



Online Museum Collaboration

Interactive Qualifying Project Report completed in partial fulfillment of the Bachelor of Science degree at

Worcester Polytechnic Institute, Worcester, MA

Submitted by:

Ryan Fredette
Nick Hayes
Rachael Huntress
Myo Thaw

Project Advisor:

Professor Dominic Golding

Sponsor:

EcoTarium
Worcester, MA

Submitted Date:

April 26, 2012

Abstract

This project assisted the Exhibit Lab Collaborative, formerly the Environmental Exhibit Collaborative (EEC), in communicating between its member museums using web collaboration tools. The project team conducted an assessment at each museum to determine their needs and current state of communication, researched and recommended appropriate web collaboration tools, and assisted in implementing them. The team also provided training materials to the staff and carried out an evaluation to determine how well the recommended products met the needs of the museums.

Acknowledgements

The team would like to thank several people who were instrumental to the completion of this project. First, the employees at each of the museums we visited were gracious in accommodating us and giving us access to the information we needed to begin and refine our research. Betsy Loring and Alexander Goldowsky of the EcoTarium were particularly helpful in keeping all of the museums on the same page and keeping them focused on the goal of our project. Kate Beverage, Joe Cotnoir, and Erin DeSilva from the WPI Academic Technology Center (ATC) were very helpful with their input into our recommendations, and liaising with the distributors of the software that the Exhibit Lab Collaborative chose. They also assisted in the creation of and critiqued our evaluation documents. We would also like to thank our advisor, Dominic Golding, for the focus and guidance he provided during this project. At every step of the project, his input and opinions helped us to refine our objectives and perfect our final product.

Executive Summary

The main goal of museums is to reach out and remain relevant in their communities. Large museums attract people by constantly updating their exhibits and programs, but smaller museums, on the other hand, do not have the resources to rent or develop new exhibits as frequently, making it hard for them to maintain visitors attraction. The Exhibit Lab Collaborative tackled this problem by collaborating with other museums. The Exhibit Lab Collaborative is funded by the Institute of Museum and Library Services (IMLS) and includes the EcoTarium in Worcester, MA; Echo Lake Aquarium and Science Center in Burlington, VT; the Children's Museum and Theatre of Maine in Portland, ME; and The Discovery Museums in Acton, MA. The collaborative was developed from the previous Environmental Exhibit Collaborative (EEC) which was funded by Jane's Trust and included the EcoTarium, Echo Lake Aquarium and Science Center, and the Children's Museum and Theatre of Maine. By collaborating on exhibit development, all members can benefit from the ideas and expertise of the other members. The goal of the collaborative project is to provide 'hands-on-professional development' and 'learn-by-doing' exercises for the staff, so that those skills and knowledge would remain even after the collaboration project is over. However, the museums are located all over New England and communication between the members becomes a problem. They have to travel great distances and gather at a museum in order to meet with each other. Since their meetings involve viewing drawing files for exhibit design, discussing over telephone is limited and emailing files alone becomes inefficient. In order to solve the problem, the Exhibit Lab requested Worcester Polytechnic Institute (WPI) to develop better communication methods to collaborate online.

The main goal of this IQP was to improve the Exhibit Lab's collaborative communication methods by selecting, implementing, and evaluating appropriate web-based communication tools. To meet these goals, our project team completed a series of objectives. A needs assessment was conducted at each museum in order to determine the desires and capabilities. Based on this information, the project team determined multiple communication tools that serve these needs. The selected tools were presented to Exhibit Lab members and they decided which tools they wanted to adopt. With the help of WPI Academic Technology Center (ATC) and museum staff, the project team implemented the chosen tools and trained museum staff to use the tools effectively. Lastly, we conducted an evaluation to determine how well these tools were

meeting the needs of the museums and whether additional recommendations were needed. The initial assessments identified BaseCamp, WebEx and Dropbox as good options for the museums. But the overriding concern of follow up support steered the final decision towards SharePoint and WebEx. The main reason for choosing SharePoint is that it has good technical support from Microsoft as well as from WPI. Once the software choices were in place, the implementation phase began.

Implementation began with a series of conferences to troubleshoot and test the software; each meeting was conducted by the Exhibit Lab. When needed, our group would participate in the meeting to assist in showcasing and testing features. Hardware was recommended for locations that did not have the technology needed for web conferencing such as microphones, speakers, and web cameras. Most museums already had the necessary tools in place, with the exception of The Discovery Museum, which purchased the hardware we recommended. After Exhibit Lab had finished the initial conference series, and solved the main issues, training materials were developed by our group members and uploaded onto SharePoint and YouTube for the Exhibit Lab. After two weeks, an evaluation form was sent to each member of the collaboration to help our group determine the success of the product combination selected and implemented for them.

After the feedback was collected from the evaluation surveys, the results were used to identify strengths and weaknesses of the software. By examining the user feedback, it was found that most staff has not used the training materials. Since the evaluation was conducted only shortly after the training materials were made available, many staffs were just beginning to familiarize themselves with the software tools. Most members felt that the software met their needs, although some felt that SharePoint was complicated. Perhaps this dilemma will be solved over-time if the collaboration takes advantage of the training materials. Overall, the evaluation results indicated that the software was a success for Exhibit Lab. In the future, the use of SharePoint should be closely monitored and encouraged or use will stop completely. Additionally, the collaboration may benefit more from training sessions as group, as opposed to online materials. We also found that if we had requested that each location prioritize their needs during the needs assessment, their emphasis on WPI technical support may have been more apparent from the start. The software recommendation for the collaboration may have been different in that case. Lastly, we felt that maintaining a good working relationship with the

leaders of Exhibit Lab was extremely valuable. The relationship allowed us to adapt as they gained a better understanding of their needs, test software before it was deployed to the entire collaboration, and hold successful communication for any situation. Without their help and communication, the end result of our project may not have been successful or functional for the Exhibit Lab Collaboration.

Authorship

This report was written by all four group members: Ryan Fredette, Nick Hayes, Rachael Huntress and Myo Thaw. Throughout the project, tasks were divided evenly between each member. Even though most sections in the report were written primarily by one individual, each section was edited by the entire team to ensure that the writing was clear and accurate, and that we all agreed on and approved the content of this report.

Section	Primary Author
Acknowledgements	Ryan Fredette
Executive Summary	Ryan Fredette, Rachael Huntress
Introduction	Myo Thaw
Literature Review	Nick Hayes, Rachael Huntress
Environmental Exhibit Collaborative	All
Communication products	
Introduction	Ryan Fredette
Skype	Rachael Huntress
Blackboard Collaborate	Ryan Fredette
Dropbox	Ryan Fredette
Box.net	Myo Thaw
Google Business Apps	Nick Hayes
Methods	
Goals and Objectives	All
Objective 1: Conduct needs assessment	Ryan Fredette, Nick Hayes
Objective 2: Implement communication tools	Myo Thaw
Objective 3: Train museum staff	Rachael Huntress
Objective 4: Evaluate the implementation of tools	Nick Hayes
Findings	
Needs assessment	All
Evaluation of the different software and hardware options	Myo Thaw
Video Conferencing Tools	Ryan Fredette, Rachael Huntress
Calendar Tools	Nick Hayes, Rachael Huntress
Web Collaboration Tools	All
Conference Room Design and Hardware	Myo Thaw
Initial Recommendation	Myo Thaw, Ryan Fredette
Training and Implementation	Myo Thaw
Evaluation	All
Conclusions and Recommendations	Ryan Fredette

Table of Contents

Abstract.....	i
Acknowledgements.....	ii
Executive Summary.....	iii
Authorship.....	vi
List of Figures.....	x
List of Tables.....	xi
Introduction.....	1
Literature Review.....	3
Introduction.....	3
Function of a Museum.....	3
Challenges for Small Museums.....	4
Environmental Exhibit Collaborative.....	6
Introduction.....	6
Reasons for collaboration.....	7
Current state of communication.....	8
Expectations.....	8
Communication Products.....	9
Introduction.....	9
Skype.....	9
Blackboard Collaborate.....	10
Dropbox.....	11
Box.net.....	12
Google Business Apps.....	12
Methods.....	14
Goals and Objectives.....	14
Objective 1: Conduct needs assessment.....	14
Objective 2: Implement communication tools.....	15
Objective 3: Train museum staff.....	15
Objective 4: Evaluate the Recommended Tools.....	16

Findings	17
Needs Assessment	17
EcoTarium	17
ECHO Lake Aquarium and Science Center	19
The Children’s Museum and Theatre of Maine	19
The Discovery Museums	20
Exhibit Lab Activities and Needs	21
Evaluation of the different software and hardware options	22
Video Conferencing Tools	23
WebEx	23
Skype	24
Calendar Tools	25
Google Calendar	26
SharePoint Calendar	26
When2Meet	27
Web Collaboration Tools	28
Basecamp	29
Dropbox	30
Box.net	30
SharePoint	31
Blackboard Learn	31
Conference Room Design and Hardware	33
IPEVO Point 2 View	34
MXL AC404 USB Conference Microphone	35
Initial Recommendations	35
Training and Implementation	37
Training Materials	37
Problems Encountered and User Evaluations	38
Reverberation effect in WebEx	38
SharePoint server	39
Email notification	39

Journal entry system	40
Evaluation	41
SharePoint survey result.....	41
WebEx survey result	43
Conclusions and Recommendations	47
References.....	50
Appendix A: Background Research.....	51
EcoTarium.....	51
ECHO Lake Aquarium and Science Center	53
Children’s Museum & Theatre of Maine	54
The Discovery Museums.....	58
Appendix B: Interview with the EcoTarium.....	61
Appendix C: Interview with The Children’s Museum and Theatre of Maine	63
Appendix D: Proposed software pricing.....	65
Appendix E: Proposed hardware information.....	67
IPEVO Point 2 View USB Document Camera	67
MXL AC404 USB Conference Microphone.....	68
Projector	69
Speakers	70
Bamboo Connect Drawing Tablet.....	71
Appendix F: Evaluation survey	72
Appendix G: SharePoint User Guide.....	75
Appendix H: WebEx User Guide	109

List of Figures

Figure 1. Use of social media comparing large and small museum (Wetterlund & Sayre, 2009) 5

Figure 2. Online educational programming comparing large and small museum (Wetterlund & Sayre, 2009) 6

Figure 3. Conference room design..... 34

Figure 4. Responses to whether SharePoint meet the needs of Exhibit Lab..... 41

Figure 5. Responses to whether WebEx meet the needs of Exhibit Lab 43

Figure 6. Responses on the quality of WebEx audio 44

Figure 7. Responses on the quality of WebEx video 44

Figure A1. Revenue: EcoTarium (Financial Report, 2010)..... 52

Figure A2. Expenses: EcoTarium (Financial Report, 2010)..... 53

Figure A3. Revenue: Children’s Museum and Theatre of Maine (2010 Annual Report) 56

Figure A4. Expenses: Children’s Museum and Theatre of Maine (2010 Annual Report) 57

Figure A5. Revenue: The Discovery Museums (2010 Annual Report)..... 60

Figure A6. Expenses: The Discovery Museums (2010 Annual Report) 60

List of Tables

Table 1. Diagnosing the Museum’s Community Role (Perman, 2006).....	4
Table 2: Sample Products and General Capabilities.....	9
Table 3: Skype Business Subscriptions and Features (www.skype.com)	10
Table 4: Dropbox Pricing (www.dropbox.com).....	12
Table 5. Pricing for Box.net (www.box.net)	12
Table 6. Pricing for Google Apps.....	13
Table 7. Products considered for Exhibit Lab’s needs	22
Table 8. Required functions and features for video conferencing tools	25
Table 9. Required functions and features for calendar tools	28
Table 10. Required functions and features for web collaboration tools	32
Table 11. Responses to how useful are the SharePoint training materials	42
Table 12. Responses to how easy or difficult the SharePoint features are	43
Table 13. Responses to how useful the WebEx training materials are.....	45
Table 14. Responses to how easy or difficult the WebEx features are.....	46
Table A1. Revenue and Expenses: EcoTarium (Financial Report, 2010).....	52
Table A2. Statement of security: Children’s Museum and Theatre of Maine (2010 Annual Report)	55
Table A3. Revenue and Expenses: Children’s Museum and Theatre of Maine (2010 Annual Report)	56
Table A4. Revenue and Expenses: The Discovery Museums (2010 Annual Report).....	59
Table D1. Basecamp Pricing (basecamphq.com)	65
Table D2. Skype Business Subscriptions and Features (www.skype.com).....	65
Table D3. Dropbox Pricing (www.dropbox.com)	66
Table D4. WebEx Pricing (www.webex.com)	66

Introduction

Museums strive to reach out and remain relevant in their local communities. This is especially the case among small museums that are often located outside the major metropolitan areas. In order to attract patrons, these museums have to remain fresh, vibrant and attractive by continually developing new exhibits and programs. While larger museums often have the finances to rent or produce new exhibits, it becomes a problem for smaller ones to maintain visitor attraction since they lack extensive resources to develop high quality exhibits on their own.

Four small science museums in New England decided to solve this problem by forming the Exhibit Lab Collaborative. Joining into a collaborative to share ideas, expertise, and funds can result in much better exhibits than any one member could develop on its own. More abstract, larger-scale ideas can also be brought to fruition when several museums collaborate. Unfortunately, there are few precedents for the collaboration model that Exhibit Lab is using. Previously, a group of small museums such as this would usually collaborate with a larger flagship museum, or hire contractors to develop the exhibits. Exhibit Lab's main goal is to provide 'hands-on professional development' and 'learn-by-doing' exercises for their staff, building the capacity within the participating museums so that the skills, knowledge, and network of contacts can continue to benefit each museum even after the grant has finished.

However, they have had difficulty with communication between their members, especially because the museums are located far from each other: The EcoTarium is located in Worcester, MA; ECHO Lake Aquarium and Science Center in Burlington, VT; The Children's Museum and Theatre of Maine in Portland, ME; and The Discovery Museum in Acton, MA. Due to the distances the staff has to travel, scheduling meetings for exhibit development is inefficient. Since they are dealing with large exhibit design drawings, discussion over telephone alone is limiting and emailing those files becomes a difficulty. To solve the problem, the EEC has requested that WPI help them to develop a better communication system that will help make its goals possible.

The main goal of this IQP was to improve the communication of the Exhibit Lab members by selecting, implementing, and evaluating appropriate web-based communication tools. This not only helped the Exhibit Lab Collaborative improve its internal communication, but also lets it stand as an example for similar collaborative endeavors in the future.

In order to meet these goals, the project had to complete a series of objectives to ensure the best solution was reached. A needs assessment was conducted in order to determine the desires and capabilities of each institution, and based on this information, the project team determined which communication tools best serve these needs. With the help of WPI and museum staff, the project team implemented the chosen tools and trained museum staff in their proper use and effective communication. Once this system was in place, the project team completed an evaluation in order to determine how well these tools were meeting the needs of Exhibit Lab and whether additional changes were needed.

Through interviews and museum visits, we conducted needs assessments at the participating museums to find out exactly what problems existed. With the help of the WPI Academic Technology Center (ATC) and through research, we found and implemented web-based communication tools at the museums to meet their needs. We also trained museum staff on how to use this new system effectively, and evaluated how well the new tools met their needs.

Literature Review

Introduction

There are many difficulties faced by small museums when it comes to technology and communication tools. Small museums face a lack of resources, resulting in technology systems that are ununiformed and out of date. Due to the difficulties, the museum collaboration has unique problems that need to be examined. The project group researched the challenges that similar museums and collaborations have faced to gain a better understanding of what might be effective going forward.

Function of a Museum

“A museum is a non-profit making, permanent institution in the service of society and of its development, and open to the public, which acquires, conserves, researches, communicates and exhibits, for purposes of study, education, and enjoyment...” (<http://icom.museum>). This is the definition of a museum in the year 2007 by the International Council of Museums, clearly a multi-purpose organization of great value to the public. The role of a museum is to educate the public through objects, programs, activities, and websites. In the United States alone, there exist over 16,000 museums, which together receive more visits annually than professional sports games (Hein, 1990), indicating their continuing popularity. Originally, museums did not allow the general public through their doors; only the educated and elite. As times changed, so did these old values, and modern museums aim to educate the lay public and provide understanding and awareness to everyone. In the present, museums are a place that encourages peace and development for society, and promoting life-long learning (Arinze, 1999).

Educating the public is a main focus for the modern day museum. They achieve this goal through specialized programs and activities aimed towards a targeted group or the general public. For example, a museum may choose to design a program solely for the education of teachers. Teachers can receive training for their own use in programs and classes they are involved in. The purpose of education through programs is a large part of school curricula, as well as a leisure experience for visitors. By involving museums in children’s education, it allows student to experience their history first hand. By exposing the public to its own history and heritage, it gives future generations the knowledge to grow (Arinze, 1999).

Museums, depending on their size and financial strength, can take on different roles to serve their community. For example, a large museum in Boston would have a greater capacity to conduct research and maintain a collection in comparison to a small local museum. Despite the difference, both value their role to educate visitors. Perman identified several types of roles museums may embody, and many use more than one, as presented in Table 1.

Table 1. Diagnosing the Museum’s Community Role (Perman, 2006)

Community Role of a Museum
<ul style="list-style-type: none"> • Visitor attraction <p>The museum is the "front porch" of the community, welcoming visitors and giving them an overview of what's special and unique about this place.</p>
<ul style="list-style-type: none"> • Catalyst for change <p>The museum exists to deliver a message that will encourage people to think differently about their relationship to others or to the world.</p>
<ul style="list-style-type: none"> • Center of creativity <p>The museum engages visitors in activities where they make and do things. Visitors, rather than the museum, determine the outcomes.</p>
<ul style="list-style-type: none"> • Memory bank <p>The museum displays aspects of the history of a place, person, cultural tradition, etc.</p>
<ul style="list-style-type: none"> • Storyteller <p>The museum interprets the history of a place, person, cultural tradition, etc. in ways that relate the past to the present—and even to the future.</p>
<ul style="list-style-type: none"> • Attic <p>The museum preserves objects and images that would otherwise have been discarded.</p>
<ul style="list-style-type: none"> • Treasure trove <p>The museum preserves valuable, meaningful, and/or rare and unusual objects and images.</p>
<ul style="list-style-type: none"> • Shrine/hall of fame <p>The museum honors a particular group or individual and assumes visitors have a built-in interest in this topic.</p>
<ul style="list-style-type: none"> • Exclusive club <p>Although open to the public, the museum is primarily aimed at people with special interests in and knowledge of the topic.</p>

Challenges for Small Museums

Despite the number of roles a museum can take on, staying financially stable can prove to be a challenge for small museums in particular. Smaller institutions typically have fewer visitors, relatively few employees, and minimal financial support from the government and other organizations. Often the main source of income for small museums comes from admissions, which means that their focus is on developing visitor attractions. These museums count on their

visitors returning over and over, so they must develop new and exciting exhibits often. The problem with constantly developing and changing exhibits, as stated previously, is that the museum has very limited funds to put towards the process.

Small museums must be creative to increase their funding and income, therefore allowing them to add and maintain exhibits. As stated in Anderson’s (2004) *Reinventing the Museum*, some museums make use of strategic and interactive planning called ‘Be yourself’ and ‘Fit in’ process. ‘Fit in’ means that the museum is grounded in a place and a community, matching the values and needs of the people in the area. By doing this, the museum can attract the surrounding community and keep them coming back. To ‘Be Yourself’, the museum keeps its exhibits on a small-scale and low-cost. The small scale means that the exhibits must use imagination, creativity, and quality. Therefore, although the exhibit may be small it can still attract and engage visitors. Lastly, if the museum chooses to implement any changes it is a slow process that may take years. The goal is to keep the museum financially stable (Parman, 2006).

In order to reach out to the appeal of the public, many small museums use technology. For example, social networking is a cheap and popular way to advertise exhibits, programs, and classes. Using social networking and websites also allows the museums to reach out to the public at a larger scale. People who live far away can keep updated with the museum, and find out any information about the institution that they wish to know. Also, considering the ubiquity of this technology, the museum is reaching out to all age ranges. Keeping current with technology gives these small museums a way to keep admissions income on the rise.

Figure 1. Use of social media comparing large and small museum (Wetterlund & Sayre, 2009)

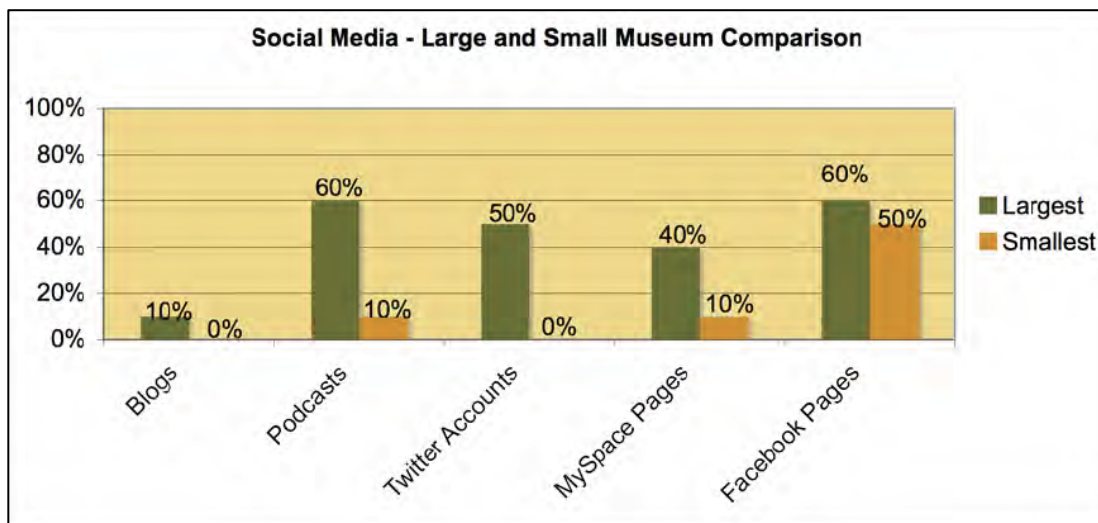
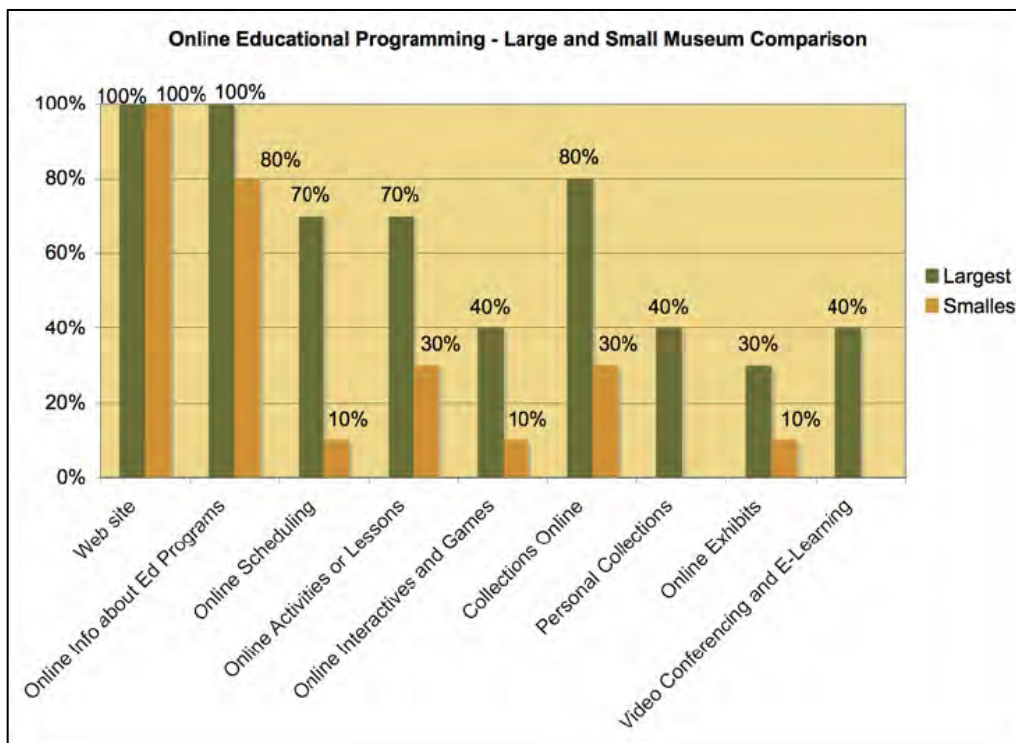


Figure 2. Online educational programming comparing large and small museum (Wetterlund & Sayre, 2009)



Environmental Exhibit Collaborative

Introduction

The Environmental Exhibit Collaborative was founded in 2003 by the EcoTarium, ECHO Lake Aquarium and Science Center, and the Squam Lake Science Center. Their goal was to convey the importance of the ecology, culture, and history of New England through the powerful medium of museum science exhibits (www.sciencenter.org/turtletravels/media/d/EECPartners.doc). In 2004, the EcoTarium, the leading museum of the EEC, received a grant of \$840,000 from Jane's Trust to build traveling exhibits to be shared among the EEC members. Each member developed ideas, shared designs, fabrications, and staff resources; and exchanged collections and expertise to create interactive exhibits for small and mid-size museums. Each exhibit, about 1,200 sq. ft. in size, was displayed at each museum for up to six months. The exhibits were made available to travel to other museums in the surrounding regions (EcoTarium, 2004).

