct levels, or Bands (as it is referred to in the library), of staff. The Bands with their titles have been provided below.

Band 0 – Keeper (Julius Bryant)

Band 1 – Deputy Keeper (John Meriton)

Band 2 – Department Head (Martin Flynn)

Band 3 – Management (Vicky Stott)

Band 4 – Senior Library Assistants

Band 6 – Library Assistants and Counter Staff

Band 7 – Paper Keeper

This section includes the interview outline that was used during our semi-standardized meetings with National Art Library staff members. The interviews were divided into three sections: the introduction, a questions about library services, and questions about the West Room renovation. The transcripts from the interviews are provided in the following appendix.

Introduction and Initial Questions

Introduction

- Introduce us
- Our purpose at the NAL is to research technologies that could improve library services, and also to provide options for the West Room renovation.
- We're just going to ask you a few questions that might give us some more information or insight into these two tasks.

Introductory Questions

1. What is your title and basic job description?
2. What are your daily tasks? (In relationship to the NAL)

Services

1. What areas of library services could use improvement?
2. In what way do you think these problems could be addressed?
3. What kinds of services have you seen used in other libraries that could be used for NAL?
4. What kinds of technologies have you seen used in other libraries that could be used for NAL?
5. In what ways do you see modernization benefiting the National Art Library?

West Room

In May there is planned renovation of the room, opening the room with goals to attract more readers and exhibit some of the Library's collection.

1. What function / purpose do you see the room having?
2. What have the users wanted that the West room could provide?
3. What type of audience do you think the West Room should have?
4. Would modern interactive displays such as TTP be beneficial; why or why not?
5. Have you seen any innovative ways of displaying books or printed materials?
6. What do you see when you picture the West Room after it is completed?

Included are the summaries from interviews conducted with eight staff members of the National Art Library.

Band 1 – John Meriton

John Meriton represents Band 1 in the National Art Library. He is the Deputy Keeper, and is responsible for the National Art Library and all the Word and Image department, museum collections (including prints), books, photographs, documentary materials, paintings, the contemporary section, and designs. He informed us that with the renovation and reconstruction of the museum three years ago, librarians and archivists took on new responsibilities. They were given the task of managing and delivering information to the public about the museums collections.

Our interview with Mr. Meriton provided us with a lot of insight into the future plans of the West Room which have already been established. The creation of the "Information Gateway" is one of the plans in the development process. The "Information Gateway" refers to a service the Library would provide to the museum patrons where they could get additional information on the collections and specific objects found in the museum. This would be implemented it hopes to make the National Art Library the center for the entire Museum. Mr. Meriton also described the importance of making people aware of what the collection has to offer, and he feels that everyone could benefit from the collection.

Mr. Meriton also made it clear that technologically the National Art Library is falling behind other institutions of the same nature. He estimated that the Library is approximately 10 to 15 years behind other modern libraries and stressed the effect it is having on the efficiency and quality of service that the Library is able to provide its users. Currently, there is no method to measure or track usage in the library, there is no system in place to monitor what books are being used more often than others or what types of books are being used by certain users. Mr. Meriton also mentioned that he would like to make it easier for users to access materials. By doing this he hopes to expose the

collection to a wider audience. Furthermore, he mentioned several concerns with the Library's catalogue system. He explained that only experienced users are able to find what they are looking for due to the limited amount of key words. In other words users have to type exactly what is programmed into the catalogue to get a specific item; otherwise the system will return a large amount of matches which makes it difficult for users who are not sure what they want. He agreed that the services and automation of the Library's services were vital to the West Room's develop and the increase of customers that it will generate. However, he informed us that the museum does not have enough funding to justify providing a national library service.

Meriton also described several things he would like to get out of the expansion into the West Room. He would like the room to be inviting and accessible for all users, and a place where they can get answers to their questions easily. The room should also become a mix between a library and a gallery without restricting flow and cluttering the area. He also thinks that the room should not be as structured and formal as the rest of the library and the catalogue system. He also agrees that the implementation of Turning the Pages has a place in the West Room, and will give users the ability to explore books that are too valuable and rare to be handled.