Recently, the EEC has evolved into the Exhibit Lab Collaborative, which includes the EcoTarium, ECHO Lake Aquarium & Science Center, Children's Museum and Theatre of

Maine, and the Discovery Museums. Previously, as the EEC, the collaborative produced five traveling exhibits, and three of them, ‘Turtle Travel’, ‘Tree Houses’, and ‘Attack of the Bloodsuckers!’ are available for rent, under management by the Sciencenter (www.sciencenter.org) in Ithaca, NY.

Reasons for collaboration

Creating quality exhibits requires brainstorming and troubleshooting between professional developers. Large museums are perfectly capable of hiring sizable and diverse teams of developers; however, none of the museums in the Exhibit Lab can hire large development teams, or fund the creation of complete exhibits. The Exhibit Lab is pioneering a new approach by having small museums collaborate on an even level in order to develop exhibits for each member. This allows each museum to contribute money, but more importantly, talent and expertise, in order to create exhibits that would be beyond the means of any of the individual museums. The collaboration, therefore, is meant to pool human resources to develop better exhibit ideas, not just funding. In this way, these museums can create high-quality exhibits that would have otherwise been beyond their means. Most importantly, the collaboration will encourage professional development and capacity building, even after the collaboration project is over.

As a non-profit collaboration between relatively small museums, Exhibit Lab has limited resources, both in terms of funding and manpower, and must focus on maximizing the potential of these resources. This means that previous models for museum collaborations would not be appropriate. This includes the ‘hiring out’ model, in which exhibits are bought or commissioned from outside contractors; the ‘build-and-swap’ method, in which members share resources to develop an exhibit which then tours all the museums in the collaboration; and the ‘hub-and-spokes’ method in which a well-funded flagship museum develops all of the exhibits and distributes them among the others. By selecting the advantages of each model, Exhibit Lab would be tailoring a new model that suits their needs. But in order to collaborate, good communications between members is needed.

Current state of communication

Before this project, the main methods of communication among the EEC members were through e-mail and telephone. A select few members have had experience on collaboration software and web conferencing tools, but these attempts ended due to lack of support and training. The purpose of the communication is to share multimedia data between institutions. Email can be used to transmit multimedia files, but it is ineffective when sharing with a large group of users. It is hard to track updates, and without proper naming system, important information can get lost within reply emails. Email can also handle only a limited data size for attachments; sending large exhibit drawings with email could crash the system. With telephone calls, only voice can be transmitted. The ‘face-to-face’ and ‘peer-to-peer’ aspect of a regular meeting is lost with teleconferencing. Due to the fact that members are spread out over New England, scheduling regular meeting also becomes inconvenient. The members of the collaboration could meet only two consecutive days in a couple of months to discuss their ideas on exhibits. The EEC experimented with using a wiki, a kind of collaboration website, but it was found to be ineffective since the staff didn’t use it extensively. Due to a lack of uniform technology and tools in each location, as well as knowledge about proper tools to use, effective and easy communication was a problem.

Expectations

Exhibit Lab’s main expectation with the new collaboration is to improve their methods of communication. E-mail will still be used as their main source of communication since every staff members uses it regularly. Accordingly, e-mail notifications should be used to notify the users for tasks that need to be completed. Use of groupware that contains web-based communication, video conferencing, calendar scheduling, and files sharing is also necessary to meet their needs. With video conferencing, the members can increase their meeting frequency by holding conferences remotely. Scheduling for travel, workshops, exhibit circulation dates, and team meetings can be done online and made viewable to every member. With file sharing, they can share, store, and organize large exhibit drawings, documents, and videos on how to assemble exhibits instead of including them as email attachments.

Communication Products

Introduction

Exhibit Lab’s needs for better collaboration are video conferencing (with the ability to edit documents during a conference), shared calendar and scheduling, and file sharing. Our team researched and reviewed the commercial products available to meet the needs of the museums. The following table indicates what the team considered the best options in each of these categories.

Table 2: Sample Products and General Capabilities

Video conferencing	<ul style="list-style-type: none">• Skype• Blackboard Collaborate• WebEx
Calendar scheduling	<ul style="list-style-type: none">• Google Calendar (included in Google Business Apps)
File sharing	<ul style="list-style-type: none">• Dropbox• Box.net
Real time file editing	<ul style="list-style-type: none">• Google Docs (included in Google Business Apps)

Skype

Skype is an internet-based audio and video communication tool. Some features of this software are free, such as Skype-to-Skype, group audio calling, file transfer, and text instant messaging. Other, more advanced features can be acquired, but this requires either payment as the feature is used, or a monthly subscription. Under a business subscription, the rates are modular, so the customer can add only the features they need. There is also a function called the Skype Manager, where an administrator can control and monitor activity, manage multiple subsidiary accounts, allocate credit for various functions to employees, and generate reports about usage and expenditures. Short descriptions and prices per month for various features are listed in Table 3. Skype supports Windows, Mac OS, Linux, and several mobile platforms. Customer support is available 24 hours a day via text message with Skype employees.

Table 3: Skype Business Subscriptions and Features (www.skype.com)

		1 Month	3 Months	12 Months
Group Video Calling	Multiple people can videoconference, viewing everyone on one screen.	\$8.99	Exclusive offer with Skype Manager	Exclusive offer with Skype Manager
Calling US landlines and cell phones	Make calls from a computer running Skype to any US-based phone number. ¹	\$2.95	\$2.80	\$2.51
Voicemail	Conventional voicemail. ²	\$2.10	\$2.00	\$1.67
Online number	A phone number that can be called from any conventional phone that connects to a Skype account. ³	\$6.30	\$4.02	\$2.50
Call Forwarding	Forwards calls placed to an online number to a conventional phone number.	Included in calling subscription.	Included in calling subscription.	Included in calling subscription.

¹ Excluding Alaska, Hawaii, American Samoa, the Caribbean, and toll-free numbers.

² Included when any calling subscription is purchased.

³ When purchased separately, an online number is \$6/month for 3 months or \$5/month for 12 months.

Blackboard Collaborate

Blackboard Collaborate, formerly known as Wimba, is a software suite made by Blackboard that specializes in education applications. It allows video conferencing among users in a virtual room, guided by a moderator. Users in the room can share applications with the moderator/presenter and take control of their computer, with access privileges controlled by the host. Presentation slides can be edited and re-ordered while a session is underway. Users have the ability to write notes on the virtual whiteboard, share websites and applications through screen sharing. Participants can move to breakout rooms where more personal attention can be paid to attendees. Built-in recording tools can be used to archive and publish session content after the session ends. Hosting Blackboard through WPI also adds the ability to share files, host discussion forums, and publish content to websites through Blackboard Learn (similar to

myWPI). The earlier version of video conferencing function of Blackboard Collaborate is also available in Blackboard Learn under the name Wimba.

Dropbox

Dropbox is an online file-sharing and storage tool that can be used to synchronize a collection of folders across multiple computers or mobile devices. Dropbox for Teams offers several capabilities useful to collaborating groups, and costs. Groups of users can share a single quota, rather than every user being bound by a quota. One or multiple users can be designated administrators with control over billing, adding and removing users, among other capabilities.

Every file on Dropbox's servers is secured, and every user is authenticated when accessing files. Public links that allow anyone to access certain files can be created as well. Users can also choose to apply encryption before a file is uploaded, which also removes the ability to create a public link for that file. Files are sent with SSL and AES-256 bit encryption for security.

Dropbox displays the most recently saved version of a file. A history of every file is saved for a month, allowing files to be reverted to previous versions. When updating a file, only the part of the file that changed is uploaded, rather than the entire file, minimizing the amount of data transferred, and thus time.

Dropbox is available as a website or as an application for Windows, Mac, and Linux OS. Installing the application let the user use Dropbox as if it is a folder on the computer without the need to access the Dropbox website. Apps are also available for iPad, iPhone, Android, and BlackBerry. Since files are synced to the devices, files can be viewed and edited offline. There are also lists of third-party apps that are known to function with different platforms. Table 4 shows the pricing for different types of Dropbox accounts.

Table 4: Dropbox Pricing (www.dropbox.com)

Account Type	Size	Price
Basic	2 GB	Free
Pro 50	50 GB	\$9.99/month or \$99.00/year
Pro 100	100 GB	\$19.99/month or \$199.00/year
Teams	350 GB	\$795/year (5 users) Additional user (\$125/year) Additional storage (\$200 for 100GB/year)

Box.net

Box.net is also an online file-sharing and storage tool similar to Dropbox, but with more administrative and management tools. It can also alert users of file changes via e-mail. Box.net is also available for several brands of mobile devices. There are many applications that directly support Box.net. If a customer uses a particular piece of software that is not supported by Box.net, the end user has access to developer tools to integrate Box.net into their commonly used applications. Table 5 shows the pricing for Box.net.

Table 5. Pricing for Box.net (www.box.net)

Account Type	Size and limit	Price
Personal (1 user)	5 GB (25 MB size limit)	Free
	25 GB (1 GB size limit)	\$9.99/month
	50 GB (1 GB size limit)	\$19.99/month
Business (3 to 500 users)	500 GB	\$15/user per month

Google Business Apps

Google Apps for Business is a collection of productivity applications provided by Google. The suite of applications includes: Business Gmail, Google Calendar, Google Docs, and Google Sites. Use of this suite requires the entity to own a domain name. Domains can be purchased for \$10 per year. Use of Google Apps for Business costs \$5 per user per month, or \$50 per user per year. A free, 30-day trial period is offered. The idea of Google Apps is to provide multi-user environments for creating and editing documents, spreadsheets, presentations,

calendars, and websites in a multi-user collaborative environment, where multiple users can edit a file or calendar at the same time. Google Apps works on a wide variety of mobile devices, in addition to Windows and Mac-based computers.

Table 6. Pricing for Google Apps

Product	Price
Business Suite	\$5/month per user
	\$50/year per user
Domains	\$10 each

Methods

Goals and Objectives

The goal of the Exhibit Lab Collaborative Interactive Qualifying Project was to improve the communication of collaboration of the museums by selecting, implementing, and evaluating appropriate web-based communication tools. The following four objectives were developed by our project group to facilitate this and give us focus throughout the course of the project:

- (1) Conduct needs assessments at the participating to determine which web-based communication tools meet the needs of the Exhibit Lab;
- (2) Collaborate with WPI and museum staff to implement communication tools at the museums;
- (3) Train the museums staff to use the communication tools effectively; and
- (4) Evaluate how well the tools are meeting the needs of the museum partners.

The following is more in-depth discussion of each objective. We created this list at the outset of our project to serve as a guide, and also developed a timeline for when we should complete major objectives.

Objective 1: Conduct needs assessment

To determine what communication solution would best fit the needs of the consortium members, a needs assessment was conducted. The information required was gathered by in-person interviews with at least two group members, one to ask questions and one to write down responses. These responses were tracked on a standard form that was used for each interview at each museum. If we require more information after the interview, follow-up questioning was conducted by phone. Certain staff members at each museum have been more intensely involved with Exhibit Lab activities over the years than have others. We began our interviews with the staff members, and asked them to identify others with whom we should speak at each institution. Group members also toured the facility with IT staff to assess the technical and workspace situation at each institution. The list of questions we were developed with the consultation of the Worcester Polytechnic Institute Academic Technology Center (ATC) and EcoTarium staff. Because of our proximity and ease of access to the EcoTarium, the questions were prototyped and refined at the EcoTarium before being used at the other institutions. (The needs assessment

was carried out at each museum between October 25 and November 22, and can be found starting on page 17).

In addition, an appropriate checklist was developed in order to keep track of different specifications of individual computers staff members are using at each museum. The hardware with the weakest specification was reviewed to determine if the products proposed were compatible with the computers and whether hardware upgrade was necessary.

To successfully choose a communication tool, background research was performed to become aware of the available offerings, and their capabilities. After the needs assessment was complete, a product or set of products were chosen for implementation at the museums. The team's choice took into account the museums' needs as well as what WPI's own ATC staff supports.

Objective 2: Implement communication tools

In order to meet the deadline for training workshops that took place in December, the implementation process needed to be completed by December 14. During the implementation process, software and hardware were set up and installed at the museums. A trial run at the EcoTarium was carried out in late November in order to reduce unforeseen problems with other museums. We troubleshooted the system and ensured that it was properly installed and we tested the system to ensure that it was working as expected. We also collaborated with the museum staffs and the WPI ATC Department for their expertise. Minor problems that occurred during this process were solved on site and major problems were assessed further with the WPI ATC Department and the museum.

Objective 3: Train museum staff

Training staff was key to ensure all products were utilized for their intended purpose. The training process was carried out in several ways, based upon the preferences of those who participated in the training sessions. Based upon a short interview conducted with Alexander Goldowsky and Betsy Loring, we identified a few training options. Betsy Loring brought to our attention that many of the staffs were difficult to reach, aside from email. To encourage regular use of products, we included email updates tied to any updates that occur. These updates

occurred if a file was added and needed attention. Regular use also made staff more familiar with the products quickly.

Training occurred in either synchronous or asynchronous sessions. Synchronous sessions were carried out as workshops at WPI campus and on site between December 15 and January 12. A speaker leading a workshop provided staff with step-by-step instruction of the processes. This covered Frequently Asked Questions, and any questions the staff had. A second option was individual videos and printed tutorials. These tutorials were conducted by staff on their own time before the workshops, and took them through the processes in a similar way as the workshop. The only issue with the individual tutorials was that we had to develop a way to encourage staff to go through the tutorials. To conduct and assist with training, two group members traveled to each museum, except for the EcoTarium where we all attended.

Objective 4: Evaluate the Recommended Tools

After our chosen system was implemented, we made sure that it was effective. We accomplished this by conducting a survey among the general staff. This survey gave us information on what features were most effective and which were being most used. We also included a section asking for comments or opinions on the system. With this data, we decided whether our recommendations should be altered, and if so, how.

Developing museum exhibits is a long-term process, and we only had about two months to examine the new communications process. Although we were not able to observe the process over the full length of an exhibit's creation, we carried out the evaluation process until April to ensure that our recommended system worked properly and was well-understood by museum staff. (This evaluation can be found starting on page 41.)

Findings

We conducted a needs assessment at each museum individually, and of the Exhibit Lab as a whole in order to determine exactly which functions they deemed necessary or helpful for the future of their collaboration. Once we determined what they needed, we were able to determine which of the communication tools we had researched supported functions that met those needs, and give an informed recommendation of what we felt were the best-suited products.

Needs Assessment

In November, our project team visited the EcoTarium, ECHO Lake Aquarium, and The Discovery Museums to carry out need assessments. We developed a baseline assessment of computer hardware and software configurations and capacity, and assessed web-based communication needs with particular regard to the way the members of the Exhibit Lab have worked together in the past and would like to work together in the future. We found that all of the museums, except for the ECHO Lake Aquarium, have limited financial resources and computer capacities. There is also a wide range of technologies being used by different museums. Even within a museum, the hardware and software used by staff members are not uniform. Every staff from each institution also has a wide range of knowledge and skills on different web-based project management tools and communication software.

The needs and capacities of individual institution are summarized in this section. The interview questions used during the process and the raw data collected can also be found in Appendix A.

EcoTarium

The EcoTarium is the leading organization among the Exhibit Lab members. Most of its needs reflect the needs of the whole organization. The EcoTarium is limited both in terms of hardware capabilities and experience. Most of the staff has only limited expertise in email and Microsoft® Office products (primarily Word and PowerPoint); a few staff members occasionally use Adobe Illustrator®. Given the limited expertise and outdated hardware and software, the simplicity and reliability of any ‘new’ systems for project management and communication were top concerns.

The major limiting factor in determining which products are viable for the EcoTarium is the current hardware. Due to the meager budget, most machines are replaced “only when absolutely necessary,” according to Betsy Loring, Manager of Exhibits and Collections (Personal communication, 11/1/11). This means that EcoTarium employees have a wide variety of hardware, including Macs and every Windows operating system from Windows 2000 to Windows 7, and RAM ranges from 512MB to 4GB. Most (but not all) computers run Microsoft Office 2003, and email clients are the personal choice of each employee. Since there is no standard across the institution, email notification is an important feature of any product that the EcoTarium intends to use.

There are no dedicated conference rooms at the EcoTarium, but there are several meeting rooms and classrooms that can be reserved by staff and used for conferences. The EcoTarium itself is a concrete building embedded in a hill, meaning that cell and Wi-Fi service is unreliable, and in some parts totally unavailable. Using a wired connection for any web clients will most likely be necessary. Additionally, the Internet connection speed is typically 1Mbps, which severely limits the amount of bandwidth that any videoconferencing client could use. As a solution to this, the EcoTarium staff would simply have to use only one machine, most likely the best personal laptop available. Using a webcam and speakers, a group of 4-5 people (the expected size for Exhibit Lab meetings) could have a full conference experience without taxing their Internet connection. Lastly, video sharing, though not necessary, would be a welcome feature of any proposed product.

In addition to email notifications, there were a few specifications that EcoTarium staff felt was necessary for any product they might use. The first of these, and the most important, was privacy. Staff should only receive alerts from and have permission to change projects that they are currently working on. Additionally, they want to implement a journal system to provide feedback for meetings and projects. All Exhibit Lab members would be using this system, which is part of the ongoing project evaluation that will be conducted by an outside consulting firm, Randi Korn & Associates. Since these journals are expected to include information, including criticism, of coworkers, it is important that they are strictly confidential. While Randi Korn & Associates has access to all their journals, each individual won't be able to see each other's journals.

Other necessary features are archiving and commenting on stored files. Each document, presentation, and design will go through many iterations, and it is extremely important that different staff members can work on them remotely. This includes backing up and accessing older versions of files to track edits. Additionally, there should be a system for adding comments to files in order to voice concerns and make plans concerning future work on that file. Ideally, commenting on a file would send an email notification to anyone working on that file.

ECHO Lake Aquarium and Science Center

The staff at ECHO Lake indicated that several functions were important to them. These included the ability to create and share timelines and to-do lists; comment on video files; move large 2-D and 3-D design files; and have off-site access. They would also like to have the capability for one person to remotely conduct a lecture for a group of about 25 people; share desktops with other conference attendees; and walk around an exhibit while a conference is underway. Hence, they would like use a mobile video camera to share footage of exhibits, exhibit prototypes, and other three dimensional objects with conferees. However, these functions seem less important to them than those listed above. Items on their “wish list” include the ability to create a timeline of an entire project; delegate tasks to specific employees; and organize a list of web links that includes tags and notes.

The majority of the equipment at ECHO Lake consists of Lenovo products running Windows XP and using Internet Explorer 8 as a browser. However, two machines on the premises run Windows 7 because of the extra RAM it allows, and they are in the process of phasing everyone into using Google Chrome. In terms of equipment to be used for conferencing, they already have a LCD TV, projector, and a screen. They need to purchase a conference microphone and a web camera. They could also use the document camera they already have to show drawings on paper during the video conferencing session.

This project team and ECHO Lake have signed a non-disclosure agreement preventing us from reporting computer and Internet connectivity information.

The Children’s Museum and Theatre of Maine

Although we didn’t have a chance to visit the Children’s Museum and Theatre of Maine (CMTM), various staff answered the needs assessment through email. The content of the

assessment was identical to those conducted at the other museums. The CMTM is located in Portland Maine, the distance from the other Exhibit Lab participants makes file sharing and web communication a necessity. CMTM staff indicated that the most important feature should be that all products are user friendly. Staff are not as familiar with some of the most up-to-date products, and stressed that that simplicity of use and thorough effective training will be key elements in successful implementation. The museum staff suggested that a classroom environment would be the best option for conducting training sessions, rather than user manuals distributed to each location. Also, they are already familiar with some similar products, so they may learn quickly. Staff emphasized that if their most basic needs are not met, communication with the collaboration will be very difficult because the museum has such limited capabilities and resources in this area.

Based upon the needs assessment, the features of chosen software that are absolutely necessary are web conferencing and file sharing. The products chosen should be completely user friendly, as some of the staff has difficulty working on computers. During a web conference, all collaborators will be in the same room to participate. The camera used during the conferences should be portable, exhibits will need to be shown and explored during meetings. In the past, the museum has had difficulty sharing large files; staff sends files back and forth through email. The large files back-up the system, creating a slow and unorganized process to track. Also, they lack audio and visual technology for web conferencing, so appropriate cameras, speakers, and microphones would need to be acquired. Our interview revealed that the museum is very willing to learn new software and better ways to conduct virtual communication, but currently lacks the means to do so.

The Discovery Museums

The Discovery Museums (TDM) is joining the Exhibit Lab as a new member, so they have little prior experience with how meetings are conducted, how members interact and work together, or what types of software the members typically use and how the limitations of the software have impeded previous interactions. As participants in the Exhibit Lab, TDM staff members are expecting that they will need to conduct video conferencing sessions and transfer large PDF and Google SketchUp files.

TDM has a Microsoft® Windows™ based on-site server and all the employees log in from their terminals, running different web browsers and operating systems ranging from Windows XP to 7, with each staff using different software versions. Staff with older versions of Microsoft Office (2003 or earlier) have difficulty opening files from later versions of Office and the conversion can change the format of some graphs and tables, which is both frustrating and wastes staff time. The museum does not have a business license for Adobe, so, except for the exhibit designer who has a standard Adobe license, Adobe Reader is the only Adobe software to which all employees have access. All the employees use Microsoft Exchange 2003 server with their own Outlook applications for their emails and calendars. Denise LeBlanc, the Education Director, has a little experience with BaseCamp from a prior project with another museum in the past. Unfortunately, she had trouble using the software due to lack of training and customer support, and later turned back to telephone, email and Skype for communication.

In terms of conference room hardware and space, they do have a room that can be used as a conference room, with a projector and a projector screen, but they need to purchase the conference microphone and web camera. Wired Internet is available in every room with limited wireless hotspots in some locations. Internet is provided through a Verizon Fios™ connection.

Exhibit Lab Activities and Needs

We also found from the needs assessment that, previously, meetings were held once a month and typically involved about three members from each museum collaboratively working on the design of exhibits. Exhibit Lab members found that traveling to these meetings was a major waste of time and resources. Instead, Exhibit Lab is now planning to meet face-to-face every other month and uses more frequent online meetings in between. In their meetings, the participants

- Share ideas on exhibits
- Creating physical mock-ups of exhibit ideas
- Design and review sketches of exhibit
- Bring in prototypes to be critiqued
- Schedule events on calendar

Exhibit Lab project meetings are physical and dynamic—the exhibit team will make models and demonstrations of their ideas with any available object, and then once an idea begins

to take form, it is quickly sketched and passed around. Betsy Loring had concerns that this hands-on style of meeting wouldn't work in an online conference. Another important limitation for the project is the budget available web products and hardware. High-end conferencing and communication products and services are available in the market today, but the costs of those services are beyond what the museums can afford. We have come up with our own conference room design and communication products to fit their purposes, keeping the cost low without compromising the quality of communication.

Evaluation of the different software and hardware options

To meet Exhibit Lab's needs for better collaboration, our project team evaluated the advantages and disadvantages of various video conferencing tools, calendar scheduling tools, and web collaboration tools. We researched and reviewed commercial products available to meet the needs of the museums. The following table indicates what we thought were the best options in each category.

Table 7. Products considered for Exhibit Lab's needs

Video Conferencing Tools	WebEx Skype
Calendar Tools	Basecamp Calendar Google Calendar SharePoint Calendar When2Meet (Scheduling)
Web Collaboration Tools	Basecamp Dropbox Box Sharepoint Blackboard Learn

In this section, we will discuss each product in detail; we will present the functions of each product and why they are important to Exhibit Lab partners, their advantages over other products in the same category and their disadvantages. Prices for each product are also considered. Detailed pricings on each product provided by the manufacturers are also presented in Appendix D.

Video Conferencing Tools

Because the museums are scattered across New England, it is difficult and inefficient for them to hold meetings in person. It may be useful to hold the most important meetings face-to-face, but it would be tedious to conduct all project meetings in this manner. Fortunately, Internet communication is more than adequate for conducting professional meetings. Since the Exhibit Lab project meetings are physically and dynamically involved, using suitable video conferencing tools becomes important and necessary for online meetings. Exhibit designs and prototypes would be viewed and critiqued during the video conferencing sessions. Many web conferencing systems offer additional features such as file sharing and a chat box to allow alternate modes of communication during a meeting. With quality video and audio equipment, a web meeting can negate the time and expense of travelling to a meeting while sacrificing very little in terms of interaction. Our team reviewed WebEx and Skype to be used as the primary video conferencing product.

WebEx

WebEx is video conferencing software produced by Cisco. WebEx can be run on any platform with a few software installations. This is suitable for the Exhibit Lab collaborative since different museums are using different versions of operating systems. WebEx can support up to 6 conferencing videos at a time, which is enough for the case of Exhibit Lab. Additional features include full screen video conferencing, and follow-the-speaker function. WebEx also allows the host to share files, applications, screen and virtual whiteboard during a conference session. These functions could be useful for the Exhibit Lab Collaborative's physically and dynamically involved meetings. The host even can transfer the keyboard and mouse control to other participants at any time during a meeting, allowing another museum to take over the presentation. It also supports users to call into a meeting from a phone, which is particularly useful when a conferee doesn't have access to a computer at the time of a meeting. The meeting sessions can also be recorded for sharing or later use. Most importantly, Cisco has a 24/7 customer support, online trainings, and demonstration video files on their website.

One disadvantage of WebEx is that it has a lot of functions, making it versatile but also a little complicated for inexperienced users. Also, to start a meeting, the host has to create it, and then WebEx will automatically send an email to all the invitees, who can then join by clicking on

the link. Unlike Skype or Google Chat, a video conference cannot be started by a click of a button. But with proper training and experience, those barriers should not be a problem for the museums, especially since only the host of the meeting has to be familiar with this process.

WebEx comes with two pricing options. For the purpose of Exhibit Lab, we decided that the cheaper option costing \$19 per month, which allows one host and up to 8 other locations to join the conference.

Skype

Skype is an internet-based audio and video communication tool. Some features of this software are free, such as Skype-to-Skype, group audio calling, screen sharing, file transfer, and text instant messaging. Other, more advanced features can be acquired, but this requires either payment per use or by a monthly subscription.

Under a business subscription, the rates are modular, so the customer can add only the features they need. There is also a function called the Skype Manager, where an administrator can control and monitor activity, manage multiple subsidiary accounts, allocate credit for various functions to employees, and generate reports about usage and expenditures. A chart detailing the different packages and their cost is in Appendix D.

In the case of the Exhibit Lab, Skype allows for group video calling for \$8.99 a month. For the best quality, it will support up to five locations at one time. Each location will appear on the screen at once, allowing everyone to see each user or place. Additionally, anyone with a mobile phone with Skype and video capabilities can connect to the group call. Skype also allows for conference calling, and group screen sharing. Group screen sharing was asked for by most museums to be able to collaborate efficiently. Users will also be able to instant message each other during the group video call as well. If there are over five locations involved in a group call, the connection could become very slow making communication difficult. Skype also supports Windows, Mac OS, Linux, and several mobile platforms.

With the \$8.99 per month package, Skype is cheaper than a WebEx subscription, and conferences are easier to set up. One disadvantage is that although customer support is available 24 hours a day with Skype employees, it is only via e-mail or live chat. No telephone support is available. The following table summarizes the required functions or those that would be useful to the Exhibit Lab and whether the products support that function or not.

Table 8. Required functions and features for video conferencing tools

	WebEx	Skype
Conferencing Functions		
Multiple video conferencing	X	X
Screen sharing	X	X
Instant text messaging/chatting	X	X
Full screen video	X	X
Phone call-in function	X	
Virtual whiteboard	X	
Online presentation	X	
Record conferencing sessions	X	
Application sharing	X	
App for mobile devices	X	X
User Friendliness		
Easy to set up		X
Easy to use		X
Support		
Online support	X	X
Telephone support	X	
Price	\$19.00/month per host	\$8.99/month per user

We chose to recommend WebEx for the Exhibit Lab’s needs. Although the price is higher, only one person needs a paid WebEx account to start a meeting, unlike Skype, in which all members would need to be using paid accounts for the full experience. WebEx also supported functions such as the whiteboard, session recording, and phone call-ins for members who are away from their computers or who use low-performance computers that might not run smoothly during a meeting. WebEx also has telephone support, which is important for Exhibit Lab members, and using WebEx will also give them access to WPI’s tech support.

Calendar Tools

In order to conduct meetings with members across each museum, some sort of calendar software is necessary. Project leaders will need to be able to check the availability of all team members and find the times that work best. Having a central location to check the schedule of upcoming deadlines and meetings also helps a project move along smoothly. Members of each museum identified that a calendar tool would be extremely helpful. Specifically, they stressed ease of use and the ability to receive automatic email updates as required features. Our team has identified some leading calendar and scheduling products they may find fit their needs.

Basecamp Calendar, Google Calendar, SharePoint Calendar, and When2Meet scheduling tools were researched for this purpose.

Google Calendar

Google Calendar is a browser-based calendar system that allows each user to create multiple calendars for personal use or for sharing. The calendar is tied to the user's Google account, and is integrated with the rest of the Google product suite, including Google+ and Gmail. The user can create any number of sub-calendars, as well as view calendars shared with them by other users, and invite or be invited to events. This means that a calendar can be created for each administrative group or project team, so that each user will only be alerted of events that concern them and will not be inundated by a flood of information that is not relevant to them.

When a user creates an event, he or she chooses a name for it and adds a time and location to it, if applicable, and can add comments, so that everyone invited will be able to see the details of the event quickly and easily. Users can adjust their privacy settings for each meeting. For the purposes of the Exhibit Lab, most events should probably be set to private. This means people who do not have access to the calendar the event is posted on will not be able to see the details of the event. Even if the event is not shared, users can mark themselves as "busy" during that particular time period. By doing this, event organizers can check to make sure when everyone they want to invite to a meeting is available and no one will be double-booked, provided that they keep up-to-date with their calendar.

Google Calendar requires no additional software, and can be accessed on mobile devices such as tablets and smartphones. It also meets the privacy requirements the Exhibit Lab desires and can alert users to events, deadlines, and updates via email, whether by Gmail or another client. Additionally, like the rest of the Google suite, it is entirely free to use.

SharePoint Calendar

SharePoint is a tool made for professional collaboration. It enables users to take advantage of many features in order to successfully communicate, collaborate, and more. In their needs assessment, each museum suggested that a calendar tool would make scheduling easier. Unique to SharePoint, users are able to sync their outlook calendars with the SharePoint calendar. This is a very useful feature because many of the staff working in the collaboration

uses the outlook calendar for their current scheduling needs. SharePoint calendar would create an easy switchover for those who are using Outlook. The downside to this calendar would mainly affect those who are not using Outlook. A majority of the staff across each museum use non-Outlook email clients, so they would have to get a new address and use the Outlook client in order to sync to the calendar. Using two calendars would be confusing, and would likely cause some staff to discontinue use of SharePoint, negating its usefulness as a calendar. The SharePoint Suite costs \$62/month for six accounts, which is how many Exhibit Lab would need. Each museum uses one account, and all members of a museum share the same account. One account will also be required for WPI support, and one for administration.

[When2Meet](#)

When2Meet is not a calendar, but is a website that helps users schedule events. The event creator names the event and sets a time period for it, and then a link to the event is generated. The user then emails this link to everyone they wish to invite to the event, and each user then fills in on the calendar when they are available. Once everyone has done this, the calendar displays who is available when, and the times with the most overlap are shown in darker colors. When a user looks at the calendar, they will be able to tell at a glance when would be the most convenient for everyone to meet. If there is no time when everyone can meet, the calendar still displays when the most people are available, so the event coordinator can pick a time when the most people can make it.

One advantage of When2Meet is that it is used on a meeting-by-meeting basis. If users do not keep their calendars updated, the calendar won't be useful for scheduling meetings. When2Meet circumvents this project by having each user actively mark their availability, ensuring that they are actually available at that time instead of just appearing to be available because of an incomplete calendar.

When2Meet is free to use, and is private, as only people invited to the event will be able to view it. However, emails are not automatic, and must be sent out manually. Additionally, the calendar only goes up to one month in the future, meaning planning events more distant than that would be awkward. Overall, it is a useful tool, but it has limited application. It should not be used as the sole scheduling tool of the Exhibit Lab, but it should be kept in mind as it has some use for scheduling small meetings in the short term.

Table 9. Required functions and features for calendar tools

	Google Calendar	SharePoint Calendar	When2Meet
Calendar Functions			
Browser-based	X	X	X
Able to share/sync calendars	X	X	
Users can create & share events	X	X	
Email notifications (Non-Outlook clients)	X		
Microsoft Outlook integration		X	
Users can display availability	X		X
Support			
Online support	X	X	
Phone support		X	
ATC support through WPI		X	
Price	Free	\$62/month*	Free

*SharePoint Calendar is only one of the features of SharePoint. The price is included in this table is the price of the complete SharePoint package for the entire collaborative.

Our original recommendation was that the Exhibit Lab would use Google Calendar, but when they decided to use SharePoint as the main document-sharing service instead of Basecamp, we all agreed that it made more sense to use the SharePoint calendar in order to keep everything in one place. The only real downside is that SharePoint Calendar only sends email notifications to Microsoft Outlook addresses, which makes it inconvenient for users who do not have an Outlook email address. We circumvented this problem by creating new email aliases for each user, and simply redirecting them to their preferred email accounts.

SharePoint has the advantage of a much wider range of support options than Google. Both have online tech support and troubleshooting, but only SharePoint has phone support. SharePoint also is supported by WPI. Through the ATC, Exhibit Lab members have access to immediate tech support with staffs who have worked closely in setting them up with SharePoint and who are familiar with their specific needs and problems.

Web Collaboration Tools

Like with any major project, getting from the concept stage to the final design of an exhibit is a complicated process that requires much iteration. Documents, photos, designs, meeting minutes, and other files will all need to be available for viewing and editing throughout

the duration of the project. The Exhibit Lab will need a web collaboration tool that can keep all of these files organized. They requested that any web collaboration product have several features: e-mail notifications when a document was uploaded or changed; archiving or version histories to view older versions of files; and privacy and security features in place to prevent users from viewing files that they should not have access to. We have identified several products they may find useful, which all differ in cost, user experience, and additional features that are available. The team researched Basecamp, Dropbox, Box, SharePoint, and Blackboard Learn.

Basecamp

Basecamp provides a utility to share files for a particular project. Whenever a file that has been uploaded is changed, Basecamp maintains a version history of the file, along with the name of the user that posted the revised file, and the time that it was posted. Files are viewed in a thread-like fashion, and can be organized based on user preference.

As far as the Exhibit Lab team is concerned, Basecamp has several positive qualities. It does not require any program to be installed on a user's computer, thus bypassing many software conflicts. It is browser-based so nearly any computer with Internet access can use all of the features of Basecamp, as can several popular mobile devices. Overall, Basecamp is very easy to use which is of concern to several members of the Exhibit Lab, considering their track record with other programs. Lastly, e-mail alerts can be sent to anyone chosen by the person who posts the file, so only relevant personnel are updated when files are changed. On the negative side, support for the program is only provided via e-mail. In the past, the Exhibit Lab staff had problems with software support. Previous attempts at using web-based tools failed because some team members are not very tech-savvy and support was not very good. In light of this, the team wants a software package that is accompanied by phone support.

The most relevant pricing option, based on Exhibit Lab's needs, is the Basic plan at \$24 per month. This plan offers unlimited users and 5 GB of storage space. If more storage space is required, the next step up provides 15 GB for \$59 per month. In any case, each individual institution would not have to purchase the software, as one instance can support the entire Exhibit Lab collaborative.

Dropbox

Dropbox is an online file sharing and storage utility. Users can have individual, private folders or shared folders among several people. If the user desires that a particular file be public, a hyperlink can be created that point directly to a specific file. The free version of Dropbox allows users 2 GB of storage space, which should be adequate for Exhibit Lab use. This can be increased to 10 GB by inviting other users to share folders. If more space is desired, a paid account can be initiated. With Dropbox for teams, a much larger storage space is available, and a single user can administrate all of the users on the team account. In any standard Dropbox account, previous versions of all files are saved for 30 days. However, to maintain an indefinite history, users need to pay for a utility called Pack-Rat. This add-on saves previous versions of all files indefinitely. The Exhibit Lab expressed interest in being able to do this, but it will cost more unless a Teams account is purchased in which case this functionality is included.

Dropbox can run on Windows, Mac, Linux, iPad, iPhone, Android, and BlackBerry. Aside from uploading files to the Dropbox website, there is a small desktop application that can be downloaded. This integrates Dropbox into the file structure of the device it is installed on. This means that a file can be copy-pasted or clicked and dragged to the Dropbox folder in the computer's file-exploring utility. This makes it very easy to use, which plays right into what the Exhibit Lab is looking for.

Box.net

Box.net is also an online file-sharing and storage tool similar to Dropbox, but with more administrative and management tools. One main advantage of Box.net is that invited collaborators can post comments on shared files, which is the main requirement for Exhibit Lab collaboration. It can also alert users of file changes via e-mail. This is important because most staffs use e-mail as their main communication method, so sending an e-mail notification whenever a collaborator edit, upload, or comment on shared files could grab their attention. Box.net also stores version history of the files, so staffs can go back and check earlier versions of the file and recover them if they made a mistake. Box.net is also available for several brands of mobile devices. There are many applications that directly support Box.net. If a customer uses a particular piece of software that is not supported by Box.net, the end user has access to developer tools to integrate Box.net into their commonly used applications. On the other hand, unlike

Dropbox, Box.net has an upload file size limit, meaning, for a free account, documents or videos over 25 MB cannot be uploaded. Out of the four account types, our recommendation for Exhibit Lab would be the free account. Exhibit Lab would be mainly sharing document files or photos, so 25 MB is large enough for their purposes. Since Box.net charges per user, using business account (\$15 per user per month) would be too expensive for Exhibit Lab.

SharePoint

SharePoint has a wide variety of features, but the main reason for the collaboration to use SharePoint would be to share files. SharePoint has features for archiving, commenting on files, and notifying users of updates. All of these features have been requested by the collaboration, and would be greatly useful to them. One advantage of SharePoint over other file sharing products is that it has a check-out/check-in features, which allows only one person to edit a document at a time, avoiding accidental overwrites by several people. The one downfall of SharePoint is that it is not very user friendly. It will take in depth training to ensure that the product will stay in use by all staff members. Additionally, SharePoint has many extraneous features that may create clutter. Because SharePoint is supported by WPI, though, the ATC can assist in setting up SharePoint and providing on-call tech support. The total cost of the SharePoint package comes out to \$62/month.

Blackboard Learn

Blackboard Learn is a website used by WPI for the myWPI system, which allows for better communication between professors and students. It allows students to check grades, submit assignments, and view announcements. Although it's designed for university use, many of its features can be adapted to fit the needs of the Exhibit Lab.

If project leaders are designated as "instructors," they will have the ability to post assignments and set up submission forums. This will allow them to set project deadlines and will give everyone else a simple, organized way to submit their portion of the project. Additionally, any member can upload files such as documents, PDFs, and pictures to be viewed and downloaded by the other members of the "class." Only instructors can post comments on a file, but there is a forum that can be used to discuss each item that needs changing. Whenever edits are made, users can be notified by email.

Because of WPI’s licensing agreement, Exhibit Lab would be able to use Blackboard for free and have access to WPI’s support network. However, it is missing some important features. There is no archiving feature in Blackboard, so either new versions of files will replace old ones or they will be uploaded as new files, which would make the site very cluttered. The lack of file commenting is another absent feature that Exhibit Lab desires. Overall, the site is designed for student-professor interaction, and it would be awkward to adapt to the needs of the Exhibit Lab collaborative.

Table 10. Required functions and features for web collaboration tools

	BaseCamp	Dropbox	Box	SharePoint	BlackBoard Learn
Features					
File sharing	X	X	X	X	X
Cloud Storage	X	X	X	X	X
Comment on files			X	X	
E-mail notification	X	X	X	X	
Version History	X	X	X	X	
Privacy	X	X	X	X	X
Check-in/Check-out				X	
Type					
Web based	X	X	X	X	X
Software based		X			
Support					
Online support	X	X	X	X	X
Telephone support				X	
WPI support				X	X

We chose a combination of BaseCamp and Dropbox as our final recommendations. We felt that BaseCamp had a better user interface than SharePoint and would be easier for Exhibit Lab members to use. We also suggested they use secure Dropbox accounts to handle the private journals. Apart from the journals, though, we recommended that all documents go on BaseCamp, as they could be commented on and older versions would be saved.

The details on the findings from the above products were presented to the Exhibit Lab members during the November workshop. Meeting the group’s needs, price, and tech support were the main features focused to choose the products. The recommendation our group gave and the products chosen by Exhibit Lab are presented starting on page 35.

Conference Room Design and Hardware

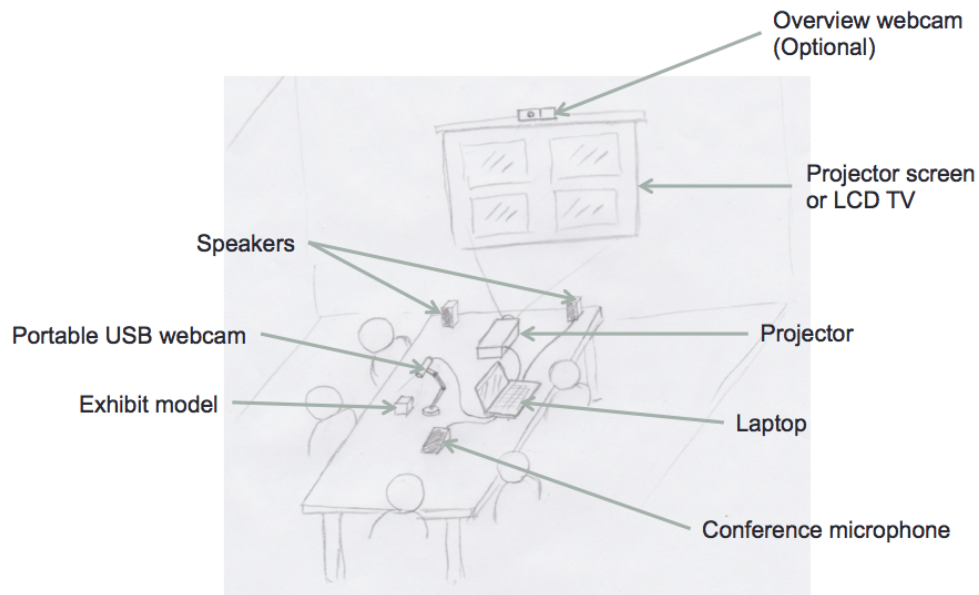
Since limited funding is available for web products and hardware, we designed the conference room with devices that are absolutely necessary for good web communication.

There would be a projector screen or LCD TV so that everyone can see what other people at different locations are broadcasting. A laptop, through a Wi-Fi or LAN cable connection would be used to run the communication software. It would also be connected to an omnidirectional conference microphone in order to avoid using the low quality built-in microphone typical of most laptops.

Exchanging exhibit design and prototypes is one of the main events during an Exhibit Lab meeting. Using the web camera on a laptop would be difficult show an exhibit around, but a mobile webcam should alleviate this problem. A web camera with a multi-jointed stand was chosen for this purpose. Models, sketches, and diagrams can easily be shared with the other locations simply by holding them up to the camera, or if necessary moving the camera to provide better focus. It can also be used as a document camera to broadcast exhibit designs being drawn on paper. Since they would all be focusing on exhibit design, having a view of the exhibit and hearing the explanation from the host in real-time are enough for the purposes of the Exhibit Lab; face-to-face video conferencing is not necessary, though the camera can be used to focus on one particular speaker if so desired.

Two speakers would be connected to the laptop to produce higher quality sound than from the built-in speakers. An optional Bluetooth web camera can be fitted on the screen to provide a view of all the participants in the room. The two cameras can be switched from one to the other easily in the video conferencing software settings. The following figure shows our idea for the conference room design.

Figure 3. Conference room design



The following devices were researched and recommended for use in the conference room.

IPEVO Point 2 View



The IPEVO Point 2 view is a USB powered 2-in-1 camera that can be used as a web camera or a document camera. Unfortunately, the retail price for this item is \$69.00, which made it prohibitively expensive for each museum to acquire one. Additionally, this is a high-performance camera, and it is more than the Exhibit Lab requires for the purposes of their meetings. Only the Discovery Museum bought one of these webcams. Each meeting participant has since made their own arrangements, with a variety of cheaper web cameras.

MXL AC404 USB Conference Microphone



The MXL USB powered microphone provides a loud and clear voice capturing in a conference room environment. Unfortunately, we found that using this microphone led to a high amount of feedback, but this can be fixed by turning off the computer's onboard microphone.

More details on the above products and other hardware we recommended can be found in Appendix E.

Initial Recommendations

During the November workshop, we made a presentation to the Exhibit Lab members on the web products and hardware we have researched and provided them our recommendation based upon our research and knowledge of the Exhibit Lab's needs. We recommended software that we thought would best fit their needs with respect to ease of use and security; we chose Basecamp because of its simplicity, flexibility, and additional features including to-do lists, e-mail notifications, and time tracking for individual team members. For web conferencing, we recommended WebEx due to its ability to share files, applications, screens and virtual whiteboards, phone conferencing, in addition to recording video and audio conferencing sessions. It also has 24/7 tech support from Cisco. As a secure way to share personal journals and large video files, we recommend Dropbox. It has a very easy to use interface, works on many platforms, and has robust security measures in place.

Our recommendations at the workshop meeting were not presented as final mandates, but as informed suggestions. We presented each of the listed products so that the Exhibit Lab members could make an educated decision on what products to use. They followed our recommendations on using WebEx for the main video conferencing tool, as they agreed WebEx

is the easiest to use and could easily be tailored to their needs. However, after asking questions and receiving feedback during the meeting, they decided to use SharePoint over Basecamp. The main reason for this was that with SharePoint they would have access to the WPI support network, which would not be available for Basecamp. We had made the recommendation for Basecamp without anticipating that the museums would value customer support so much higher than the other features. Several members of the current collaborative have had bad experiences with poor customer support in the past, and cited it as a major reason previous collaboration methods had failed. Having immediate telephone support was absolutely necessary, as online support would not be responsive enough to fix problems that occur during or just before a meeting, which is when they would often be encountered. Additionally, the promise of having WPI's own support network on-call was a huge advantage SharePoint had over BaseCamp. Since the EcoTarium is so close to WPI, they can even have tech support assistance on-site if they feel it is necessary. Although we felt that BaseCamp had a simpler interface and better fit their other needs, we conceded that the significantly higher level of support that comes with SharePoint could outweigh these other advantages. Additionally, SharePoint supports archiving and file commenting abilities that BaseCamp lacks.

After this decision was made, several members of our team attended a SharePoint training session in order to familiarize ourselves with it so that we could help the museums implement and use it. It was decided not to use Dropbox so that all of the materials would be in one place. If members started using Dropbox and SharePoint interchangeably, it could get very disorganized. For the sake of simplicity, it was decided that the Exhibit Lab would only use one, and SharePoint has additional functions such as version histories, file commenting, groups, and a calendar that Dropbox lacks. We also recommended that the journal entry system be done on SharePoint using password protected Microsoft Word documents. Each member would upload a Word document encrypted with a password, known only to that user and Randi Korn. For the sake of simplicity, they chose simply to include their journals in private email responses with Randi Korn & Associates.

Training and Implementation

The final stage of our project was to provide the staff with training on the selected products, evaluate their usefulness to the museum partners, and modify them and/or the training materials to better meet the staff needs. To make the training effective, we made video tutorials as well as printable user guides on SharePoint and WebEx and tested them at the EcoTarium with Betsy and Alexander before distributing it to the rest of Exhibit Lab. After the training and implementation process, we took note of any problems encountered with the system, and consulted with WPI support network staff to address these problems. If the products we have implemented do not work as planned, we or another project group may make new recommendations based on the working experiences of the museum staff.

Training Materials

The first step in the process of training the Exhibit Lab member was to make video tutorials. We identified the main features of WebEx and SharePoint to be included in the videos. Camtasia was used to record the screen while we demonstrate how to use the features. The videos are divided depending on their topic (i.e. wiki, library) so that it is easier to browse through the video. Most of the time, a person watching the tutorials wants to know how to do a specific task. By dividing up the video into smaller sections, the viewer doesn't need to scan through a long video to find those pieces that address the desired topic. The recorded videos were posted on YouTube and the links to those videos were sent out to the Exhibit Lab members. The videos can be accessed at:

<http://www.youtube.com/user/exhibitlab/videos?view=1>

Video tutorials can be awkward to use, as they often require pausing the video in order to switch to the program the user is receiving training in, and going back and forth for every new step in the process. To ease the process, and to help users who may prefer written instructions, we also made printable user guides for both SharePoint and WebEx. The user guides contain more detailed information on the products than is presented in the videos, and include screenshots of the relevant pages so that they are easy to follow along with. We expected that most users would view the video tutorials first and then refer to the user guides for more detailed

instructions and/or clarifications. The user guides can be viewed as a soft copy on the computer using Microsoft Word or Adobe Reader, but we recommended the users make a hard copy so that they can view the product and the tutorial side-by-side more easily. The soft copy includes an interactive table of content, so that the user can click on the specific topic on the content to go to the desire page. These user guides were first made available to Betsy and Alexander on February 23rd for them to review. We edited the materials based on their feedback, and the completed user guides were made available to the Exhibit Lab as a whole on March 5th. The user guides can be seen in Appendix G and Appendix H.

Problems Encountered and User Evaluations

During the process of implementation and evaluation, several problems were encountered. Each problem was discussed among members of the team, our advisor, the WPI ATC department, and the EcoTarium in order to troubleshoot and come up with solutions to these problems. Although we solved most of them, some could not be easily solved due to limitation of resources. In these cases, the museums either continued using their traditional methods to get the job done, or we found some sort of workaround. Despite these bugs, the current setup is working satisfactorily. Exhibit Lab members are sharing files for collaboration, and several web conferences have been conducted successfully.