Mr. Meriton was also able to give us some estimates on cost and feasibility issues regarding the expansion and renovation of the Library. Before the expansion a design architect will be hired to create a specific layout for the West Room at a cost of £50,000. The Library also has to be modest in the plans for the expansion with a budget of approximately £500,000.

Band 2 – Rowan Watson

Rowan Watson is the Head of Documentary Materials at the National Art Library. He is a Band 2 manager who is part of the senior staff and actively involved in the decision making processes in the Library. In our interview with Mr. Watson, he expressed some interesting perspectives about our objectives during renovation of the West Room. Mr. Watson stressed the importance of some sense of traditionalism for the Library during the interview. He felt that maintaining a quiet atmosphere in the library is

very attractive and aesthetically pleasing and is helpful in creating an aura of academic concentration. Mr. Watson went on to say that the service process should preserve the sense of importance that comes with accessing these rare and valuable materials, and that making access to these materials too easy could have some negative effects on the reputation of the Library.

Discussing future plans of the West Room is a large part of the interview we created for the staff. Mr. Watson had several ideas regarding the West Room and its purpose for the Library. He wanted to create a room that is both suggestive and informative where users could talk to specialists about various materials and subjects they are interested in. The room should also reveal the potential for research and make casual visitors aware of the rare and precious materials available on the Library. Mr. Watson is not very interested in the implementation of the Turning the Pages display. He found the picture catalogues and bindings at British Library to be more effective and educational.

Band 3 – Victoria Stott

Vicky Stott is the Head of Onsite Services for the Access Department. She reports directly to Martin Flynn, and is a member of Band 3. Her main responsibility is to handle the daily tasks within the print room, the National Art Library, and the archives, making sure that everything is functioning correctly and efficiently. She also is constantly looking for development opportunities for the Word and Image Department.

Ms. Stott said that her main concern with the services at the National Art Library is that it is too staff-intensive. She mentioned that the delivery process should be examined, because many of the tasks that are completed by the staff could be done by the users themselves. To improve the process, she suggested developing a method for alerting users that their materials are ready. An automated ordering system would help as well. She would also like to see the enquiry process centralized, as well as increased interoperability between the three rooms. In addition to these problems, says Scott, a number of users have complained about the bureaucracy of filling out large quantities of forms to register and acquire materials. They have also complained about a lack of

communication between staff and readers, and the process required to make reprographics.

Ms. Stott listed a number of services she's seen at other libraries that she believes could be helpful at the NAL. The first was the computer-based self-registration at the British Library, because the registration process at the NAL is quite lengthy and requires the time of a staff member. Also mentioned was the call center at the National Archive. The center has a scripted system that logs specific types of enquiries, and automatically directs the call to the relevant expert. In addition to these, Ms. Stott said that she would like to look at services that are not based at libraries, because many libraries follow the paths of other libraries, limiting change and progress.

Ms. Stott also had a number of opinions on the development of the West Room. She believes it should be a place for museum visitors to drop in, with a comfortable area for them to rest. It should also be an exhibition space, educating those visitors about the library, its history, its goals, and its collections. She noted that a display like Turning the Pages would be a valuable part of the exhibit because it has a lot of potential educational values, and allows users to interact with materials that are not usually available for the general public. Staff should be present and highly visible throughout the room to encourage visitors to ask questions. Also, functions such as the opinion service, where visitors bring in objects to have curators judge the items' history and value, should be run through the West Room, according to Scott. The room should bring in the general museum visitor, families, and school-age children. Ideally, it should be accessible to anyone off the street. Ms. Stott mentioned that currently only about 4-5% of Library visitors use the Library as a casual resource, and probably about 40-50 visitors a day are intimidated by the current imposing entrance to the Library. She feels that the renovation of the West Room should help change these numbers for the better.

Band 4 – Elizabeth James

Ms. James is a Documentation Manager, whose main job is to catalogue acquired materials. Drawing on her experience with the library, she noted two problems that have been repeated several times throughout our discussions with the staff. The first was that

written requests, although seeming necessary, are an awkward way to access materials. Being able to make lists in the current catalogue, for instance, but then being unable to order straight from the computer is a frustrating point for many users of the library. Secondly, telephone inquiries tie up a large amount of resources at the Enquiry Desk. Separating the desk services from the phone services would help users in both areas as well as lessen the awkwardness for the staff of trying to juggle a user in person and a remote user.