Reverberation effect in WebEx

After trying out WebEx with the EcoTarium using proposed hardware, the first problem to be encountered is the reverberation effect. Because web conferencing uses the Internet connection instead of the telephone for audio transmission, there is a minor lag between when a person speaks and when another person on the other end hears. And since we are using open speakers and microphones, the sound produced by the speakers is captured by the microphone and broadcasted back to the other end. The same scenario happens on the other side of the conference, and reverberation effect is created.

One way to solve this problem is by using echo-cancelling equipment, which may be rather expensive. Another solution recommended by Nefsis Corporation (www.nefsis.com) is to increase the distance between the speakers and the microphone and to avoid moving the microphone during a conference. The problem could also be solved by each person using

personal headphones instead of the open speakers. Additionally, this effect is lessened by turning off the computer's on-board microphone. Meeting members could also use conference telephones. This would also help if a user is experiencing connection troubles. Since there is no lagging with telephones, attending museums can call into the meeting using a conference phone rather than attend via an internet connection. WebEx does have a toll-free call-in feature, so this is a feasible alternative.

SharePoint server

Back when SharePoint was selected by Exhibit Lab as the product to be used for their group collaboration, they planned that SharePoint would be hosted by WPI server. Unfortunately, the Microsoft agreement with WPI doesn't allow the school to host servers for anything other than school's use, so the ATC worked on purchasing a separate SharePoint account for Exhibit Lab, which took more than a month to establish. Also, to keep cost down, only six accounts were purchased; one for each museum, one for the WPI project team, and one administrator account.

Email notification

During the literature review, we learned from the SharePoint website and from the WPI ATC department that it contains an email notification feature. Due to our lack of experience with SharePoint, we only realized after implementation that the email notification system of SharePoint didn't meet the needs of the museums. What the museum staff expected was that when uploading a document, they would be able to enter the email addresses of people to send email alerts to. But in SharePoint, email alerts can only be set to a folder or library, not individuals. This means that in order for email alerts to be sent to specific people, the email would have to be sent to a group containing those people that were already set up by an administrator, i.e. Betsy Loring. The administrator can set up a list of emails for SharePoint to send email alerts to when a new document is added to the library or when a document in the library is edited. Only the administrator has access to edit the list. When someone else wants to upload a document, the email list cannot be edited, so email alerts would be sent to everyone on the list, not just the relevant people. The solutions are either for the poster or editor of a document to manually email everyone they wish to be notified of their changes, or to have an

administrator create an email list beforehand for them to use. Whenever a new project team is created that will need to have ongoing discussions and edits, they should request that the administrator create an email list for them to use.

Journal entry system

Although we recommended using password encrypted Word document and SharePoint as the journal entry system, Exhibit Lab members have decided to stick to traditional email. Each person will write their journal as an email and send it to Randi Korn & Associates. Using email as the journal system is simpler than what we proposed, but it may be difficult to keep track of all the journals over time. For organizational purpose, our team recommended to using a precise naming format (name-journal#) for the subject when emailing journals to Randi Korn, so that the journal emails can easily be searched and tracked.

Evaluation

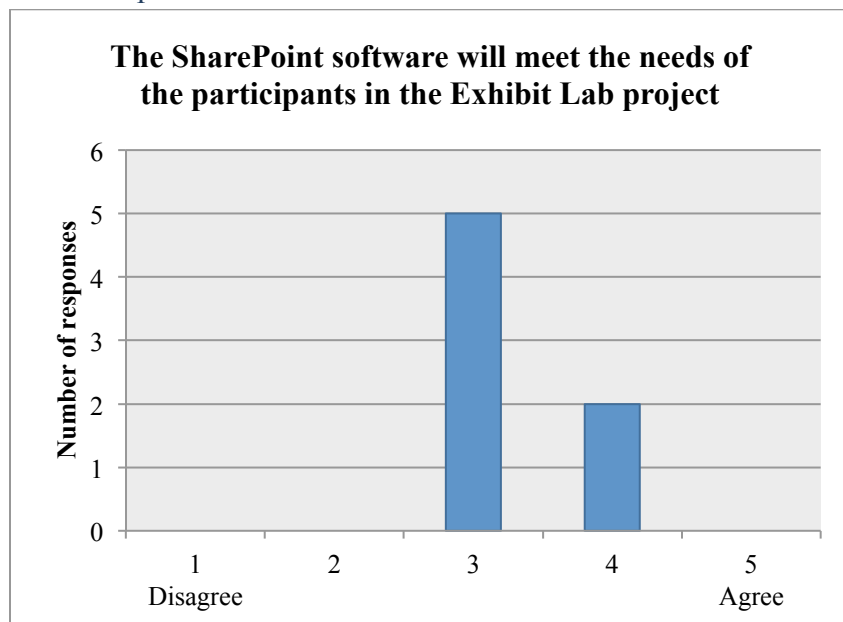
In this final section, we evaluate how well the products were at meeting the museums' needs and how useful, ease to use, and effective our training materials were. To collect the evaluation data, a survey form was created in SurveyMonkey™, a free online survey software and questionnaire tool. We were limited to a maximum of 10 questions since we were using the free version. This survey is included as Appendix F.

We originally used Google Forms to create the survey, but we found that it cannot create tables as shown in question 3 and 4 in Appendix F. Without using the tables, each row in the table must be made into a multiple-choice question, which lengthens the survey. It is important to keep the survey short so users don't become bored and abandon the survey before completing it. The survey was sent out to the Exhibit Lab members on April 3, 2012, after their WebEx conference. The responses were collected two weeks later.

The following are the responses to the survey from the Exhibit Lab members. A total of seven people participated in the survey out of the nine who participated in the collaborative Exhibit Lab activities.

SharePoint survey result

Figure 4. Responses to whether SharePoint meet the needs of Exhibit Lab



Five of the seven respondents indicated that they did not feel strongly either way that SharePoint is an effective communication and collaboration. Only two of the respondents indicated that they feel SharePoint is effective, but fortunately no one feels that it is a poor choice of program. One responded that SharePoint is a little complicated and prefers Basecamp. A few said they haven't used SharePoint extensively to know it very well. It is likely that the longer they use SharePoint and the more familiar they become with it, the more streamlined their collaboration will be. As shown below, most users did not use the training materials we provided, which may account for why they do not consider SharePoint exceptionally useful – They may not be aware of its full functionality.

For the following charts, each dot represents one respondent. Not all respondents answered all questions.

Table 11. Responses to how useful are the SharePoint training materials
Please indicate how useful are the SharePoint training materials

	Haven't used the material	1 Not useful	2	3	4	5 Very useful
User guide	● ● ● ● ● ●				●	
Training videos	● ● ● ● ● ●					

From the responses, most of the people obviously have not looked over the training materials. One responded that SharePoint is very intuitive, but another one said the opposite. Some don't know where to access the training materials, and some of them have put it on their to-do list.

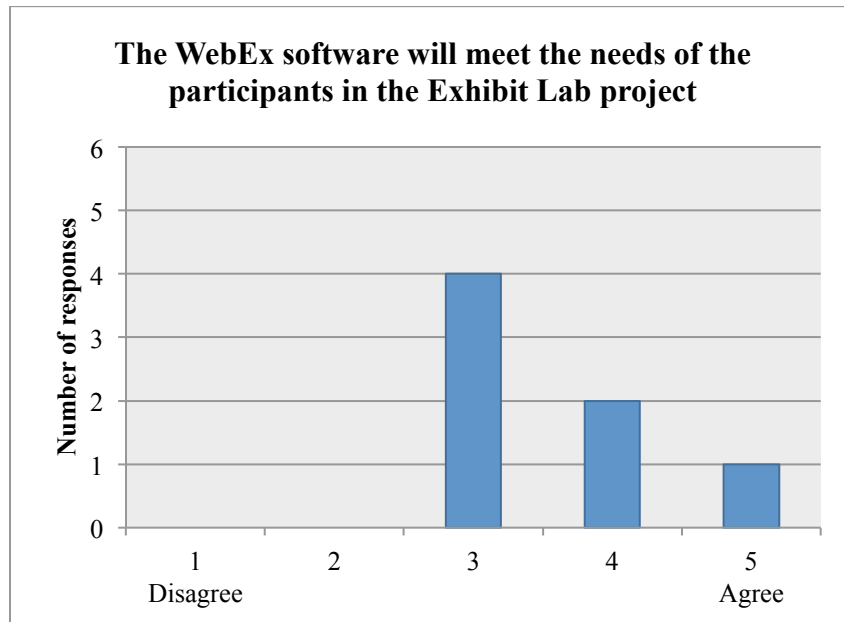
Table 12. Responses to how easy or difficult the SharePoint features are
Please indicate how easy or difficult you found the following SharePoint features

	Haven't used the material	1 Hard	2	3	4	5 Easy
Upload a document	● ●				● ●	● ●
Download a document					● ●	● ● ●
View a document on SharePoint						● ● ● ● ●
Calendar	● ● ●			● ●	●	●
Search function	● ●		●	●	●	●

Of the respondents who used each SharePoint feature, most felt that they were easy to use. It appears that at least one of the respondents had difficulty with the search feature.

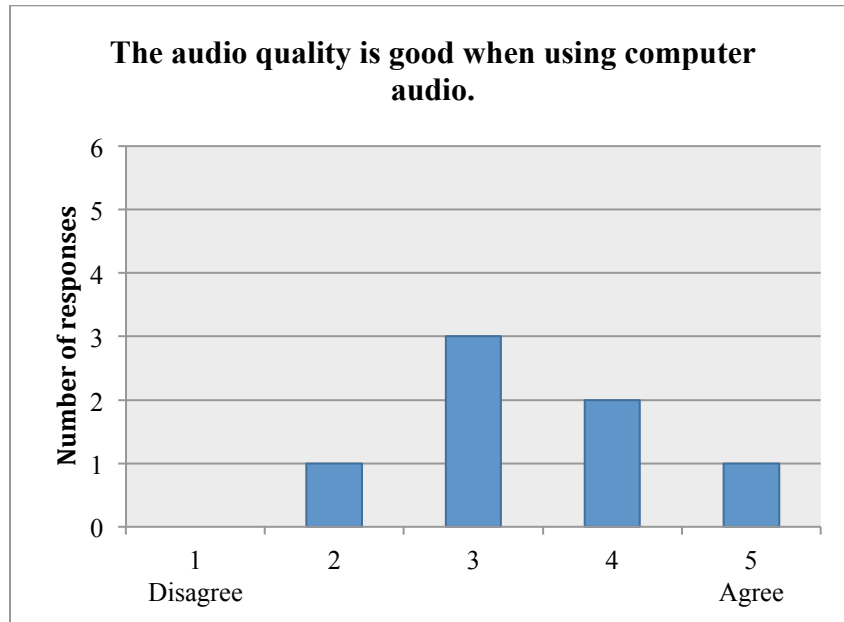
WebEx survey result

Figure 5. Responses to whether WebEx meet the needs of Exhibit Lab



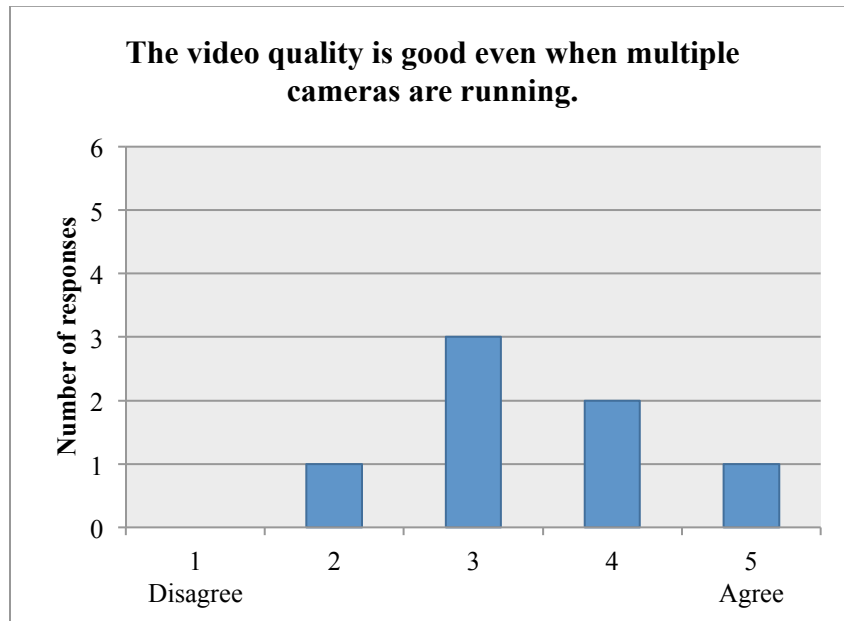
Most people commented that WebEx is working well. They have had successful web conferences in the meantime, and minimal tech support was required.

Figure 6. Responses on the quality of WebEx audio



There were a few issues with the microphones and web cameras at the Discovery Museums before, but the issue was solved and the last meeting on April 2, 2012 was a success.

Figure 7. Responses on the quality of WebEx video



One respondent said that the last meeting went well since the WPI ATC participated and solved the issue with using external microphones and cameras. One of them also stated there are some delays and pixilation when the Internet connection speed is slow.

Table 13. Responses to how useful the WebEx training materials are
Please indicate how useful are the WebEx training materials

	Haven't used the material	1 Not useful	2	3	4	5 Very useful
User guide	● ● ● ● ● ●			●		
Training videos	● ● ● ● ●		●			

It appears that few respondents used the training materials we provided, and those who did found them moderately helpful at best. Without more respondents, though, we cannot make a good determination on what we could change to improve their usefulness.

Table 14. Responses to how easy or difficult the WebEx features are

Please indicate how easy or difficult you found the following WebEx features

	Haven't used the material	1 Hard	2	3	4	5 Easy
Schedule a meeting	● ● ● ●		●	●	●	
Join a meeting	●			● ●	●	● ● ●
Switch presenter	● ●			● ●	●	● ●
Whiteboard	● ●		● ●	●	●	●
Record meeting	● ● ● ● ● ●		●			
Screen sharing	● ● ●		●	● ●	●	

It is not surprising to see a lot of people who have not used many of the features since most of the work is handled by the host. All the other meeting members need to know how to do is join the meeting. They also stated that they have not used the features like recording the meeting or screen sharing, but they think those features are important and will likely be useful in the future.

We've worked closely with Betsy and Alexander to get Exhibit Lab set up with WebEx, and we've even had personal training sessions with Betsy to familiarize her with WebEx's more complicated features. Since she hosts the web meetings and is present for all of them, she is the only one who really needs to be familiar with the more advanced features, such as setting up a meeting.

Conclusions and Recommendations

Looking back at our project experience, our team can draw some conclusions about what our team and the museums have done. The biggest and arguably the most important conclusion that we can draw is that keeping a good working relationship with the employees of the museums is very important. We were able to use the staff at the EcoTarium, the closest museum to us, as test subjects for some of our ideas and we got timely feedback from them to refine our training tools before distributing them to the entire collaboration.

We were surprised when Exhibit Lab chose SharePoint instead of BaseCamp as we had recommended. Our group didn't realize how much they valued the higher level of tech support over other features. During our needs assessment, we only asked for a list of what they desired, and we didn't consider asking them to prioritize their desires. If we had asked which features they considered more important than others, it would have been easier to weigh the options appropriately before presenting them. Instead, we weighed the options based on our own standards: prioritizing ease of use and simplicity. In hindsight, we should have asked in the interviews for a relative ranking of desired functions so that we could make recommendations more in line with what Exhibit Lab was looking for.

Regarding the Exhibit Lab's choice of software, we believe that we presented them with too many options to choose from during our initial presentation. Presenting so many varied and unfamiliar products in such a short time was probably confusing, which may not have led them to make the best decision. We should have narrowed our recommendations down even further, so they were not overwhelmed with information that may not have been entirely relevant. If we only presented two or three products for each category, the information would have been much easier to digest, and they could have made a more informed, confident decision. Future IQP groups working with Exhibit Lab should take care to prevent this kind of information overload.

There are several things we learned and concluded from SharePoint specifically. File management in SharePoint requires fairly tight control over the files, their metadata, and where they are uploaded. Also, the calendar inside SharePoint will become useless very quickly if people stop using it, so it should be kept current and monitored. Both of these mean that SharePoint has to be used consistently and correctly. Users must comply to the standards Betsy has implemented, or the whole site will quickly devolve into clutter. This means it is important to not only provide training, but to continually encourage the correct use of SharePoint features.

Several of Exhibit Lab's past projects, including their collaborative wiki, failed because the users did not use it frequently, so we can assume they will encounter this problem again moving forward. If they are not vigilant about using the resources provided, they will eventually become useless.

In terms of hardware, at the end of our project we found that our previous hardware recommendations were somewhat irrelevant, given the operating budget and existing hardware at some of the museums. All the museums should be careful when acquiring new hardware to be sure that it is compatible with the hardware and software being used by the rest of the Exhibit Lab. They did not have to strictly follow our recommendations, however, and if they already have compatible hardware there is little need for them to obtain new products.

Overall, we accomplished three major things at the end of this project. First, we researched and recommended solutions for every problem that the Exhibit Lab presented us with. After the initial implementation of their chosen software, we assisted in troubleshooting and finding some workarounds to bugs they encountered. We also created extensive training materials for current and future users to become familiar with the Exhibit Lab solutions.

Our recommendations for future IQP groups working with Exhibit Lab is to acknowledge and correct the mistakes we made along the way. Be sure not only to ask what their needs might be, but how much they need them. Their priorities might not match your own, but they might not communicate that without being asked directly. Don't make any assumptions about what they think or want, be sure they make their desires explicit.

It is also important to remember your role as informed and educated consultants. We presented the complete findings of our research, and we feel that the flooding the Exhibit Lab members with so much information negatively impacted both our presentation and their ability to make an informed choice. We should have only presented what we felt were the best solutions to their problems, and left out products that we determined were not correct for them. Our role was to present relevant and helpful information, not as much information as we could find.

Our last recommendation is to continue what we feel is the greatest success of our project, which is our excellent working relationship with Betsy and Alexander of the EcoTarium. Since the EcoTarium is so close to WPI, and Betsy handles much of Exhibit Lab's administrative needs, we had the perfect setup to get feedback on our work. This meant that we could better tailor our recommendations to the needs of the museum. Later, they assisted us in helping

determine what the problems were with the newly implemented system so that we could come up with fixes for them. They also acted as a test group for the training materials, so that we could refine them before distributing them to the rest of the museums. Future IQP groups will also want to work closely with the EcoTarium in order to have a good idea of what Exhibit Lab as a whole wants and needs.

References

- Anderson, G. (2004). *Reinventing the Museum: Historical and Contemporary Perspectives on the Paradigm Shift*. Altamira Press.
- Arinze, E. N. (1999, May 17). *The Role of the Museum in Society. Public lecture at the National Museum, Georgetown, Guyana*. Retrieved from http://www.maltwood.uvic.ca/cam/activities/past_conferences/1999conf/CAM'99-EmmanuelArinze.GuyanaFinal.pdf
- Children's Museum and Theatre of Maine. (2010, June). Retrieved from 2010 Annual Report: [http://www.kitetails.org/pdf/FY2010 Annual Report \(no names\)\(lowres\).pdf](http://www.kitetails.org/pdf/FY2010%20Annual%20Report%20(no%20names)(lowres).pdf)
- EcoTarium (2010). *Annual Report Making Memories 2010*. Retrieved September 7, 2011, from <http://www.ecotarium.org/support/ecoar2010.pdf>
- EcoTarium (2004, January 29). *New England Museums Join Forces To Build Ecology Exhibits. EcoTarium News*. Retrieve from <http://www.ecotarium.org/about/news/20040129Jane.html>
- Hein, H. (1990). *The Exploritorium. The Museum as Laboratory*. Washington, D.C., Smithsonian Institution Press.
- Holton III, E. F., Bates, R. A., & Naquin, S. S. (2000, Summer). Large-scale performance-driven training needs assessment: A case study. *Public Personal Management*, 29(2).
- Parman, A. (2006, February). *The Museum's Community Role. CultureWork: A Periodic Broadside for Arts and Culture Workers*, 10(1). Retrieved from <http://aad.uoregon.edu/culturework/culturework33b.html>
- The Discovery Museums. (2010). *The Discovery Museums 2010 Annual Report*. Retrieved September 7, 2011, from [http://discovery museums.org/sites/default/files/2010_Annual%20Report_web\(4\).pdf](http://discovery museums.org/sites/default/files/2010_Annual%20Report_web(4).pdf)
- Traveling Exhibitions for Rent (n.d). *Sciencenter*. Retrieved 12 Sept. 2011 from <http://www.sciencenter.org/exhibits/travelingexhibit.asp>
- Wetterlund, K., & Sayre, S. (2009, April). 2009 Art Museum Education Programs Survey. Retrieved from http://www.museum-ed.org/index.php?option=com_content&view=article&id=118:2009-art-museum-education-programs-survey-report&catid=26:current-practice-museum-programs&Itemid=53

Appendix A: Background Research

At the start of this project, our team did background research on each museum to get to gather information of the museum history, size, financial reports, and their individual goals on the community.

EcoTarium

The EcoTarium was established in 1825, originally under the name Worcester Lyceum of Natural History. The 14 men that established this group wanted to improve public understanding and appreciation for nature. In 1861, the organization incorporated as the Worcester Natural History Society, which remains the legal name of the institution to this day. In 1971, after several previous moves, it arrived at its current location on Harrington way in Worcester and renamed itself the Worcester Science Center. Reflecting its wide and growing audience, museum became the New England Science Center in 1986. In 1998, following an \$18 million capital campaign, the museum adopted its current operational name, EcoTarium.

The current mission of the EcoTarium is “To contribute to a better world by inspiring a passion for science and nature through discovery.” (<http://www.ecotarium.org/>). To this end, the EcoTarium hosts many different exhibits, artifacts, live animals, and a planetarium in their 55,000 square foot facility, detailing such diverse topics as the physics behind light and sound, local ecosystems, and energy conservation. The facility is situated on 40 wooded acres that feature live animal exhibits, nature trails, a tree canopy walkway through the forest, two ponds, a New England meadow, and a narrow gauge railway.

According to the 2010 annual report released by the EcoTarium, there were 131,566 total visitors, 23,567 of whom attended as members of student groups. Table A1, Figures A2 and A3 depict the operating support, revenue, and expenses for fiscal year 2010. Despite the overarching economic troubles, the EcoTarium has recorded an increase in attendance and memberships every year since 2006. Because Worcester is not a very popular tourist destination, the EcoTarium hosts a large number of repeat visitors compared to other museums of similar size and content. The EcoTarium has responded by updating its exhibits often, forming strong partnerships with school districts, offering yearly summer camp programs for children ages 7 through 12, and hosting guest speakers and lecture series relating to environmental conservation.

Table A1. Revenue and Expenses: EcoTarium (Financial Report, 2010)

EcoTarium	
Revenue and Expenses	
Revenue	2010
Contributions, Gifts & Grants	\$ 1,502,000
Endowment Support	\$ 961,200
Admissions	\$ 472,600
Group Programs	\$ 225,000
Educational Programs	\$ 206,000
Museum Store	\$ 174,800
Exhibits & Special Projects	\$ 167,600
Membership	\$ 159,300
Special Events	\$ 78,800
Interest & Other	\$ 11,700
Total	\$ 3,959,000
Expenses	
Maintenance	\$ 593,800
Membership, Special Events, Visitor Services	\$ 565,100
Administration	\$ 453,700
Exhibits	\$ 386,700
Educational Programs	\$ 345,700
Marketing	\$ 260,900
Utilities	\$ 232,800
Wildlife	\$ 216,300
Museum Store	\$ 112,100
Development	\$ 94,400
Total	\$ 3,261,500
Change in Net Assets	\$ 697,500

Figure A1. Revenue: EcoTarium (Financial Report, 2010)

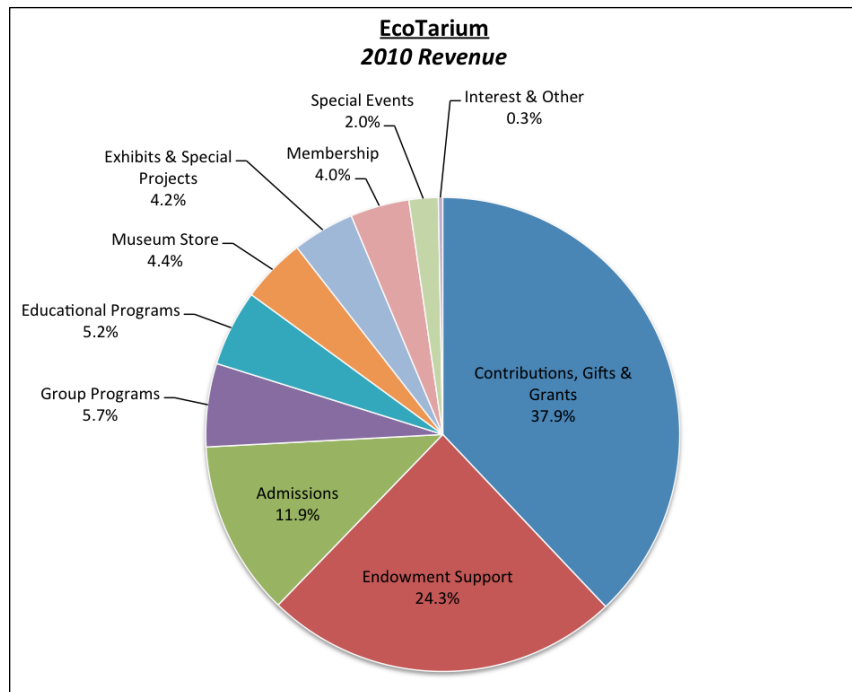
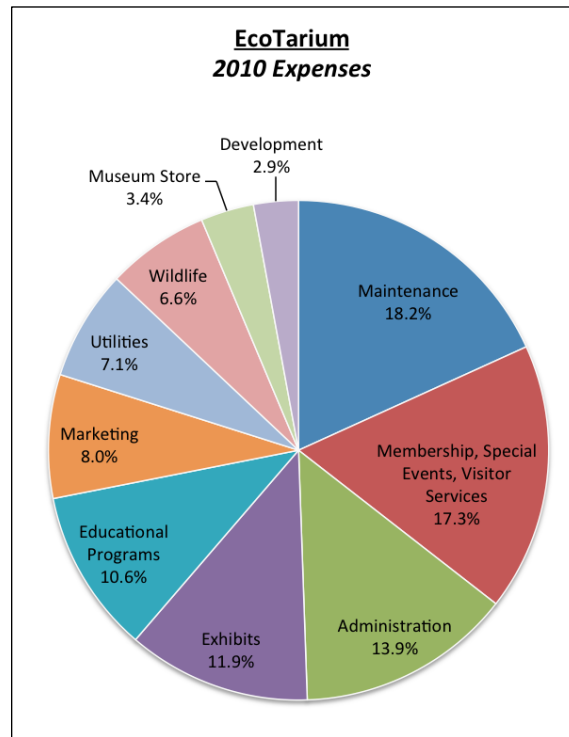


Figure A2. Expenses: EcoTarium (Financial Report, 2010)



ECHO Lake Aquarium and Science Center

The ECHO (Lake Aquarium and Science Center) is part of the Leahy Center for Lake Champlain, dedicated to the preservation and conservation of Lake Champlain and the surrounding Vermont basin. One of the Leahy Center's goals is to engage and educate the public on the science, ecology, and history of the waterfront and the ECHO Lake Aquarium is an important organization for this cause.

The Aquarium opened in Burlington, Vermont in 2003 and now sees about 150,000 visitors yearly (<http://www.echovermont.org/>). It cost \$14.5 million to construct, approximately half of which came from federal funds gathered by the Leahy Center, with the rest funded by private donations. It has several community outreach programs, including school field trips and discount vouchers for low-income families, designed to get more people, especially children, interested in science and conservation. With over 70 species of live aquatic animals and a variety of exhibits, the ECHO Lake Aquarium is a popular attraction for both tourists and locals concerned with the well-being of the lake they live on. The Aquarium also educates its patrons about environmental threats to the Great Lakes, such as algal blooms and invasive species that can kill native aquatic life and sometimes be dangerous to humans as well.

The Aquarium is now attempting to increase the quality of its new exhibits by collaboration with other museums in the Environmental Exhibit Collective, namely the Worcester EcoTarium, the Children's Museum & Theater of Maine, and the Discovery Museum. These museums want to create more effective communication channels between each other in order to share ideas and collaborate on exhibits. ECHO Lake's original exhibits were designed by Amaze Design, Inc., but they want to focus on creating new exhibits that are more widely applicable and easier to share and collaborate on with these other museums. The Aquarium is interested in this project in order to make the most of the limited funding that a relatively small museum has in order to create the best patron experience possible, as well as supporting other small museums who will also build off this collaboration for the benefit of all of them.

Children's Museum & Theatre of Maine

The Children's Museum and Theatre of Maine takes pride in its mission to "inspire discovery and imagination through exploration and play." (Children's Museum and Theatre of Maine) The Museum and Theatre focuses on four main areas: science education, early childhood education, multicultural education, and arts education. These foci create a unique combination of exhibits and activities targeted for children of 6 months to 10 years old, as well as theatre productions for children 7 to 10 years old. The museum and theatre merged in 2008 to become the success it is today. The museum describes itself as "a significant and valuable community asset, offering a broad and diverse array of educational and cultural enrichment opportunities". (Children's Museum and Theatre of Maine)

The Children's museum believes that play experiences are an important piece of childhood, and help kids to identify strong traits within themselves. Based on this theory, the museum develops a number of exhibits each year that combine elements of science and the arts. This past year they offered a variety of exhibits including, a physics exhibit using a hands-on approach with balls, with which children can play and experiment. An exhibit let children celebrate Greek holidays, and learn about the culture through role-play. Children were able to explore the stomach of an inflatable whale in an exhibit call "What About Whales?" The museum also put on five theatre productions in the last year. The theatre productions allow children to choose their role, either by participating on stage or attending the show as an audience member. Lastly, the museum set up a program called "Dancing with Books" for

preschool students in the community. As shown through these past exhibits, the Children’s Museum and Theatre has a unique combination of activities for the community to participate in year round.

The small staff at the museum, under 150 employees, is committed to the integration of art and science, as well as delivering programs and exhibits that meet the needs of the local community and visitors. The staff consists of administration, development and marketing, education, and exhibits and operations. The museum also uses an advisory board, and board of directors. The small staff works together to keep the museum exceeding expectations of the community. Working together, they are able to keep tradition alive and continue to effectively run new and exciting programs each year.

The museum depends on visitors to continue to achieve goals set by the staff and community. They receive a large amount of their income through donations, fundraising events, and educational programs. Admissions only accounts for 39% of their income in the past year (Figure A3). Currently, the museum has total net assets at \$1,764,170 (Table A2). Many of their expenses are used for daily operations and administration (Figure A4). These financials are all taken from the annual report from The Children’s Museum and Theatre of Maine for the year 2009-2010.

Table A2. Statement of security: Children’s Museum and Theatre of Maine (2010 Annual Report)

Children's Museum and Theatre of Maine	
Financials: Statement of security (as of 6/30/2010)	
Assets	
Cash	\$ 291,651
Cash Board Restricted	\$ 17,662
Receivables	\$ 5,944
Endowment Investments	\$ 234,146
Net Land Building Equipment	\$ 1,281,432
Other Assets	\$ 12,373
Total Assets	\$ 1,843,208
Liabilities	
Current Liabilities	\$ 74,934
Long Term Debt	\$ 4,104
Total Liabilities	\$ 79,038
Total Net Assets	\$ 1,764,170

Table A3. Revenue and Expenses: Children’s Museum and Theatre of Maine (2010 Annual Report)

Children's Museum and Theatre of Maine	
Revenue and Expenses	
Revenue	2010
Admissions	\$ 359,428
Membership	\$ 144,872
Corporate Support	\$ 107,739
Special Events	\$ 104,694
Annual Funds	\$ 72,756
Foundation Grants	\$ 37,030
Educational Programs	\$ 34,557
Facility Usage	\$ 25,672
Miscellaneous Income	\$ 24,745
Total	\$ 911,493
Expenses	
Operations	\$ 327,775
Development	\$ 142,349
Administration	\$ 134,689
Education	\$ 126,582
Marketing	\$ 87,148
Exhibits	\$ 59,711
Theatre	\$ 57,115
Total	\$ 935,369

Figure A3. Revenue: Children’s Museum and Theatre of Maine (2010 Annual Report)

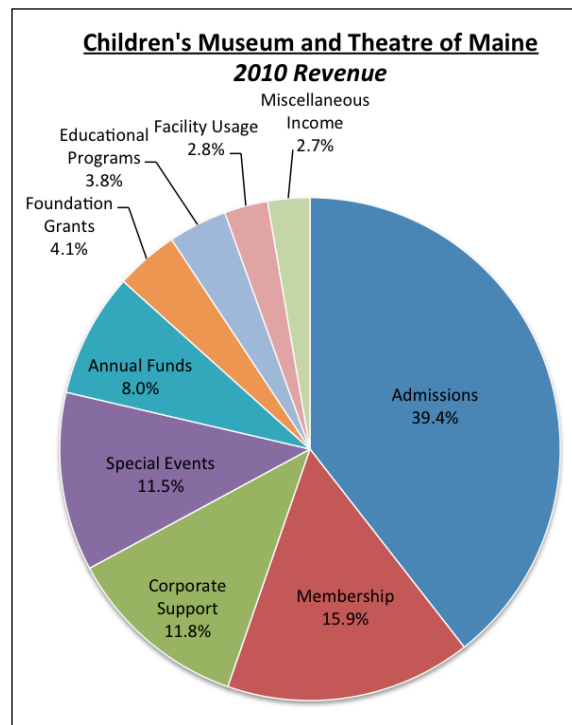
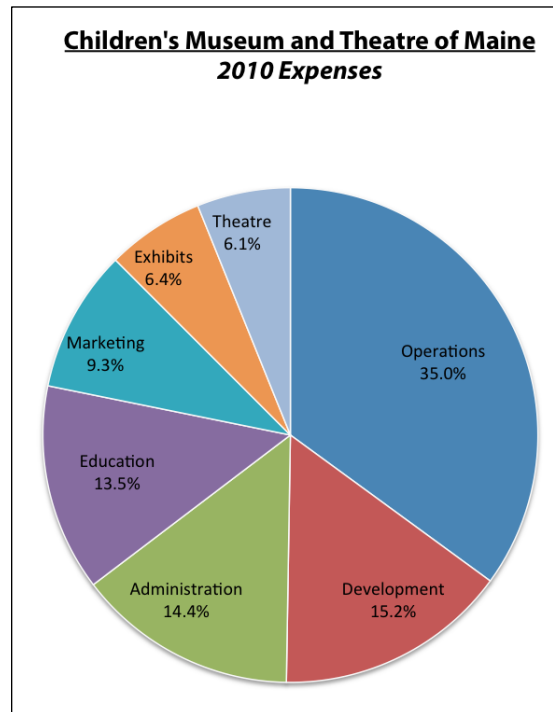


Figure A4. Expenses: Children’s Museum and Theatre of Maine (2010 Annual Report)



The Children’s Museum is located at 142 Free Street in Portland Maine. Their hours run from 10-5 Monday-Friday and Noon-5 on Sundays. The first Friday of each month, admission is only \$1, but normally it is \$9 per person. Being that the museum is aimed for a younger audience, they offer several services for visiting families. These include changing tables, disposable diapers, nursing, and stroller parking. In particular, these options make visiting with young toddlers or babies easy for families. The Museum does not allow any eating in exhibit areas, but does have its own café and plenty of nearby restaurants.

The Children’s’ Museum and Theatre is a great place for families and children to bond and explore together. The intertwining of science and art makes it a unique place for the community to come and play. The staff continues to develop new exhibits each year, which allow children to experience things they may never have the chance to otherwise. Explore animals, foreign countries, and science. The theatre program allows children to both experience timeless live theatre as a participant or audience member. The museum is unique and special experience, which is loved by its community members, and cared for by its small and attentive staff. The staff puts all their effort into raising funds to keep the museum operations, and running exhibits for visitors. The museum is truly a unique family experience for all visitors.

The Discovery Museums

The Discovery Museums (TDM) is a combination of two museums: The Children's Discovery Museum (CDM) and The Science Discovery Museum (SDM). The mission of the museums, as stated on their website (<http://www.discoverymuseums.org>) is to “inspire enduring curiosity and love of learning through interactive discovery, hands-on inquiry and scientific investigation”. The CDM was established in 1982 as a community-based museum in need of “interactive, educational experiences for young children and their families”. It is located in a 120-year-old Victorian house with a 3500 sq. ft. of exhibition area. Based on the principle of ‘learning through play’, the CDM provides “hands-on, experiential” exhibits that are suitable for children from toddlers to elementary school students. The SDM, located right behind the CDM, was opened in 1987 using funds from a fundraising campaign. It is a three story, 8500 sq. ft. building, designed for children from the age of six to teenagers. The SDM is built with a goal to provide “supplemental education and cohesive, interactive experiences” (<http://www.discoverymuseums.org>) in math and science for older children, families, and teachers. The principles from their mission statement can be found on the exhibits itself. In the ‘Train Room’ of the CDM, children can learn the engineering behind rail transportation by constructing railroads using movable tracks and trains. They can feed tiny coal bags into the burner, giving information on energy and environment. One can also be a conductor, selling tickets and giving services. At the SDM, the new ‘Dream Green’ exhibit allows children to build their own model home using different types of material and view it under thermal imaging cameras to see where heat escapes. Information is also given on what their family can do at home to improve their insulation and energy consumption.

During the CDM's early years, the museum attracted 40,000 visitors a year. Now, both museums have a total visitor of 140,000 per year, with 65% of them children (age 0-12). Most of the visitors are from the Greater Boston and MetroWest regions. The museum is planning to attract more visitors from further areas of the country. The Discovery Museum is located in Acton, MA with a driving distance of 40 minutes from Worcester and 48 minutes from Boston. The museum is a 4-minute walk from South Acton Rail Station, which is served by MBTA Fitchburg/South Acton Commuter Rail. Admission for the museum is \$10.50 for adults and children and \$9.50 for seniors. Membership prices are \$80 for two people and \$110 for a 4-person family. As stated in their 2010 Annual Report (The Discovery Museums), the museum

has 15 staff members and a 15-member board oversees operations. Due to a small size of staff members, the museum draws on many volunteers throughout the year to help deliver programs and activities and enhance the visitor experience by supplementing the work of the staff.

Currently, Lees Stuntz is the President; Davida Fox-Melanson, Vice President; Neil H. Gordon, CEO; and Sarah Brockway as the Director of Visitor Experiences.

Almost 43% of the museum’s revenue comes from visitor admissions, making over \$534,000 in 2010 (Figure A5). But the museum receives gifts and grants from over 1600 institutions and families, making up 25% of the revenue. The top three financial contributors are Manton Foundation, Polariod Corporation, and The MathWorks, Inc. It also received gifts from companies such as Cisco, HP, and IBM. On the other hand, the museum also has a program that donates complimentary admission passes to nonprofit organizations in its vicinity. Due to a large number of requests, the program is now automated and is available online. One of the popular programs at the museum is the ‘Open Door Connections’. The museum is working with organizations such as SMOC Head Start Hudson, SMOC Head Start Marlborough, Massachusetts Adoption Resource Exchange (MARE), Parent Child Home Program, and Minute Man Arc Social Services, Inc. to provide the museum’s offerings to families and schools with need. The program also includes free morning and evenings to families with children suffering from Austin spectrum disorders and hearing problems, in collaboration with Austin Alliance of Metro West and Deaf and Hard of Hearing program at Children’s Hospital Boston at Waltham.

Table A4. Revenue and Expenses: The Discovery Museums (2010 Annual Report)

The Discovery Museums			
Revenue and Expenses			
Revenue		2009	2010
Admissions		\$510,496	\$534,722
Gifts and Grants		\$230,921	\$312,602
Educational Programs		\$169,243	\$208,500
Memberships		\$104,125	\$143,218
Rental Income		\$24,776	\$28,602
Museum Store		\$20,743	\$24,651
Miscellaneous Income		\$4,808	\$2,304
	Total	\$1,065,112	\$1,254,599
Expenses			
Program Services		\$730,734	\$827,620
Fundraising and Public Relations		\$185,650	\$198,970
Management and General		\$116,501	\$123,180
	Total	\$1,032,885	\$1,149,769
	Change in Net Assets	\$32,227	\$104,830

Figure A5. Revenue: The Discovery Museums (2010 Annual Report)

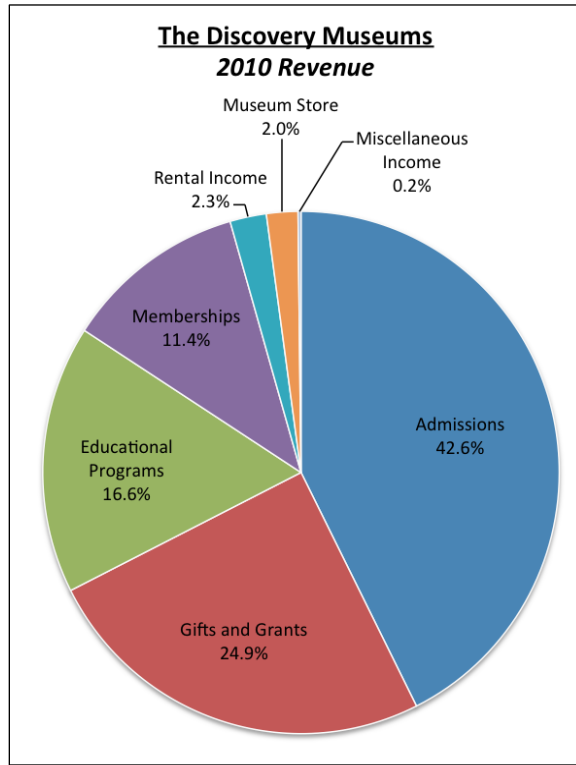
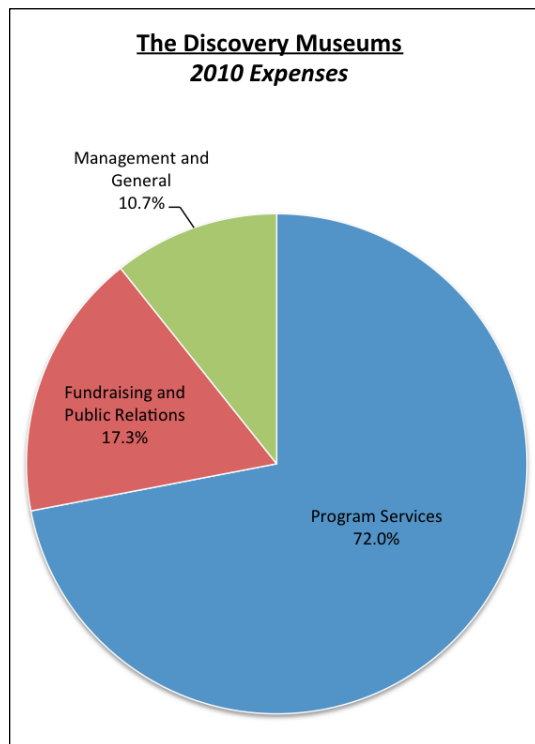


Figure A6. Expenses: The Discovery Museums (2010 Annual Report)



Appendix B: Interview with the EcoTarium

On November 1, 2011, our project team went to the EcoTarium in Worcester to carry out needs assessment and interview the main people at the museum. The following are the questions we asked and notes taken during the interview.

Attendees: Alexander Goldowsky, Betsy Loring, Nick Hayes, Myo Thaw, Ryan Fredette

Date: November 1, 2011

Place: EcoTarium

What kind of features will enhance you with communication between the members?

Cloud data storage

Video conferencing, with portable web-cam

Commenting on shared files (like Facebook) with Email notification

Journal Entry

Are any collaboration software currently in used or had been used in the past? (eg. Dropbox, GoogleDocs, etc.)

Wiki has been tried before, but was not successful

What is currently the biggest obstacle to effective communication?

Physical distance

How are brainstorming sessions conducted?

Everyone gathers in a room and come up with ideas for exhibits (very physical, using all things available in the room for example purposes)

How many people do you want to videoconference with at once? Individually or as a group in a conference room? Is a conference room available? Equipment?

Location: 4 museums + Dominic + Randi

No. of people: $3 + 3 + 3 + 3 + 1 + 1 = 14$

No designated conference room. The conference equipment has to be mobile, possibly on a wheeled cart to move from room to room.

Should the web cameras in use be portable while broadcasting? (In order to show around exhibits)

YES

What programs are typically used in a workday?

Vary from person to person. The designer uses Adobe Illustrator, but share with others using PDF format. Typical office programs are used by everyone.

What types and size of files are typically shared?

Large drawing files, around 1MB. Want to share video files in the future.

Do any staff members need access to the collaboration tools while mobile, i.e., away from the museum using a laptop, tablet, or smartphone?
Not that important

Appendix C: Interview with The Children's Museum and Theatre of Maine

Due to the distance and time conflict with classes, our team couldn't travel to the Children's Museum in Maine. Therefore, we sent out our interview questions via email. They filled out their answers to our questions and sent us back the document.

Filled out by: Chris Sullivan

Date: November 15, 2011

Which features must absolutely exist in the chosen software package, and which features are on the wish list?

Everything absolutely needs to be User friendly (we may have a young staff but we still have technophobes). Collaborative/ conferencing software has to have video, audio, and the ability to file share. We wish that there could be real time/ remote collaboration on actual files: for example I can open up a plan that we are working on and other museums can critique it.

How many people do you want to videoconference with at once?

At least three but up to 5

Will these people be in their individual workspaces, or in the same room?

Ideally in the same room

Should the cameras in use be portable while broadcasting?

Yes

What is currently the biggest obstacle to effective communication?

Trying to do too much through email. Too long of a conversation thread, too large file sizes, inconsistency in programs (and versions), lack of audiovisual technology (don't even have speakers on computer)

What programs are typically used in a workday?

Microsoft office for business and Adobe CS2-CS5 (each terminal has different versions for licensing reasons), Google Sketchup, and turbo cad for design

What types of files are typically shared?

Word, excel, pdf, illustrator, and in design

What would be more helpful for training: a classroom format, or a self-paced tutorial format?

Classroom

How are brainstorming sessions conducted?

In the conference room using an easel and large pad

Do any staff members need access to the collaboration tools while mobile, i.e., away from the museum using a laptop, tablet, or smartphone?

We have used Logmein so vendors can repair software remotely, but do not have any examples of staff needing to collaborate remotely. However, it would be something we would be interested in and if available use.

How familiar are you with the following tools?

Document sharing with Dropbox, GoogleDocs, or something similar?

Very. Exhibits director and marketing staff have used both of these working with vendors and in other collaborative projects. The rest of the staff has disparate familiarity with them depending on their personal comfort with technology.

Simultaneous conferencing with Skype, Google Hangout, or similar?

We use Skype for long distance interviews. We are also familiar with Google video chat.

Social networking with Facebook, LinkedIn, or similar?

Very. Most staff use both for work and personal reasons

Creating and maintaining Wikis?

Are familiar with using and adding content. We have used Google pages and wiki spaces for two different large projects with exterior partners, but have preferred not to integrate them into our internal work.

Appendix D: Proposed software pricing

The following tables show the prices for the software our team proposed. The information was collected in late 2011. The prices may have changed overtime.

Table D1. Basecamp Pricing (basecamphq.com)

Plan Name	Basic	Plus	Premium	Max
Projects	15	35	100	Unlimited
Storage Amount	5 GB	15 GB	30 GB	75 GB
Users	Unlimited	Unlimited	Unlimited	Unlimited
Price	\$24/month	\$59/month	\$99/month	\$149/month

Table D2. Skype Business Subscriptions and Features (www.skype.com)

		1 Month	3 Months	12 Months
Group Video Calling	Multiple people can videoconference, viewing everyone on one screen.	\$8.99	Exclusive offer with Skype Manager	Exclusive offer with Skype Manager
Calling US landlines and cell phones	Make calls from a computer running Skype to any US-based phone number. ¹	\$2.95	\$2.80	\$2.51
Voicemail	Conventional voicemail. ²	\$2.10	\$2.00	\$1.67
Online number	A phone number that can be called from any conventional phone that connects to a Skype account. ³	\$6.30	\$4.02	\$2.50
Call Forwarding	Forwards calls placed to an online number to a conventional phone number.	Included in calling subscription.	Included in calling subscription.	Included in calling subscription.

¹ Excluding Alaska, Hawaii, American Samoa, the Caribbean, and toll-free numbers.

² Included when any calling subscription is purchased.

³ When purchased separately, an online number is \$6/month for 3 months or \$5/month for 12 months.

Table D3. Dropbox Pricing (www.dropbox.com)

Account Type	Size	Price
Basic	2 GB	Free
Pro 50	50 GB	\$9.99/month or \$99.00/year
Pro 100	100 GB	\$19.99/month or \$199.00/year
Teams	350 GB	\$795/year (5 users) Additional user (\$125/year) Additional storage (\$200 for 100GB/year)

Table D4. WebEx Pricing (www.webex.com)

Max. No. Of Location	No. Of Host	Price
8	1	\$19/month
25	\$49/host per month	\$49/month + host

Appendix E: Proposed hardware information

Together with our proposed software, we also proposed certain hardware that could be useful for the museums' needs.