Ms. James also stressed the importance of not taking traditional displays entirely out of the picture. Interactive or computerized ones should be used as complements to actual materials, not alternatives. For example, a digitized version of the newly acquired 18th century edition of Aesop's Fables with hundreds of hand painted margins would allow users to browse the entire book for fun or for research. Having the actual book next to that display would give a sense of reality and meaning that a computer alone cannot convey.

In keeping with the discussion on tradition, it is important to note that one of the main attractions of the library to the common museum visitor is simply the architecture of the rooms. New renovations should retain the inspiring feel of the room in order to keep people coming to the entrance and opening the doors would a simple yet inviting way to get people in to the West Room or the rest of the Library.

Also, the West Room would be a good place to relate the library to the whole of the museum. Ms James told us that the Library used to put books that were related to special exhibitions in the V&A on display in the reading rooms. Even standard, permanent exhibits could have information about them in the Library for users to access easily. In example, creating a small collection of materials for the purpose of "Following up the British Gallery" would be found helpful by visitors who only wanted a little more information about a certain time period or theme. By allowing these non-rare or non-valuable collections to be accessed without necessarily the need to register within the Library could save resources and help the visitors at the same time.

Finally, we discussed what the purpose of the National Art Library is, and talked about what needs to be done in order to provide a basis for any refurbishment and

expansion. One main idea is the need to develop questions to be answered by the Library. A simple example might be: "What does the Library wish to promote?" By creating such a list and answering them, a single, unified policy can be adapted to ensure that the renovation will run smoothly.

Band 5 – Robin Crawford

Robin Crawford is a Band 5 employee who manages the Reading and Study Rooms. His daily tasks include managing affairs at the circulation counter, and the direct operations of the two public rooms in the NAL as well as in the Print room.

Robin is directly involved with the daily services and procedures of the Library. He was able to provide us with valuable insight into the Library's service strengths and weaknesses. He explained that it is a paper-based system which is very old-fashioned; however he did mention that a lot of regular readers might be upset by a change. Robin also mentioned that a lot of systems are inappropriate in terms of scale, because they are too expensive to implement in the National Art Library. One aspect of service that he would like to see reformed is the enquiry process. He stated that splitting up face-to-face and phone enquiries would certainly have several service related benefits. However, developing a full-fledged call center may be a little over the top.

As discussion moved towards future plans for the West Room, Robin had several ideas for its purpose and function with respect to the Library and the Museum. He feels that the West Room should be much more informal than the other two rooms in terms of use and should provide knowledge for all types of users. He also believes that it should be staffed well and should be an easy place to find answers to questions. Robin would like to see the room hold an open reference collection that contains basic information about the Museum's collections for visitors looking to learn more. The West Room should also cater to school level researchers and audiences. Robin would also like to see displays of books that support current exhibitions in the Museum, which could be advertised to the visitors who come to see these exhibitions. Robin agreed that the Turning the Pages display technology would be useful in the West Room as long is it

does not decrease the historical and academic significance of the book for the sake of the casual visitor.

Band 6 – Jennifer Farmer

Jennifer Farmer is a Library Assistant in the Access division of the Library. She is a member of Band 6, and her job includes working at both the counter and the enquiry desk, dealing with written enquiries, and organizing visits to the library.

As hers was the first interview we conducted, Ms. Farmer provided us with a good perspective on Library operations. She mentioned that one of the main problems with the services is that users get frustrated when they are required to apply for a reader's ticket and fill out a requisition form for every book that they request. They also complain about the long wait times for materials. This means that the people who go through the entire process are the people who really want to see the book. She thinks that in general the request and retrieval process works well, and is not sure how it could be improved. Ms. Farmer thinks that it would be nice to be able to order the book directly from the catalogue, but it is not necessarily more efficient because the materials still have to be retrieved and delivered. Also, the paper-based system does add a sense of selectiveness to the Library, in which only users who really need to access materials can get to them. In a research setting, she pointed out, this is very good because it limits the number of users to the library and makes service more personal. On the other hand, she agrees that opening up the West Room would be an effective way to provide access to some materials to the common museum visitor.