IPEVO Point 2 View USB Document Camera



Features

- 2 Megapixel USB Web/Document Camera with 4.9ft cable
- Maximum image resolution: 1600 x 1200
- Maximum video resolution: 30fps at 640 x 480
- 3x digital zoom; up to 2" macro focus
- Multi-jointed stand or hand-held
- Autofocus or single click focus
- One-touch photo snap shots
- Plug-and-play for Mac and PC

1-year warranty

Returns accepted within 30 days of purchase

Price: \$69.00

Links:

<http://www.ipevo.com/prods/Point-2-View-USB-Camera>

or

http://www.amazon.com/IPEVO-Point-View-USB-Camera/dp/tech-data/B002UBPBTC/ref=de_a_smtd

MXL AC404 USB Conference Microphone



Features

- USB powered
- Built-in headphone/speaker monitoring jack
- Includes a 6' USB cable, headphone/speaker jack and leatherette zipper case

Warranty: Yes

Price: \$73.92

Link:

<http://www.amazon.com/MXL-AC404-USB-Conference-Microphone/dp/B001TGTDFM>

Projector

**No specific recommendation. Any projector will work.*

Example: ViewSonic PJD5123 SVGA DLP Projector



Features

- Resolution SVGA 800 x 600
- Display size: 27" – 300" / 0.7m – 7.6m
- Throw distance: 3.9' – 36' / 1.2m – 11m
- 180W lamp
- Lamp Life: 5000 hours (normal), 6000 hours (eco-mode)

Warranty: 3-year limited warranty on parts and labor
 1-year limited warranty on lamp

Price: \$329.00

Replacement Lamp: \$174.99

Link:

Projector

<http://www.amazon.com/ViewSonic-PJD5123-Projector-120Hz-Lumens/dp/B004UG3BQK>

Replacement lamp

http://www.amazon.com/PJD5123-5223-5523REPLACEMENT-Lamp-Module/dp/B004XGXGJE/ref=sr_1_1?s=electronics&ie=UTF8&qid=1322632637&sr=1-1

Speakers

**No specific recommendation. Any 2.0 stereo speakers will work.
Example: Logitech S120 2.0 Multimedia Speakers*



3-year limited warranty

Price: \$10.25

Link:

http://www.amazon.com/Logitech-S120-2-0-Multimedia-Speakers/dp/tech-data/B000R9AAJA/ref=de_a_smtd

Bamboo Connect Drawing Tablet

**Optional*

To be used for drawing on the WebEx whiteboard



Features

- Battery-less pen
- Pressure sensitive
- Accuracy: +/- .02 in (+/- 0.5 mm)
- Resolution: 2540 lpi

Warranty: 1 year

Price: \$79.00

Link:

<http://www.wacom.com/en/Products/Bamboo/BambooTablets/BambooConnect.aspx>

or

http://www.amazon.com/Wacom-Bamboo-Connect-Tablet-CTL470/dp/B005HGBEYS/ref=sr_1_1?ie=UTF8&qid=1323249929&sr=8-1

Appendix F: Evaluation survey

This is the survey the team created in SurveyMonkey™ to gather feedback on the use of SharePoint and WebEx.

1. Please type in your name.

2. The SharePoint software will meet the needs of the participants in the Exhibit Lab project.

- 1 Disagree
 2
 3
 4
 5 Agree

Please tell us more about your assessment of SharePoint.

3. Please indicate how useful are the SharePoint training materials.

	Have't used the material	1 Not useful	2	3	4	5 Very useful
User guide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube videos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us more about your assessment of these SharePoint training materials.

4. Please indicate how easy or difficult you found the following SharePoint features.

	Haven't used the feature	1 Hard	2	3	4	5 Easy
Upload a document	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Download a document	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
View a document on SharePoint	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calendar	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Search function	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us more about your assessment of these SharePoint features.

5. The WebEx software will meet the needs of the participants in the Exhibit Lab project.

- 1 Disagree
- 2
- 3
- 4
- 5 Agree

Please tell us more about your assessment of WebEx.

6. The audio quality is good when using computer audio.

- 1 Disagree
- 2
- 3
- 4
- 5 Agree

Please tell us more about your assessment of WebEx audio quality.

7. The video quality is good even when multiple cameras are running.

- 1 Disagree
- 2
- 3
- 4
- 5 Agree

Please tell us more about your assessment of WebEx video quality.

8. Please indicate how useful are the WebEx training materials.

	Have't used the material	1 Not useful	2	3	4	5 Very useful
User guide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
YouTube videos	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us more about your assessment of these WebEx training materials.

9. Please indicate how easy or difficult you found the following WebEx features.

	Haven't used the feature	1 Hard	2	3	4	5 Easy
Schedule a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Join a meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Switch presenter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whiteboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Record meeting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Screen sharing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please tell us more about your assessment of these WebEx features.

Appendix G: SharePoint User Guide



Microsoft SharePoint User Guide

[Libraries](#)

[Pictures](#)

[Wiki](#)

[Discussions](#)

[Calendar](#)

[Announcements](#)

[Tasks](#)

[Links](#)

Made for Exhibit Lab

By WPI IQP Team

Created: 3/1/201

Microsoft, SharePoint and its logo are trademarks of Microsoft Corporation.

Content

1 INTRODUCTION	1
1.1 Log in	2
2 LIBRARIES	3
2.1 Location	3
2.2 Add Document to Library	4
2.3 Sort Document by Topic	7
2.4 Edit Document Properties/Change Tags/Set alerts	8
3 PICTURES	9
3.1 Location	9
3.2 Upload/Delete Pictures	10
4 WIKI	12
4.1 LOCATION	12
4.2 Add a New Page	13
4.3 Edit Properties/Delete/Set Alerts	14
4.4 Sort Wiki Pages by Tag	15
4.5 Edit Wiki Page Content	16
5 DISCUSSIONS	17
5.1 Location	17
5.2 Reply to a Post/Edit/Delete/Set Alerts	18
5.3 Add a New Discussion	18
6 CALENDAR	20
6.1 Location	20
6.2 Add an Event	21
6.3 Edit Event	22

6.4 Delete Event/Set Alerts	23
7 ANNOUNCEMENTS	24
7.1 Add New Announcement	24
7.2 Edit Announcement	25
7.3 Delete Announcement/Set Alerts	26
8 TASKS	27
8.1 Location	27
8.2 Add New Task	28
8.3 Edit Task/Delete/Set Alerts	29
9 LINKS	30
9.1 LOCATION	30
9.2 Add New Link	31

1 INTRODUCTION

This tutorial will review the major functions of SharePoint, and how to interact and use them. These functions include:

Libraries – Used to upload, store, and access files of all kinds. You may also edit previous documents, to update as needed. Uploading pictures files is not included here; there is a separate way to store pictures.

Pictures – This library is strictly for the storage of picture files. Here you may view a slideshow of selected pictures, upload pictures, and edit.

Wiki – Create text documents that are easy to interact with and edit. It is a collaboration tool that's allows all users to brainstorm, and share ideas. You may view what others have changed or added, and edit the documents.

Discussions – Search through conversations by category and post. Reply to posts, and interact with other users by posting questions and comments.

Calendar – View upcoming events, and add events to the calendar. Keep track of meetings, and due dates. Add and edit events on the calendar.

Announcements – View important announcements about projects and other upcoming important events. Add announcement, and edit.

Tasks – Keep track of tasks assigned to you, and assign tasks to yourself or others. A simple way to log assignments and track workload.

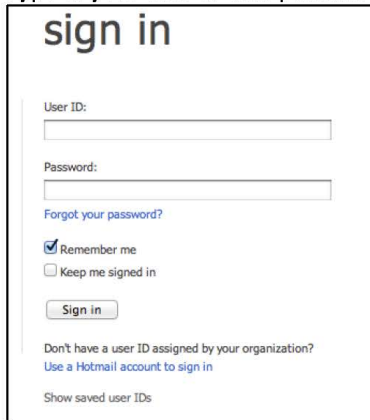
Links – Share links to websites, and view other links posted by users.

Tagging is a very important feature of SharePoint. By tagging documents, instead of creating multiple folders, they can be easily searched and sorted. Documents can be found and the click of a button, and transferred from areas with ease. It is very important to become comfortable with this feature, as it makes the use of SharePoint much simpler.

Note: Use this tutorial in conjunction with SharePoint tutorial videos for comprehensive training.

1.1 Log in

1. To log into SharePoint, go to <https://eecmuseum.sharepoint.com>
2. Type in your user ID and password, and click on **Sign in**

A screenshot of a SharePoint sign-in page. The page has a white background with a black border. At the top, the text "sign in" is displayed in a large, bold, black font. Below this, there are two input fields: "User ID:" and "Password:". Below the password field is a blue link that says "Forgot your password?". There are two checkboxes: "Remember me" (which is checked) and "Keep me signed in" (which is unchecked). Below the checkboxes is a "Sign in" button. At the bottom of the form, there is a link that says "Don't have a user ID assigned by your organization? Use a Hotmail account to sign in" and a link that says "Show saved user IDs".

The followings are the usernames for each museum.

ecotarium@EECMuseum.onmicrosoft.com

echo@EECMuseum.onmicrosoft.com

discovery@EECMuseum.onmicrosoft.com

childrens@EECMuseum.onmicrosoft.com

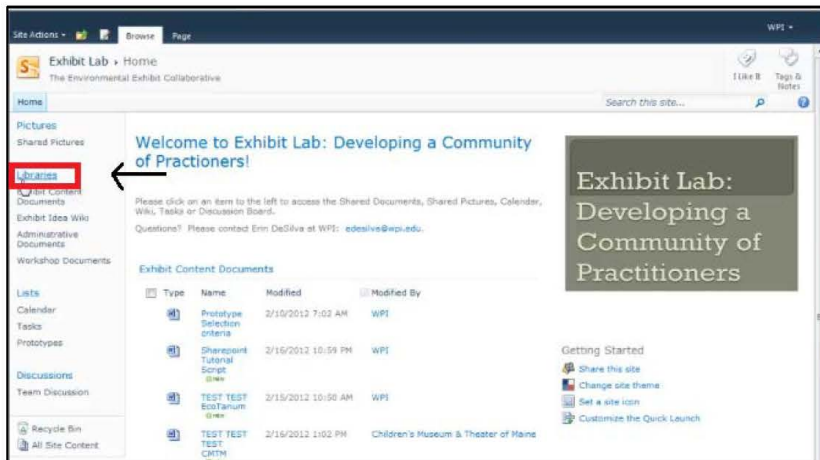
*Note: Check the **Remember me** option to let your browser remember your username*

2 LIBRARIES

Libraries are used to upload, store, and access files of all kinds. You may also edit previous documents, to update as needed. Uploading pictures files is not included here; there is a separate way to store pictures.

2.1 Location

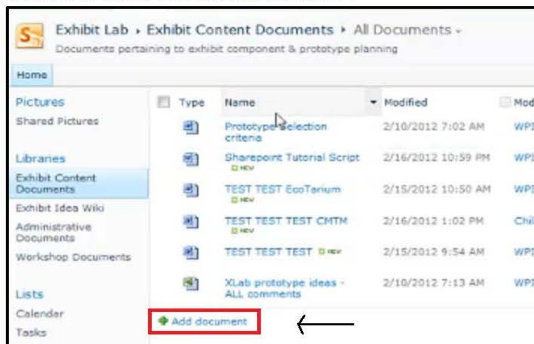
1. From the home page, click on the **Libraries** Link



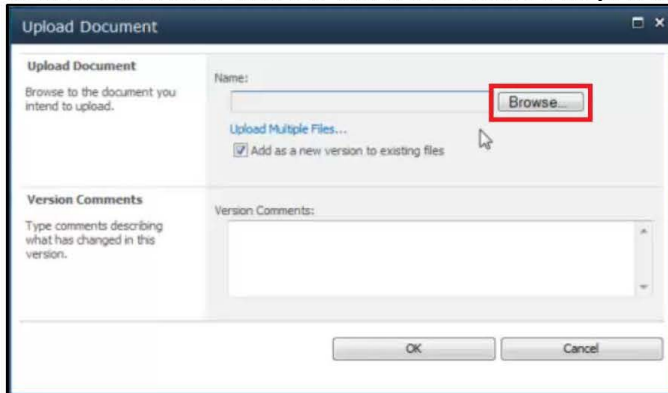
2. You will now see all of the available document libraries
3. Click on the Library you wish to use

2.2 Add Document to Library

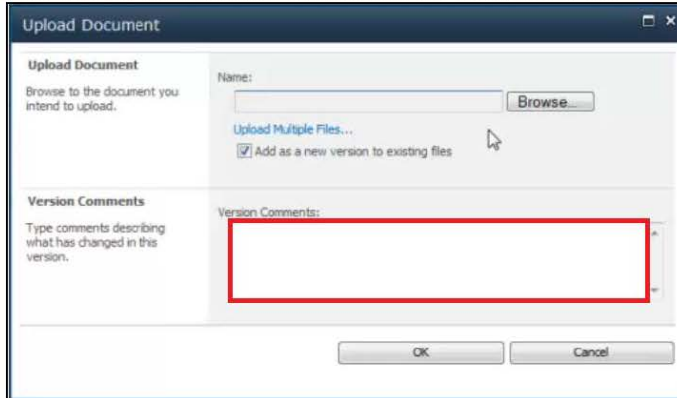
1. Locate and select the desired Library you wish to add a document to
2. Click the **Add Document** button



3. Click on the **Browse** button to select a document from your computer



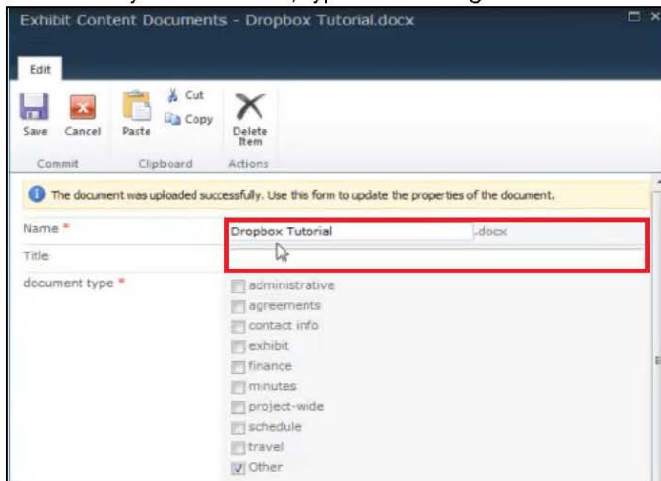
4. Add version comments (if desired), in the designated box



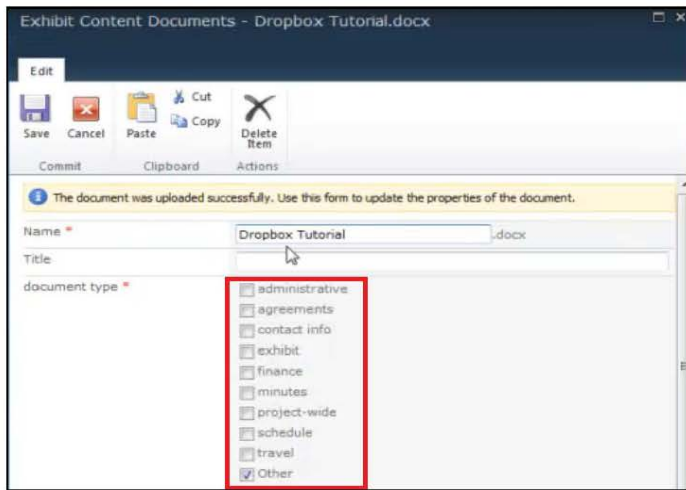
5. Once you have finished, select the **OK** button

A form will appear, here you can rename or tag your document

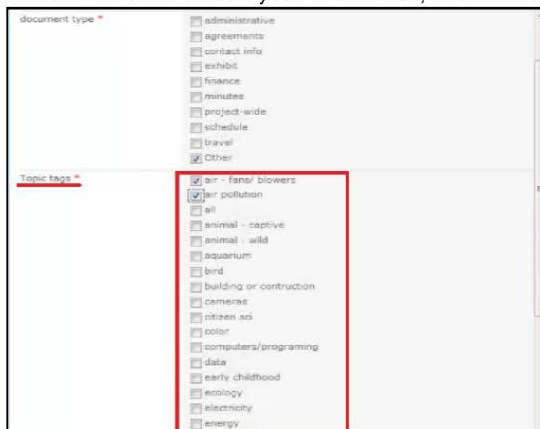
6. To rename your document, type in the designated box for **Name** and **Title**



7. Select the type of document you are uploading by checking off a document type box



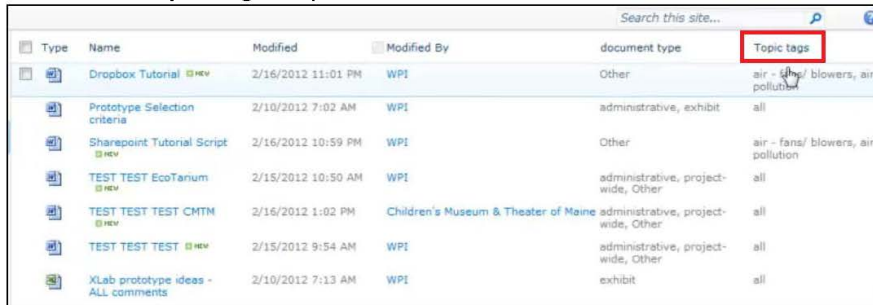
8. Now, you can tag your document by checking off boxes that are related to your document. Tagging a document will make it easier to search and categorize. You will also be able to sort your document, and see ones that are related to yours.








9. Press the **Save** button to finish

2.3 Sort Document by Topic

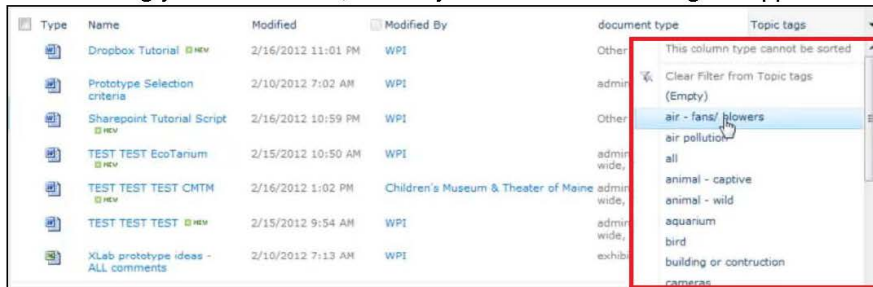
1. Click on the Topic Tags drop-down menu






A screenshot of a document list table. The table has columns: Type, Name, Modified, Modified By, document type, and Topic tags. The 'Topic tags' column is highlighted with a red box. The table contains several rows of document entries.

Type	Name	Modified	Modified By	document type	Topic tags
	Dropbox Tutorial 	2/16/2012 11:01 PM	WPI	Other	air - fans/ blowers, air pollution
	Prototype Selection criteria	2/10/2012 7:02 AM	WPI	administrative, exhibit	all
	Sharepoint Tutorial Script 	2/16/2012 10:59 PM	WPI	Other	air - fans/ blowers, air pollution
	TEST TEST EcoTanum 	2/15/2012 10:50 AM	WPI	administrative, project-wide, Other	all
	TEST TEST TEST CMTM 	2/16/2012 1:02 PM	Children's Museum & Theater of Maine	administrative, project-wide, Other	all
	TEST TEST TEST 	2/15/2012 9:54 AM	WPI	administrative, project-wide, Other	all
	XLab prototype ideas - ALL comments	2/10/2012 7:13 AM	WPI	exhibit	all

2. Select the tag you want to view, and only document with that tag will appear



A screenshot of the same document list table as above. A dropdown menu is open over the 'Topic tags' column. The menu options are: 'This column type cannot be sorted', 'Clear Filter from Topic tags (Empty)', 'air - fans/ blowers', 'air pollution', 'all', 'animal - captive', 'animal - wild', 'aquarium', 'bird', 'building or construction', and 'cameras'. The 'air - fans/ blowers' option is highlighted with a mouse cursor.

Type	Name	Modified	Modified By	document type	Topic tags
	Dropbox Tutorial 	2/16/2012 11:01 PM	WPI	Other	air - fans/ blowers
	Prototype Selection criteria	2/10/2012 7:02 AM	WPI	administrative	air pollution
	Sharepoint Tutorial Script 	2/16/2012 10:59 PM	WPI	Other	all
	TEST TEST EcoTanum 	2/15/2012 10:50 AM	WPI	administrative, project-wide, Other	animal - captive
	TEST TEST TEST CMTM 	2/16/2012 1:02 PM	Children's Museum & Theater of Maine	administrative, project-wide, Other	animal - wild
	TEST TEST TEST 	2/15/2012 9:54 AM	WPI	administrative, project-wide, Other	aquarium
	XLab prototype ideas - ALL comments	2/10/2012 7:13 AM	WPI	exhibit	bird

3. To remove the tag filter, press **Clear Filter from Topic tags** from the top of the tag menu

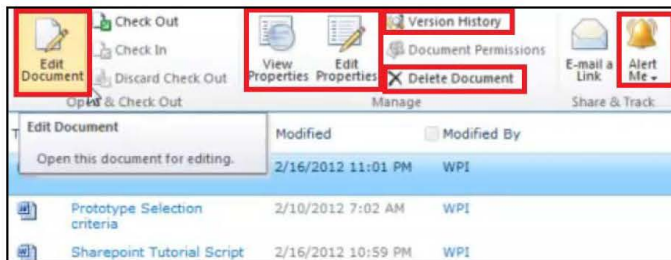
2.4 Edit Document Properties/Change Tags/Set alerts

1. Select the check box next to the document you wish to change.



Type	Name	Modified	Modified By
<input checked="" type="checkbox"/>	Dropbox Tutorial	2/16/2012 11:01 PM	WPI
<input type="checkbox"/>	Prototype Selection criteria	2/10/2012 7:02 AM	WPI

2. From the top menu bar, click on **Edit Properties** to change the tags for the selected document. You may also **View Properties**, **Version History** to view any past edits made, or **Edit Document**. You can delete the document from this menu by clicking on **X Delete Document**. Set alerts by pressing the bell; you will be alerted if any changes are made to the document.

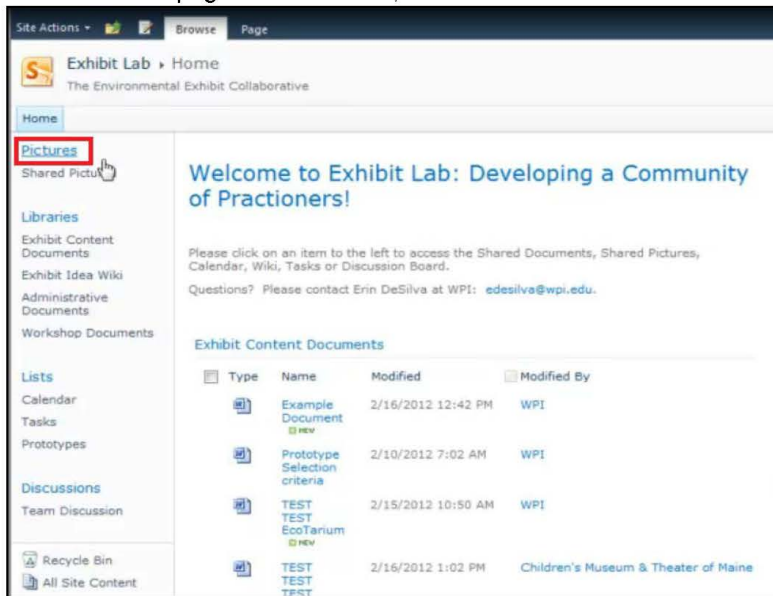


3 PICTURES

This library is strictly for the storage of picture files. Here you may view a slideshow of selected pictures, upload pictures, and edit.

3.1 Location

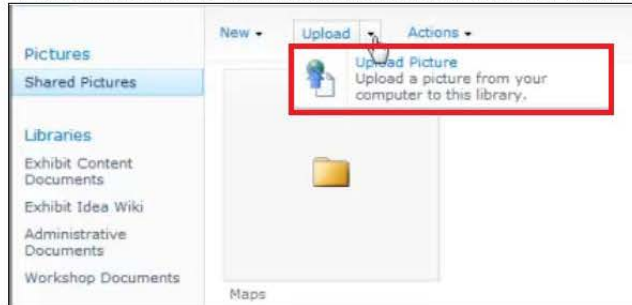
1. From the home page side menu bar, click the **Pictures** link



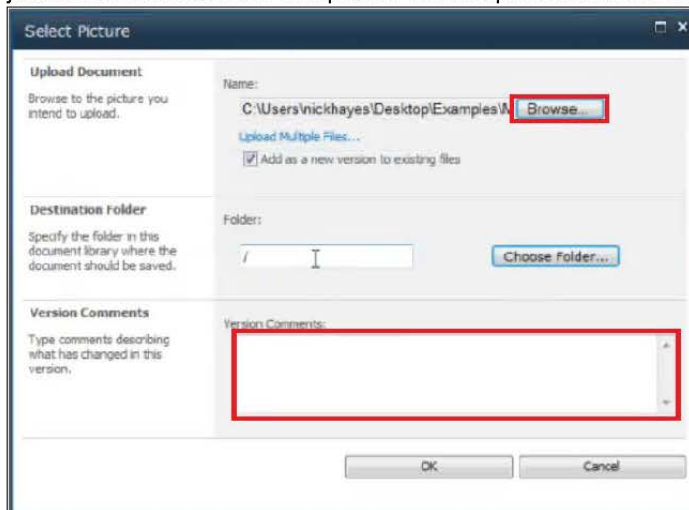
2. You will now be able to view all existing Picture Libraries
3. Click the Library you wish to use

3.2 Upload/Delete Pictures

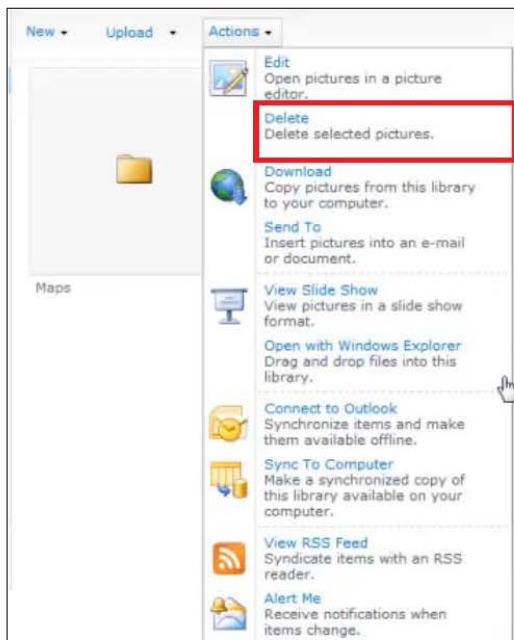
1. To upload a picture, select **Upload Picture** from the Upload drop-down menu



2. Click the **Browse** button and select the picture you wish to upload. You may add a comment; Select **OK** when finished. In the next menu, add any other details you wish and click **Save**. The picture will be uploaded into the Library



3. To delete a photo, check the box next to its name and then in the Actions drop-down menu press the **Delete** button. From this menu you may also edit the photo, view a slideshow of selected photos, or set alerts for the folder.