Ms. Farmer discussed several key points that would make the library more successful after its expansion. In particular, she believes that displaying some of the materials will help inform the public about how amazing the collection is at the Library. Turning the Pages could be a very useful tool in accomplishing this, especially considering how difficult books are to display effectively. The West Room should appeal more to the average Museum visitor, families, and young school groups, not to the serious scholar. It should allow for more noise, and be more welcoming and friendly, while still retaining the traditional atmosphere of the Library.

Band 7 – Antje Schroeder

Ms Schroeder is a Band 7 graduate trainee and is halfway through a 12 month program at the National Art Library which is required by her university. She currently works as a Paperkeeper, one who retrieves materials as requests come in, at the Library.

While her time here has been limited, she does raise a number of good ideas from a new employee's point of view. In terms of service, she believes it is important for a library to make sure its user's first experience is an enjoyable one so that the visitor feels inclined to come back. At the National Art Library, for instance, many users attempt to use the library once but seem threatened by the amount of work it takes to actually get access to the materials. There are leaflets explaining the process, she continued, but many users do not see them or want to actually read them. Once the user has access, it is important to help them in actually finding the materials. She makes the point that having a second computer, again, at the main counter would be an asset to the library staff and would aid in helping more customers at a time.

On the staff side of the same problem, she described a steep learning curve for finding some books and materials. While books are usually in their correct place, for instance, inconsistencies in re-shelving have added some hassle to the process from time to time. Also, the inability to track books and keep high demand ones closer to the reading rooms in more easily locatable areas has hindered turn-around time. Finally, due to her short-term experience with the museum so far, Ms Schroeder was unable to offer specific suggestions for the expansion into the West Room, but she did say that it should include at least a small work area since new technologies in the Center Room, such as a digital camera and photocopier, have been starting to take space for seats from users.

Appendix D: Additional Research into Library Systems

This appendix highlights several different options for library systems in addition to Horizon.

The Corinthian System by Dynix

On April 8, Dynix announced the release of Corinthian, their most revolutionary integrated library system to date. The final release date is planned for the end of this year. Corinthian is very similar to Horizon in many ways, but has a number of new features which will make it easier for both staff and users to use the system. The main difference between Horizon and Corinthian is that Horizon contains more features that are useful for public libraries, while Corinthian will be geared towards academic, or university, libraries. There are a number of small, architectural differences between Horizon and Corinthian. Corinthian is designed to run based on either an Oracle or MS SQL database, while Horizon is based on only SQL databases. The staff client for Corinthian can be run on Macintosh computers, while with Horizon the client can only be run on PC's. Also, Corinthian was designed on open API's, allowing it to be more easily integrated with both third-party applications and new Dynix add-ons than Horizon.

Voyager System (From Endeavor website)

The Voyager System, created by Endeavor Information Systems, is a comprehensive system that aids library staff in performing a wide array of tasks. It aids acquisitions and serial staff by automating or assisting many of the daily tasks, including ordering, creating purchase orders, processing invoices, and managing serials. Using technologies such as Electronic Data Interchange (EDI), Voyager allows users to create data once, and generate it automatically for reuse. It also allows the user to customize their own workflows, thereby choosing the order with which they want to work.

Voyager offers features to help libraries reduce the amount of manual catalogue work. Through the module they provide, library staff may add, delete, or update bibliographic and holdings records. Thanks to its standards-based design, Voyager also allows staff to search other external databases, so that they may verify sources and records. It offers libraries a precise, accurate cataloguing process. It also offers libraries a solution for OPAC, or online public access catalogue, capabilities.

Voyager also benefits the employees of the circulation desk. The circulation staff can use the system to easily and correctly place items under reserve. It stores information on users, and also on use of items in the library. It can track fines according to your library's policies, and also fees for services such as printing, copying, etc. It also offers features for creating, maintaining, and accessing digital collections.

Millennium System (From Innovative Interfaces website)

The Millennium System, created by Innovative Interfaces, is an integrated web and Java-based automated library system. It is designed to be not only user-friendly, but to be platform-independent. This allows libraries a broader choice of hardware when implementing such a system.

Millennium offers a variety of features that assist in the acquisitions process. It has easy-to-use functionality, and integration among features. It features full financial accounting, including fund management, payment history, and financial statistics. This makes it easy for users to maintain a budget on serials and acquisitions, and to view full financial reports for review.

Millennium provides catalogue database capabilities as well. It has features such as global updating of records, by field or via a batch file. It also provides the library with OPAC capability. It requires only a standard browser to access the catalogue from anywhere. The OPAC is fully customizable, allowing each library to modify it based on its own needs and desires. It can assist in circulation tasks, such as self-renewal of accounts and manipulation of holds on patrons' accounts. Patrons can also view their own records of use with the library.

Circulation functions are also available. It can handle a large number of circulation duties, such as checkout, renewals, holds, fines, and overdue notices, among others. These can all be customized to fit each library's specific policies and procedures. As with Voyager, capabilities for creating, organizing, and maintaining digital collections are offered as well.

Aleph 500 System (From Ex Libris website)

The Aleph 500 integrated library system, designed by the Ex Libris Group, is a library automation software package. It is very similar to the software packages listed above, in that it provides libraries with management capabilities for cataloguing, including a web OPAC, acquisitions, serials, and circulation. It is based on an Oracle database system, and on the Microsoft Windows operating system. Overall, it is very comparable to any of the other software automation packages.

Appendix E: West and Reading Rooms Development Proposal

[Produced by the National Art Library and provided by Martin Flynn]

Introduction

Information Gateway is the Department's service enabling the Museum's visitors and users to obtain information on the Museum's collections and in the field of art, craft and design.

This paper describes the development of Information Gateway, in particular from the point of view of physical infrastructure and the supporting configuration of the National Art Library and redevelopment of the West Room. The West Room is currently closed to the public and used for staff offices and book storage.

While these new Information Gateway services will be undertaken by redeploying available Departmental resources, there will be the need for additional and external financial support to realize the development of the physical spaces.

Main goals

- To rationalize library spatial arrangements to create a more logical and manageable arrangement of services
- To create a welcoming discovery space for enquirers, browsers and passing visitors
- To showcase Museum expertise with opinions and other collections services
- To provide a seamless pathway from Learning Zone to deeper and broader resources
- To assemble introductory, accessible and visually attractive reference collection; including digital resources relating to art, craft and design, and specifically the Museum's collecting areas
- To mount displays, demonstrations, &c. open to the public to bring alive print, archive and book materials and to unfold aspects of their design histories, in particular changing displays on the art of the book and printing techniques

- To provide gateway and signposting services to educational opportunities, arts and culture tourism, other research resources and collections; in addition to referral services to other sources of information,, in particular facilitated access to on-line resources

- To provide an integrated access point to the Museum's collection interpretation services, electronic and print, and other supporting resources

- To reach out and market to the Museum's target and new audiences; using for example the socio-demographic diversity of the collections.

Mission Statement

The Department is an open and inclusive resource for art and design and a gateway to information on the Museum's collections and subject areas. It aims to stimulate creativity, encourage scholarship, and promote enjoyment and understanding of designed objects and how they help us interpret the world, past and present.

Audience

The Department is building on its current audiences to serve, onsite and remotely, the same range of users as the rest of the V&A. It reaches out to all those seeking to enjoy, understand and interpret the world of today and of the past through designed objects and material culture. These include families, school children, tourists, students, academics, curators, conservators, critics, journalists, people working in the creative industries and art markets, interested adults, and adult groups. In short, Word & Image Department will provide an essential tool for life long learning and exploration at all levels.

Information Gateway to the V&A collections

The purpose of the Information Gateway is to assist the Museum in meeting the information and learning needs of its target audience. The information handling skills of the Word & Image Department Department make it ideally placed to provide this pivotal service to the public on behalf of the Museum.

The Information Gateway is designed to provide a single access point and a single procedure for all users enquiring about the Museum's collections and subject areas. The process of forwarding and distribution to the person and collection where the information can be provided most effectively and efficiently will be co-ordinated by Information Gateway. No matter where users first make their information request, they should and will experience the same consistent informed interface.