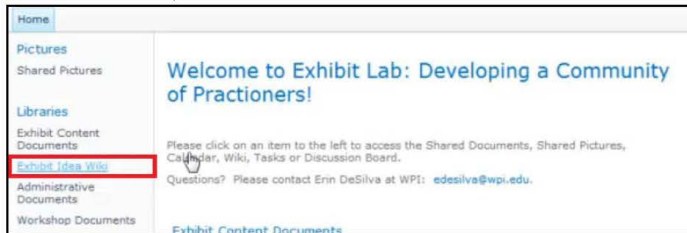


4 WIKI

Create text documents that are easy to interact with and edit. It is a collaboration tool that's allows all users to brainstorm, and share ideas. You may view what others have changed or added, and edit the documents.

4.1 Location

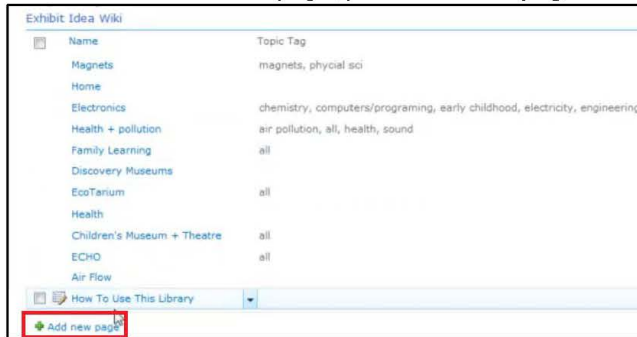
1. Under Libraries, select the **Exhibit Idea Wiki** link from the homepage



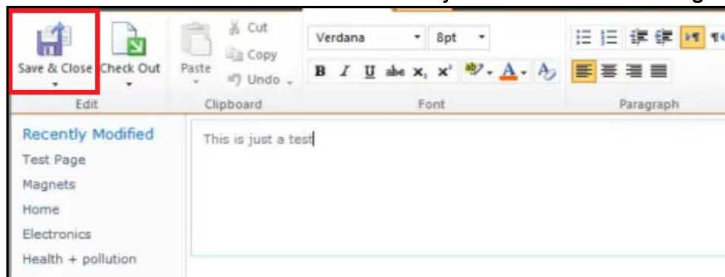
2. You will now be able to see all available Wikis
3. Click on a Wiki link to view the pages in it.

4.2 Add a New Page

1. At the bottom of the Wiki page, press **Add new page**

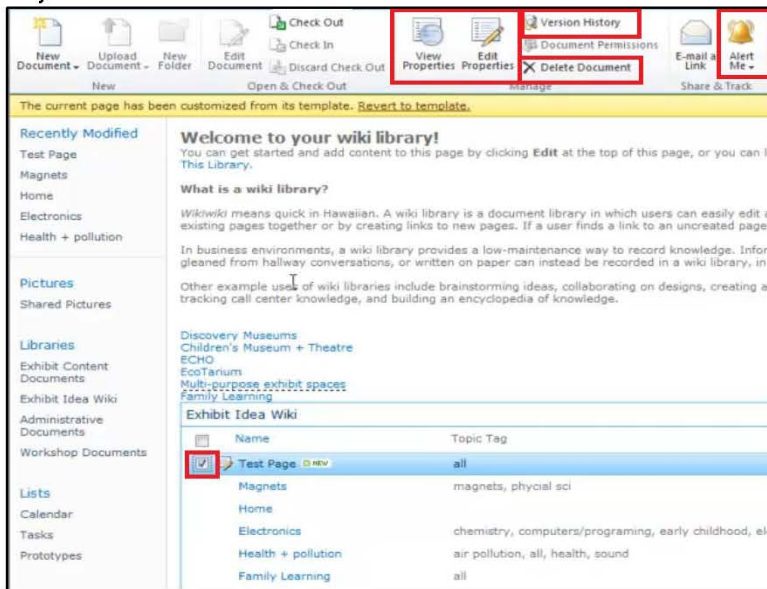


2. Choose a name for the page, and press **Create**
3. You can now add content to your new Wiki page
4. Press the **Save and Close** button when you are finished working on the page



4.3 Edit Properties/Delete/Set Alerts

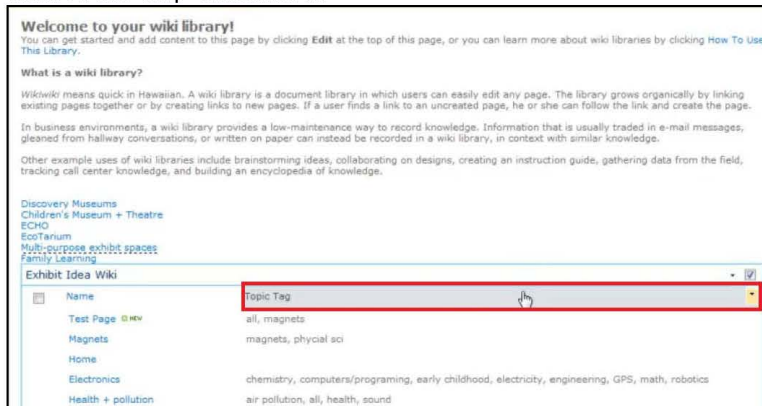
1. Select the pages you wish to edit properties, view properties, view version history, or set alerts by clicking the check box next to it. You may select as many as you need at the same time.



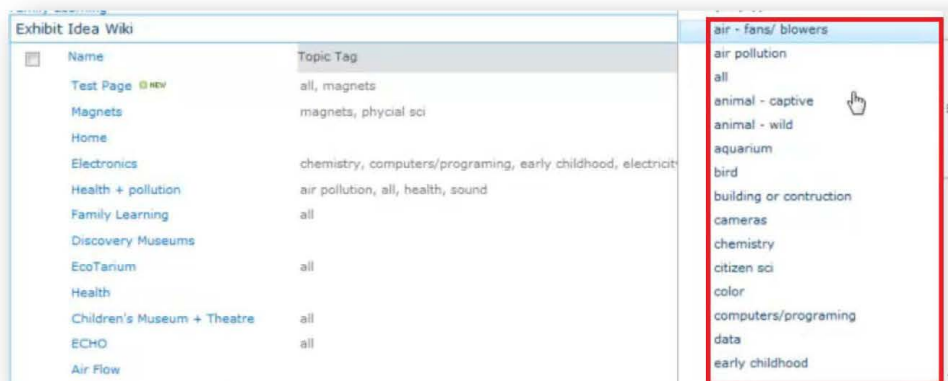
2. If you select **Edit Properties**, a list of all tags will appear. You may select or de-select tags to be related to the document. Press **Save** when you are finished.

4.4 Sort Wiki Pages by Tag

1. At the top of the Wiki Page directory, there is a drop-down menu for **Topic Tags**. Click on the drop-down menu.



2. From the drop-down menu, select a tag and then you will one see the Wiki Pages with that tag.
3. When you are finished, open the drop-down menu and select **Clear Filter** from to view all pages again

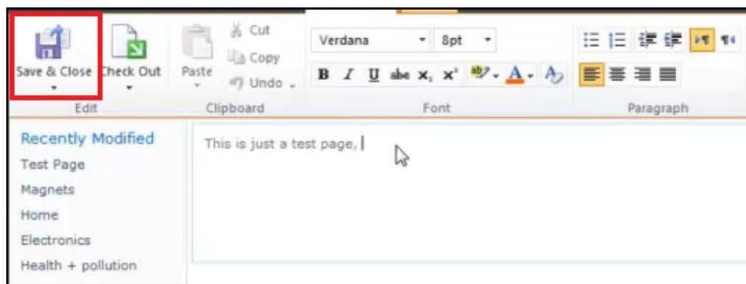


4.5 Edit Wiki Page Content

1. Click on the Wiki Page you wish to edit, you can now see the content on this page.



2. To add changes, press the **Edit** button at the top of the page. It looks like a piece of paper with a pencil laid over top.
3. You can now edit the content of the page. Press **Save & Close** when you are finished.

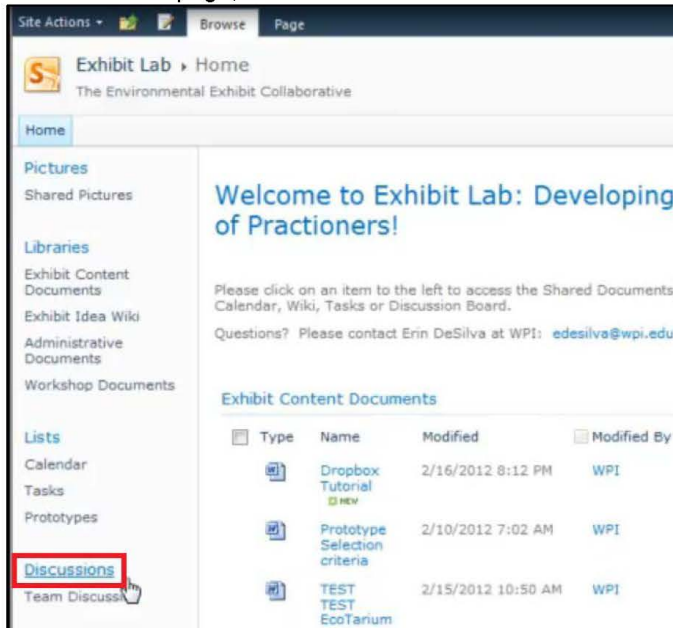


5 DISCUSSIONS

Search through conversations by category and post. Reply to posts, and interact with other users by posting questions and comments.

5.1 Location

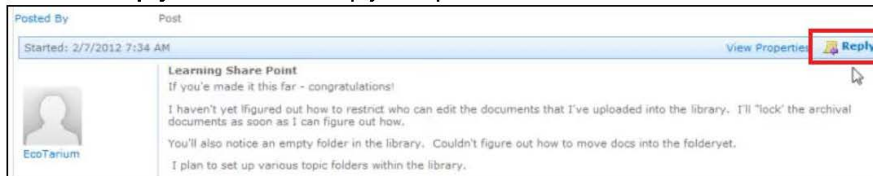
1. From the home page, click the **Discussions** link to view the discussion boards



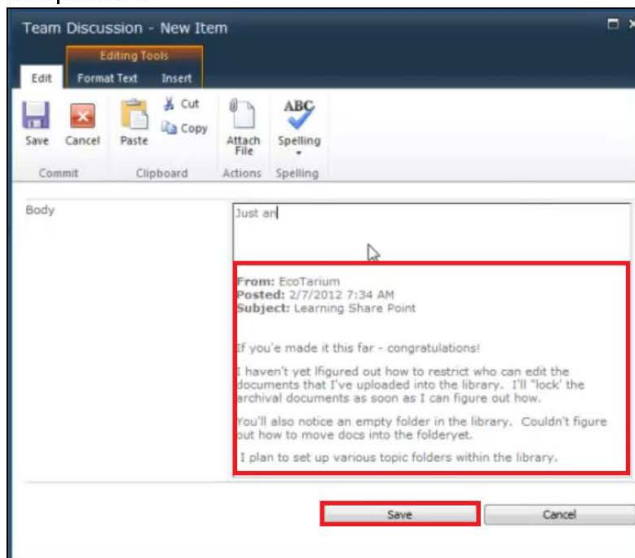
2. Click on the board you wish to view

5.2 Reply to a Post/Edit/Delete/Set Alerts

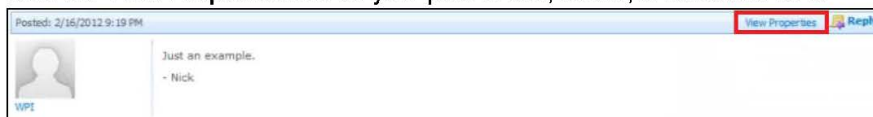
1. Click on the board you wish to view. You will now see the discussion and all of its posts.
2. Click the **Reply** link to write a reply to a post.



3. If you don't delete the message you are replying to, it will be kept in your message as a quote. Press **Save** when you have finished, and your reply will be posted. You should add a signature at the end of your post so that others know who posted it

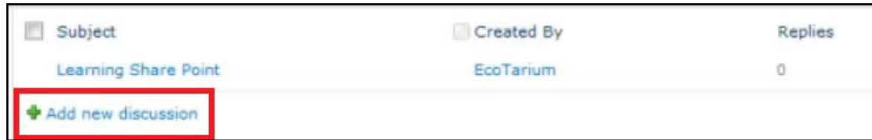


4. Click the **View Properties** link on your post to edit, delete, or set alerts for it

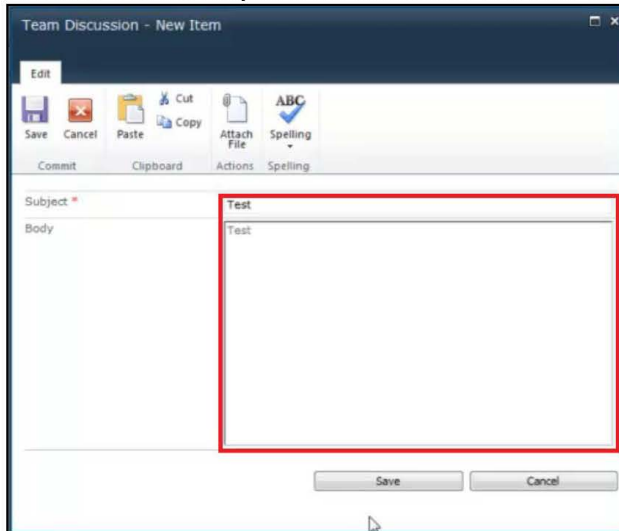


5.3 Add a New Discussion

1. Locate the Discussions boards, and click on the board you wish to view
2. Click the Add new discussion link



3. You must add the subject of the discussion, and then write the post



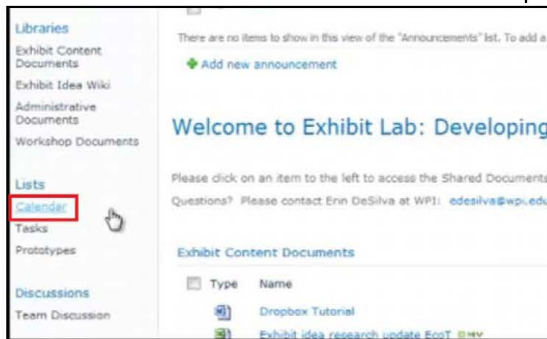
4. Press save when you are finished.

6 CALENDAR

View upcoming events, and add events to the calendar. Keep track of meetings, and due dates. Add and edit events on the calendar.

6.1 Location

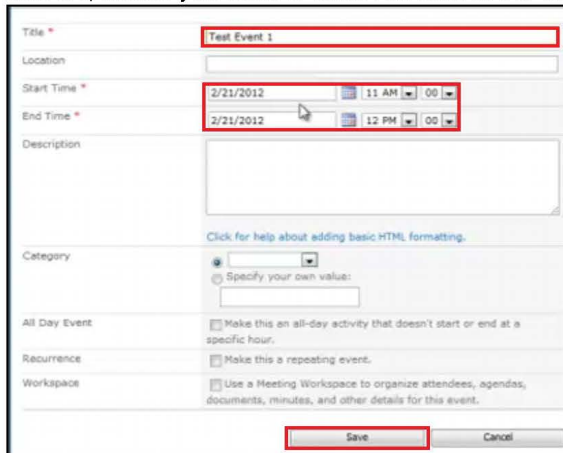
1. Click the **Calendar** link on the SharePoint homepage



2. You will now view the Calendar and all the scheduled events

6.2 Add an Event

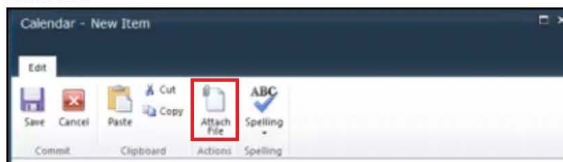
1. To add an event to the Calendar, hover your mouse over the day you want the event to appear on and press **Add**
2. From here, you will fill out information about the event. Press Save when you are finished, unless you want to attach an item to the event



The screenshot shows a 'New Event' dialog box with the following fields and options:

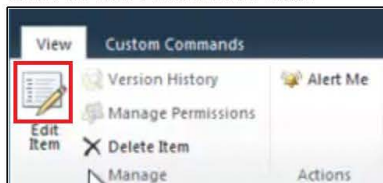
- Title ***: Test Event 1
- Location**: (empty)
- Start Time ***: 2/21/2012 11 AM 00
- End Time ***: 2/21/2012 12 PM 00
- Description**: (empty text area)
- Category**: (dropdown menu)
- All Day Event**: Make this an all-day activity that doesn't start or end at a specific hour.
- Recurrence**: Make this a repeating event.
- Workspace**: Use a Meeting Workspace to organize attendees, agendas, documents, minutes, and other details for this event.
- Buttons**: Save, Cancel

3. To attach a document to an event, press the **Attach File** button. Press **Choose File** to find the document on your computer, and press **OK** when you have finished

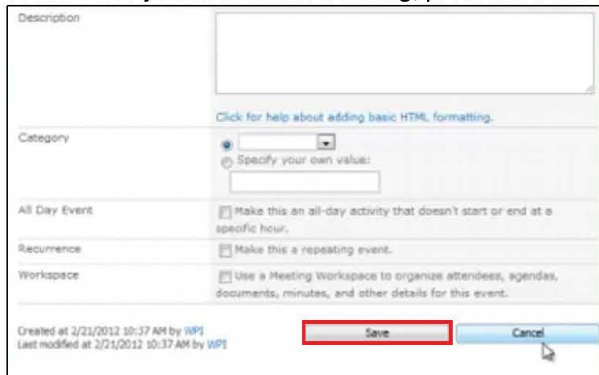


6.3 Edit Event

1. Click on the event that you wish to edit
2. Click on the **Edit Item** button

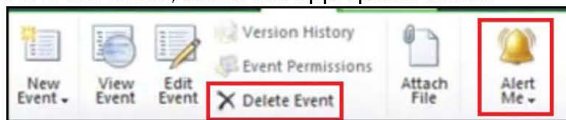


3. The menu that appears will allow you to alter or add to any properties of the event. Once you have finished editing, press the **Save** button

A screenshot of an event editing form. The form has several sections: 'Description' (a text area), 'Category' (a dropdown menu with a 'Specify your own value' option), 'All Day Event' (a checkbox), 'Recurrence' (a checkbox), and 'Workspace' (a checkbox). At the bottom, there is a 'Save' button highlighted with a red box and a 'Cancel' button. The form also displays metadata: 'Created at 2/21/2012 10:37 AM by WP1' and 'Last modified at 2/21/2012 10:37 AM by WP1'.

6.4 Delete Event/Set Alerts

1. Select the event you want to delete or set alerts for
2. From the menu, select the appropriate button

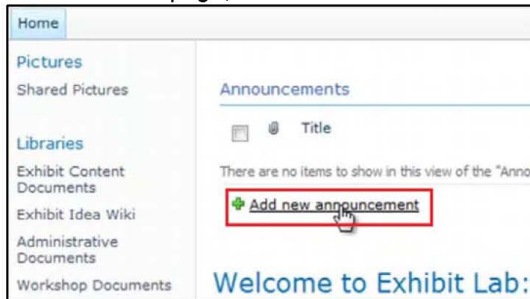


7 ANNOUNCEMENTS

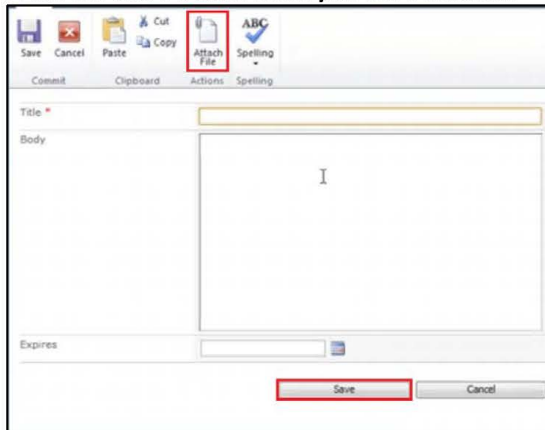
View important announcements about projects and other upcoming important events. Add announcement, and edit.

7.1 Add New Announcement

1. From the homepage, select the **Add new announcement** link

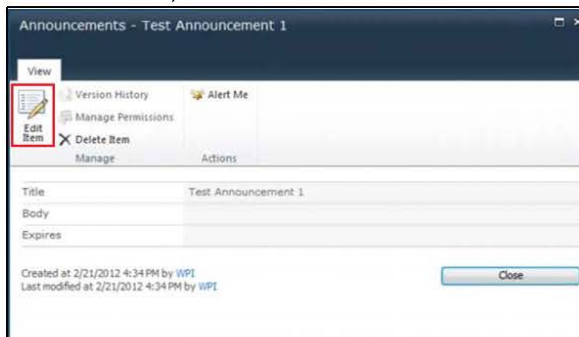


2. A menu will appear allowing you to add a title, content, and expiration date. You may also attach a file to the announcement by pressing the **Attach File** button. Press the **Save** button when you have finished.



7.2 Edit Announcement

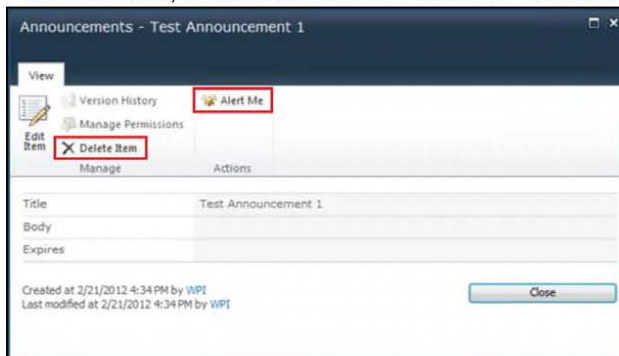
1. Click on the announcement you want to edit from the list on the homepage
2. From the menu, click the **Edit Item** button



3. The same menu from creating a new announcement will appear. Edit the content you wish to change, and press the **Save** button when you have finished

7.3 Delete Announcement/Set Alerts

1. Click the announcement you wish to delete or set alerts for from the home page list
2. From the menu, click the **Delete Item** button or the **Alert Me** button

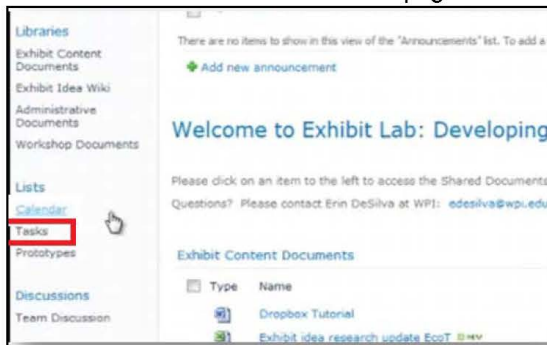


8 TASKS

Keep track of tasks assigned to you, and assign tasks to yourself or others. It's a simple way to log assignments and track workload.

8.1 Location

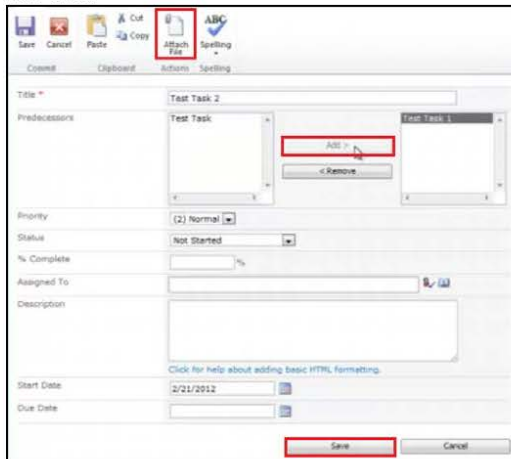
1. Select the **Tasks** link from the home page



2. You will now be able to view all available tasks in a list

8.2 Add New Task

1. Click the **Add New Task** link under your list of tasks
2. A new menu will appear allowing you to enter a title, choose predecessors, and more. You may also attach a file to your task. Click the **Save** button when you are done



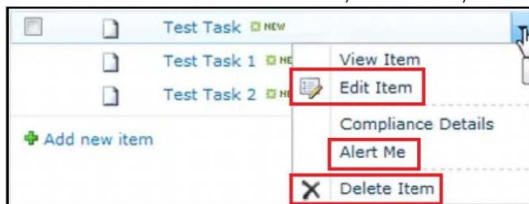
The screenshot shows a task creation dialog box with the following fields and controls:

- Title:** Test Task 2
- Predecessors:** Test Task, Add Task 1
- Priority:** (2) Normal
- Status:** Not Started
- % Complete:** %
- Assigned To:** [User Icon]
- Description:** [Text Area]
- Start Date:** 2/21/2012
- Due Date:** [Date Picker]
- Buttons:** Save, Cancel

Red boxes highlight the **Attach File** button in the top toolbar, the **Add** button in the predecessor selection area, and the **Save** button at the bottom.