It will bring structural and management clarity to information handling in the Museum: in other words to give to the informational 'space' of the Museum the same kind of intelligibility as FuturePlan sets out to achieve for its physical 'space'.

The user will benefit from an effective, seamless and monitored services measured against delivery and quality standards. The Museum will benefit from an across-the-board application of professional information management, the gateway acting as a conduit linking enquiries with the relevant subject specialists. In addition, the information collected from previous enquiries can be used to develop V&A website content to help satisfy future public information need. This will enable a growing audience with similar information needs to be satisfied on immediate demand while using fewer Museum resources. Layered packages of information on the collections are also being devised for different learning types, abilities and disabilities.

While the Information Gateway is intended to act as a single point of contact for enquirers seeking information about the Museum's collections and subject areas, other closely integrated information points would co-exist to handle information on museum activities, bookings, &c.

The Information Gateway will manage the process of distributing enquiries to the most effective and efficient sources of information, taking account of the availability of resources and curatorial expertise.

Delivery

The Information Gateway will include the following delivery mechanisms:

1. Telephone call centre / Telephone Information Centre to answer direct-line calls and calls re-directed from other hubs; to introduce the enquirer to the most appropriate information source or enquiry route (web, visit, written enquiry); to provide an advanced ordering service for Departmental items; to identify and locate objects using CIS, Catalogues, crib-sheets, &c.

2. Written enquiry handling to act as a single point of contact for subject and collections based enquiries by e-mail, letter, fax; to answer enquiries using local reference resources and electronic reference tools; to forward enquiries requiring additional expertise to appropriate departments or experts in the Museum & beyond; to log enquiries, monitor efficiency standards, compile data record for assessing type, level and subject matter of enquiries; to maintain and monitor a database of enquiries and to fulfil the legal requirement under the *Freedom of Information Act* to monitor by 2005 all written requests for information.

3. Web Information provision through the On-Line Museum to provide web content which will provide immediately accessible answers and sources of information on basic level subject enquiries (e.g. FAQs) for the Museum and Department. This would *build on* responses to previous enquiries; to provide digitalized topic boxes and other appropriate collection materials; on-line exhibitions & archiving of previous Departmental displays; to provide 'packages' of information on the Department's collections

Service delivery or e-business to process and deliver photocopying requests; to enable on-line enquiry forms; to enable full catalogue searching and remote pre-ordering for study rooms; to provide remote document supply, i.e. the provision of texts electronically by e-mail or over the web

4. On-site to provide free access to the Department's collections through the study rooms; to provide access to the widest possible audience, in particular to the disabled,

both for physical access and ease of use; to facilitate access to collection items across the Museum by providing convenient locations for delivery to visitors.

4a. Summary of main services provided at the three reading and study centres:

PRINTS & DRAWINGS STUDY ROOM (including the RIBA ARCHITECTURE STUDY ROOMS) (study conditions, secure & invigilated issue)

- access tools
- packaged educational resources (national curriculum and further education; also delivered through the Library in the re-opened West Room)
- Group Room for education and other groups
- on-line resources
- reprographics (i.e. photography for study purposes)
- enquiry service
- item ordering
- visitor self-registration (automated)
- invigilated delivery of reserved items
- opinions service

ARCHIVE READING ROOM (study conditions, secure & invigilated issue)

- access tools
- packaged educational resources (national curriculum and FE)
- on-line resources
- reprographics
- enquiry service
- item ordering
- visitor self-registration (automated)

- invigilated delivery of reserved items

NAL READING ROOMS

Layered service delivered across three rooms:

West Room (chief public entrance; open reference, discovery and access);

Centre Room (book delivery & information literacy training);

Reading Room (study conditions, secure & invigilated issue)

- enquiry service
- access tools
- building of reference collections to enable individual and assisted information gathering on subject and collections based topics, including topic boxes
- packaged and educational resources (national curriculum and further education) layered for learning types, abilities and disabilities
- exhibition cases
- on-line resources
- reprographics
- item ordering
- visitor self-registration (automated)
- invigilated delivery of reserved items
- space for tutorials/inductions/seminars/workshops

In order to further our knowledge of current library operations, we held two interviews in Worcester, Massachusetts. The outlines of these interviews have been included.

1) Helen Shuster & Rodney Obien at Gordon Library, February 2, 2005
-Digitization
    -online access or pdf form
    -high-tech vs. low-tech solutions
    -depends on demand
-enCompass
    -software for creating digital libraries
    -describe, search for digital objects
-Luna Imaging (Insight)
    -digital imaging
-computer access for keyword searches
    -textual vs. object interest
    -e-books – Cornell
-complete commercial library admin. Systems
-online system handles automations
    -accounting requests acquisitions
    -Voyager system – Endeavor
    -Antiquarian society uses it as well
-Is online catalogue complete?
-barcoding special collections
    -keeping track of use
-steps to accessing special collections
-Pass Perfect
    -managing archival collections
-Possibilities of opening stacks

-technology to improve security

-Marketing for demographics

-search engines into webpage? Catalogue?

-Google scholar – searches collections

-marketing to general public, kids, etc.

-zoning the library – quiet vs. non-quiet

-traditional institution

-privilege

-culture change

-ripple effect of changes

-shock due to change

-people issues

-staff size concerns

-map out the existing process

-look for duplication, redundancy

-organizational hierarchy

-Philips Library @ Peabody-Essex Museum

-culture of strict libraries

2) Deborah Aframe at the Worcester Art Museum Library, February 4, 2005

-James described problem to Ms. Aframe

-open vs. closed stacks

    -open with reading room

    -customers: who are you serving?

    -popular books in open stacks

    -only English-language books in open stacks

    -valuable materials in closed stacks

        -have to worry about theft/damage

    -staff only in closed stacks

    -concerns due to limited staff

    -readers write down requests, give to librarian on duty

        -librarian must find time to retrieve

-catalogue

    -online

    -Triple-I Millenium system (from Holy Cross, their system)

        -library for Holy Cross

    -Great Plains – Forecaster (line-item budget)

-special collections

    -unique books (special prints, etc.) go to print room, not in library

    -rare books create staff problem, have to watch when readers have them

    -same with fragile books

-wishlist

    -problem -> cataloguing background

        -not enough funding to buy what curators want/need

    -1000 books purchased a year

        -only catalogue 500 per year with current staff

    -space is an issue

    -auction catalogues -> get rid of minor houses

-what they do well

-primary function -> serve staff of museum

-good service

    -should digitize catalogues and put online

        -saves time

    -Million Book Project (digitization of materials)

        -all done in India, China

        -risks sending to sites for digitization

        -labour prices force the issue

        -hosted by Carnegie-Mellon

        -AAM approved, supported

-Marketing

    -3500 users/year

    -staff concerns

        -more users is a problem

        -already understaffed

        -all about staffing: most important issue

    -would like more professors/students to use the library

    -Library of Art – online images of art pieces

    -part of larger institution, which markets

This list, compiled by Sally Bacon and David Anderson, was provided to us by Andrew Russell during a meeting with him at the National Art Library.

Key Factors for Education Centres

By Sally Bacon and David Anderson

Results of brainstorm in the Habitat restaurant, November 15, 2001

1. Knowing as a visitor which institution you are in (communicates the mission/purpose of the organisation through the designed environment)
2. Welcome/stimulation to learn with skilled staff
3. Flexibility in operational use; also for strategic changes of function
4. Richness of environment and good design – not the isolated white box drained of meaning
5. Priority given to usage in developing the aesthetics
6. The start of the journey for many people – not the adjunct
7. Given the care, attention, resources, and intellectual investment that are expected for galleries – not the afterthought and the first target for economics of money, time, and staff
8. A place people want to be in, and to which they want to return
9. Very visible and accessible on arrival at the Museum
10. Easily opened at evenings or on weekends
11. Involves artists and designers in the creation and renewal of the environment, as well as in programmes
12. Spaced around "lines of desire" – where people want to go – and other research on human behaviour in space
13. Great loos
14. Well maintained and cared for
15. A test bed for ideas and visitor research

16. [Last but not least] Designed to foster all kinds of learning (formal, informal, self-directed/practical as well as traditional academics/for full range of learning styles)

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