8.3 Edit Task/Delete/Set Alerts

1. Select the drop-down menu on the task
2. From the menu select **Alert Me**, **Edit Item**, or **Delete Item**

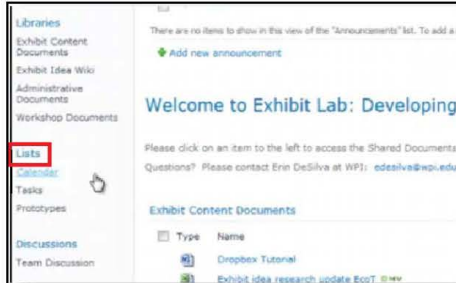


9 LINKS

Share links to websites, and view links posted by other users.

9.1 Location

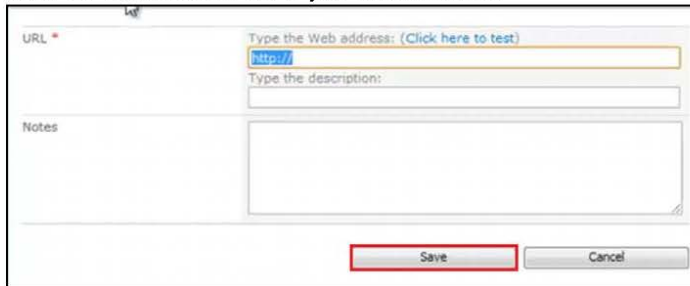
1. Select the **List** link from the home page



2. From the list that appears, select **Links**

9.2 Add New Link

1. From the bottom of the Links list, select **Add New Link**
2. A menu will appear where you can add the URL, and notes about the URL link. Click the **Save** button when you have finished



The screenshot shows a dialog box for adding a new link. It has a title bar with a small icon. The dialog is divided into two main sections. The top section is for the URL, with a label 'URL' and a red asterisk. It contains a text input field with the placeholder text 'Type the Web address: (Click here to test)'. The input field has 'http://' entered and is highlighted with a blue selection. Below the input field is a label 'Type the description:' followed by another text input field. The bottom section is for notes, with a label 'Notes' and a large text area. At the bottom of the dialog, there are two buttons: 'Save' (highlighted with a red border) and 'Cancel'.

Appendix H: WebEx User Guide



WebEx User Guide

[Creating Account and WebEx Homepage](#)

[WebEx Meeting Center](#)

[WebEx Basic Features](#)

[WebEx Advanced Features and Sharing](#)

Made for Exhibit Lab

By WPI IQP Team

Created: 3/1/201

WebEx and its logo are trademarks of Cisco System, Inc.

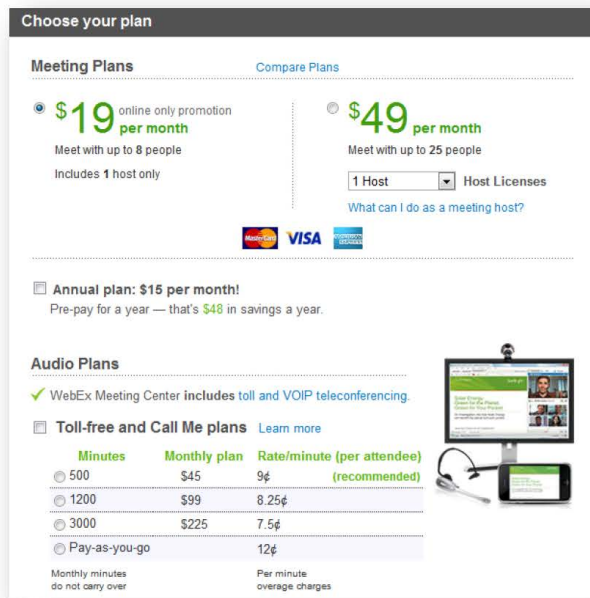
Content

1	CREATING ACCOUNT AND WEBEX HOMEPAGE	1
1.1	Create an Account	1
1.2	Log in to your account	3
1.3	WebEx Home Page	4
1.4	Schedule a Meeting	5
1.5	My Meetings	6
1.6	One-Click Meeting	7
2	WEBEX MEETING CENTER	8
2.1	WebEx Default Window	9
3	WEBEX BASIC FEATURES	11
3.1	Turn on/off webcam and microphone	11
3.2	Full screen video-conference	12
3.3	Focus on one video	13
3.4	Make presenter	14
3.5	Record the Meeting	15
4	WEBEX ADVANCED FEATURES AND SHARING	16
4.1	Whiteboard	16
4.2	Desktop	17
4.3	Share a file	18
4.4	Others	19
4.5	Save a file	20
4.6	File Transfer	21

1 CREATING ACCOUNT AND WEBEX HOMEPAGE

1.1 Create an Account

1. To create a new account, go to <https://buyonline.webex.com/US/pages/BuyMeetingCenter.html>
2. Choose the \$19 per month plan and uncheck the **Toll-free and Call Me plans** option



3. Click **Continue** and fill in your contact information on the next page

*Note: Your email address will be used as the login username
Choose a password that can be shared with other museums*

4. Click **Continue**. Choose a site name for your WebEx site (e.g. exhibitlab, eec). You will be able to access the WebEx site directly by going to that address.
5. Type in your password for the WebEx site.

Note: Make sure the password requirement is met

Create a WebEx site name

Schedule and launch online meetings from your own secure WebEx site. Create a site name that's easy to remember, like your company or product name.

Site Name
http:// .webex.com

[Why do I need a site name?](#)

Create your login

Your email address will serve as your username.

Username: myothaw@wpi.edu
[Edit username](#)

Create your password
Use this password to log into and manage your account. Passwords are case sensitive.

Password

Re-enter Password

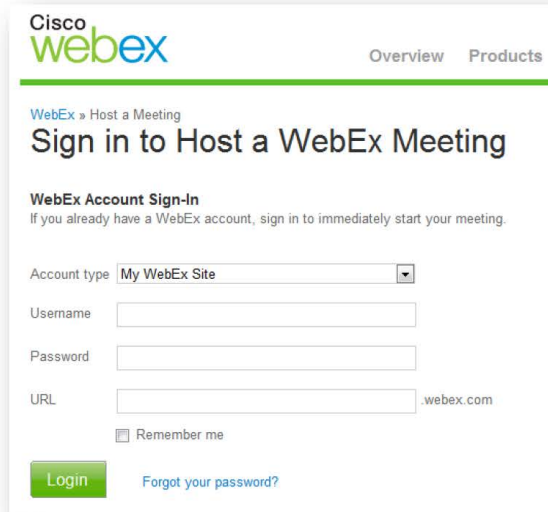
Your password must:

- Be between 6 and 30 characters
- Include 1 number
- Include 1 upper-case letter
- Include 1 lower-case letter
- Not use spaces, tabs or special characters (such as @, #, *, &, or %)

6. Click **Continue**, type in your payment information and purchase the account.

1.2 Log in to your account

1. Go to www.webex.com/login/host-a-meeting



The screenshot shows the Cisco WebEx login page. At the top left is the Cisco WebEx logo. To the right are links for 'Overview' and 'Products'. Below the logo is a breadcrumb trail 'WebEx » Host a Meeting' and the main heading 'Sign in to Host a WebEx Meeting'. Underneath is the section 'WebEx Account Sign-In' with the instruction 'If you already have a WebEx account, sign in to immediately start your meeting.' The form includes a dropdown menu for 'Account type' set to 'My WebEx Site', input fields for 'Username', 'Password', and 'URL' (with '.webex.com' as a placeholder), a 'Remember me' checkbox, a green 'Login' button, and a 'Forgot your password?' link.

2. For Account type, choose **My WebEx Site**.
3. Type in your username, password, URL (the site name you gave while creating your account) and click on **Login**.

*Note: Check the **Remember me** option for automatic log in next time
If you have a free trial account, choose **Free trial** as the account type*

1.3 WebEx Home Page

After you log in, you are now at the WebEx home page. There are two tabs on the top, **Meeting Center** and **My WebEx**. You are currently in the **Meeting Center** tab.

Everything you need will be under **Host a Meeting** on the left side bar. You can schedule a meeting ahead of time, look at your meeting schedules, or host an instant meeting.



1.4 Schedule a Meeting

1. Click on **Schedule a Meeting** on the side bar to schedule a meeting ahead of time.

Schedule a Meeting Set options using template: [Meeting Center Default] ?

To set advanced meeting options, go to [Advanced Scheduler](#)

* Meeting topic: * Required field

Password: Confirm password:

Date: February 18 2012

Time: 9:00 am pm [New York Time](#)

Duration: 1 hr 0 min

Attendees: <Separate email addresses with a comma or semicolon> [Use address book...](#)

Send a copy of the invitation email to me

Audio conference: WebEx Audio [Change audio conference...](#)

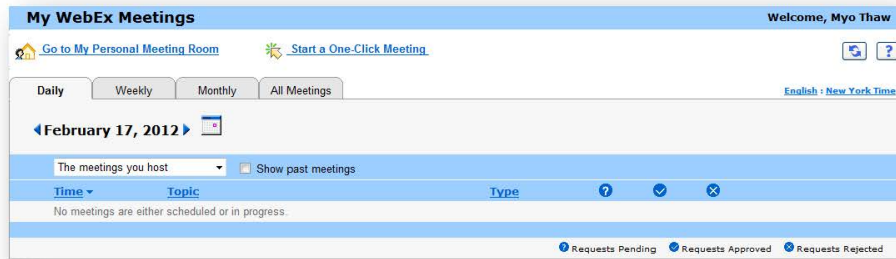
Cancel Save as template... **SCHEDULE MEETING**

2. Type in your Meeting topic, password to join the meeting (or leave it blank if you don't want a password), date, time, duration, and attendees' email addresses.
3. Click on the blue **SCHEDULE MEETING** button to finish.

Note : WebEx will automatically send an email to all the attendees with a link to join the meeting. You will also receive an email with a link to start the meeting. The meeting will start when you log in or at the scheduled time.

1.5 My Meetings

- Click on **My Meetings** on the side bar of the home page to view all the meetings you have scheduled or been invited to.



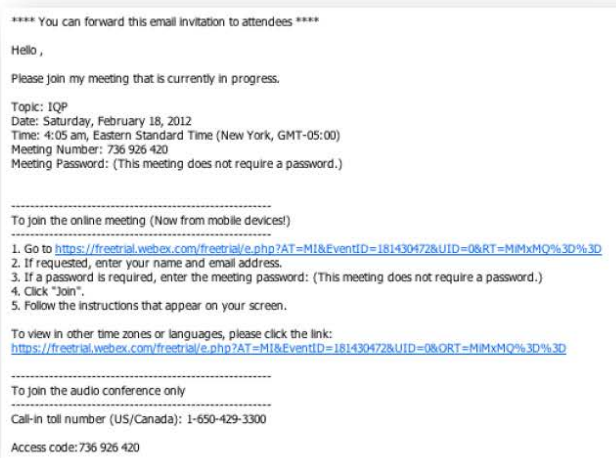
You can choose the appropriate tabs to see your meetings in a daily, weekly, monthly format, or all your meetings.

*Note: Check **Show past meetings** to show you past meetings you have joined or held.*

1.6 One-Click Meeting

- Click on **One-Click Meeting** to start a meeting instantly.

Note: You will receive an email with a link that you can forward to your attendees to join.



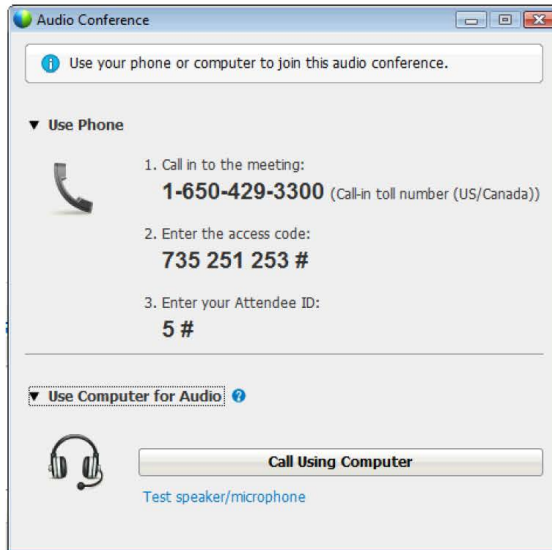
Cisco WebEx Meeting Center will be started automatically.

Note: If it is your first time running WebEx, necessary software and add-on will be installed on your computer

2 WebEx Meeting Center

The WebEx Meeting Center is the place where you meet with people online and collaborate.

At startup, the **Audio Conference** box will pop up on your screen.



You have the option to call in using a phone or the computer.

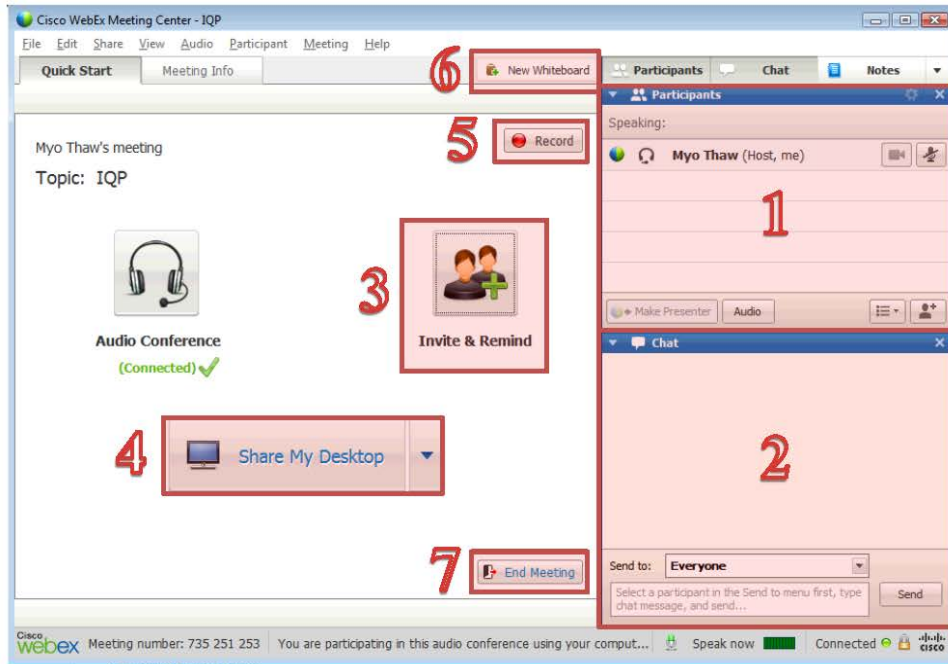
To use the **phone** call in feature, dial the given number. You will be greeted by the WebEx automatic answering machine where you can enter the given access code followed by the # sign.

Note: If you want someone with a phone to join in the meeting, you must send the phone number and the access code to the person.

If you have the necessary equipment for audio conference using your computer (i.e. speaker and microphone or headphone), you can click on **Call Using Computer**.

*Note: You can test whether your speaker and microphone are working by using the **Test speaker/microphone** function.*

2.1 WebEx Default Window



1. Participants window

It shows all the online participants in the meeting. The blue and green WebEx logo indicates the host of the meeting. On the right of the name are the buttons on turn on/off the video and mute/unmute the microphone.

2. Chat window

It can be used to send text message to anyone in the meeting. In the **Send to:** box, a specific person can be chosen to send a private message. **Everyone** can be chosen to send text message to everyone in the meeting.

3. Invite and Remind

This feature can be used to invite more people into the meeting. WebEx will send out an email to the invited users. It can also be used to send email reminder to invited people.

4. Quickstart

5. Record

This function can be used to archive the meeting. It will record the WebEx session, which can later be watched as a video.

6. New Whiteboard

This button will start a new whiteboard, where pictures, pdf, powerpoints, etc can be shared and marked on.

7. End Meeting

This button will end the meeting.

3 WEBEX BASIC FEATURES


3.1 Turn on/off webcam and microphone

At the start of the meeting, the webcam will be automatically off.




- Click on the video button  to start the video.

Note: The video logo will turn green when the video has started.

- Click on the green video button  to stop the video.

When the **Call using computer** option is used, the microphone will be automatically on when the meeting is started.


- Click on the mute microphone button  to mute the microphone.

Note: The mute microphone button will turn red when the microphone is muted.

- Click on the red microphone button  to unmute the microphone.

Note: It is recommended to turn off the webcam when video-conferencing is not important. It will free up bandwidth for other tasks.


3.2 Full screen video-conference

- Click on the  button on the top right corner of the video screen to see all participants in full-screen mode.





You are now in the full-screen mode.

Note: By default, the video will show the active speaker, which is the person who is speaking at that moment.

- The active speaker view can be further expanded by clicking on the  button on the top right corner of the video.



Note:  and  functions are still available in full screen mode.

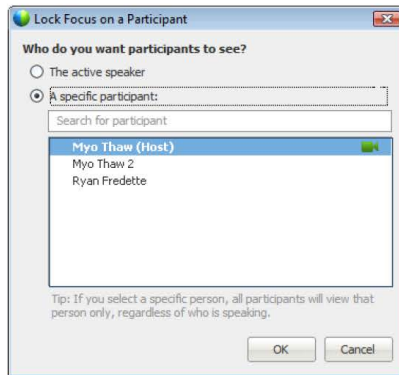
3.3 Focus on one video

WebEx will automatically focus the video on the person who is speaking. Sometime, this feature is not desirable and can be turned off by the host or the presenter.

1. Click on the  button on the bottom left corner of the video screen.



The **Lock Focus on a Participant** box will appear.




2. Choose **A specific participant**
3. Select the person who wanted to be focused on from the list and click **OK**.

Note: This function is only available to the host or the presenter.


3.4 Make presenter

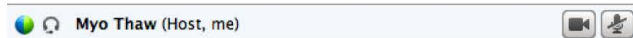
The presenter has control over the meeting. At the start of a meeting, the host will be the presenter. The host must first assign one participant as the presenter. The presenter privilege can then be passed on to any participant by the current presenter or the host.

To assign or change the presenter:

- Select a participant and click on the  button





OR

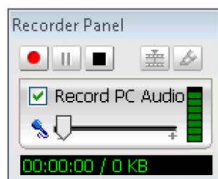
- Drag and drop the blue and green WebEx logo  on the desire participant



Note: Only the host and the current presenter can change the presenter.

3.5 Record the Meeting

1. To record a meeting, click on the  button on the welcome window of the WebEx Meeting Center.
2. The **Save Recorded Meeting As** box will come up. Choose a location and a name for the file.
3. The **Recorder Panel** will appear on the window. Click on the  button to start recording.
4. Click on the  to pause the recording, and  to stop recording.



Note: Make sure the Record PC Audio is checked to record audio. Only the WebEx Meeting Window will be recorded. Other windows appearing on the screen during recording will not be included.

5. The video file will appear at the location specified before recording. Double click on the file to play it.

*Note: The **WebEx Player** software might need to be installed to play the video.*

Download link: Windows

<https://akamaicdn.webex.com/client/WBXclient-T27L10NSP32EP1-13926/nbr2player.msi>

Download link: Mac

https://akamaicdn.webex.com/client/WBXclient-T27L10NSP32EP1-13926/mac/intel/webexnbrplayer_intel.dmg



4 WEBEX ADVANCED FEATURES AND SHARING

Note: Some of the features under this heading can only be carried out by the host or the presenter.

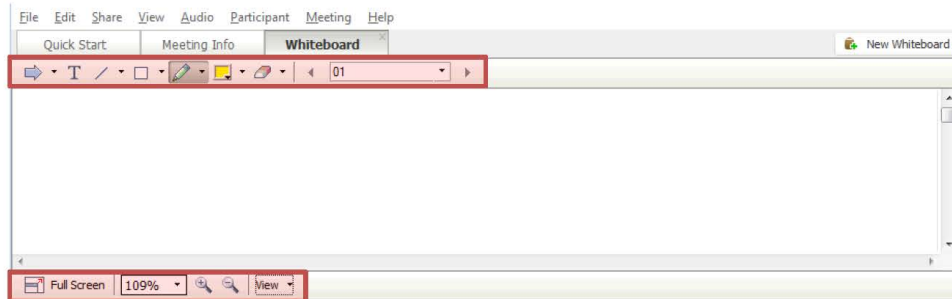
4.1 Whiteboard

To start a new whiteboard, click on the  button on WebEx welcome window

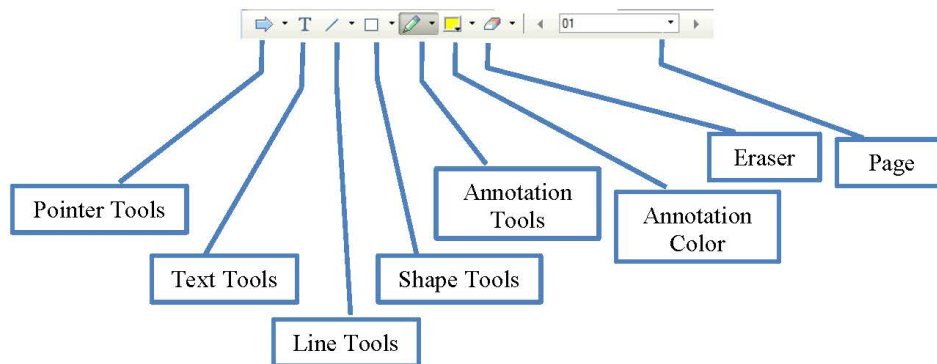
OR

On the menu bar, go to **Share > Whiteboard**

A new whiteboard will be created in a new tab under the menu bar.



Highlighted above are all the tools available to use with Whiteboard.



The above tools will also be present when a file (picture, PDF). The presenter can annotate on the file and save the annotations as a PDF file.

4.2 Desktop

WebEx has the ability to share the desktop screen with the participants give the participant control over mouse and keyboard. To share the desktop:

- Go to **Share > My Desktop**

The following tool bar will appear at the top of your desktop, indicating that you are sharing your desktop.



*Note: If you cannot see the tool bar, move your mouse on the green text **Your are sharing your desktop**.*

To pass keyboard and mouse control to another participant, on the tool bar


- Go to **Assign > Pass Keyboard and Mouse Control** and select a participant.

To assign someone else the presenter. On the tool bar,

- Go to **Assign > Make Presenter** and select a participant.

You can annotate on the desktop by clicking on the **Annotate** button on the tool bar.



- Other participants can be granted permission to annotate by clicking on **Allow to Annotate** and choosing a participant.
- To save the annotated desktop, click on the  button and save it as a JPEG picture format.
- Click **Restore** to clear the annotations.

4.3 Share a file

Files like Powerpoint, PDF, video, and picture can also be shared via. A new tab will be created in the WebEx window, which displays the file.

1. To share a file, go to **Share > File (Including video)...** on the menu bar.
2. A **Share File** box will appear. Go to the location of the file to be shared, and click **Open**.

The file will be shown in the new tab (like the new Whiteboard).

4.4 Others

My Meeting Window

Sharing **My Meeting Window** is the same as sharing the WebEx application via screen sharing. Attendees will be able to see what the presenter is doing on the WebEx Meeting Center window.

Note: This is a good tool to show someone around WebEx.

Other features that can be shared on WebEx are:

Applications

Share a specific application on the presenter's computer with the attendees

*Note: Unlike sharing **My Desktop**, other windows will not be visible to attendees.*

Web Content

A new tab containing the website will be opened on WebEx window.

Web Browser

Share the web browser of the presenter's computer (i.e. Internet Explorer or Firefox).

Remote Computer

Share any remote computer connected to the presenter's computer.

4.5 Save a file

After collaborative annotation, the presenter can save the file.

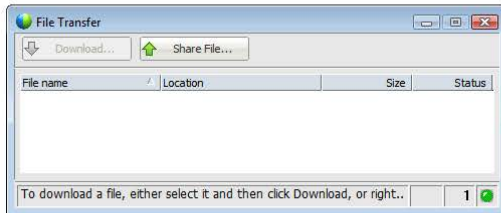
1. To save the file, make sure the file tab is opened.
2. Go to **File > Save As > Document** in the menu bar.
3. **Save Document As** box will appear. In the **Save as type:** choose the (*.pdf) format, type in the name for the file, and click **Save**.


The saved file can then be shared via SharePoint. Or each participants can take turn as presenter and save the file using the above method.

WebEx can also do file transfer between participants.

4.6 File Transfer

1. To transfer a file, go to **File > Transfer** on the menu bar.
2. The **File Transfer** box will appear.



3. Click on  and choose a file you want to share and click **Open**.
4. Other participants will be able to see the file. To download the file, select the file and click **Download**.