

MARITECH ASE Project 99-01130

A Shipbuilding World Class Resource Center for Crosscut Initiatives

**CROSSCUT RESOURCE CENTER
DESIGN GUIDELINES
Change 1**

July 7, 2000

Prepared by

Electric Boat Corporation

Cascade General

Todd Pacific Shipyards Corporation

Approved for public release; distribution is unlimited
Category B data: Government Purpose Rights

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 07 JUL 2000		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE Crosscut Resource Center Design Guidelines Change 1				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Surface Warfare Center CD Code 2230-Design Integration Tower Bldg 192, Room 128 9500 MacArthur Blvd Bethesda, MD 20817-5000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 40	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Record of Changes

CHANGE	CHANGE NUMBER	DATE
Added Section 4.7	1	July 7, 2000
Rephrased Virtual Workshop/Classes Rule 3, Section 4.5	1	July 7, 2000

TABLE OF CONTENTS

1.0	INTRODUCTION AND SCOPE.....	3
1.1	System Identification.....	3
1.2	Background.....	3
1.3	System Overview.....	3
1.4	Document Overview.....	6
2.0	REFERENCE DOCUMENTS.....	7
3.0	VIRTUAL COLLABORATION AND CONFERENCING.....	8
3.1	Overview.....	8
3.2	Virtual Collaboration and Conferencing Tool Analysis.....	8
4.0	SYSTEM AND SERVICE GUIDELINE.....	10
4.1	Resource Center User Audience.....	10
4.2	Service Functional Requirements.....	11
4.3	Resource Center Functional Map.....	11
4.4	Service Content Inventory.....	14
4.5	Resource Center Service Rules.....	19
4.6	Resource Center Service Tracking.....	21
4.7	Resource Center Service Security.....	22
4.8	Service Transactions.....	24
4.9	User Interface.....	25
	APPENDIX A . Resource Center Operational Scenarios.....	26
	APPENDIX B. Review of Collaborative Software.....	30
	APPENDIX C. Resource Center Functional Maps.....	33

LIST OF FIGURES AND TABLES

Figure 1. Crosscut Resource Center Location Nodes.....	5
Figure 2. Combined NSnet and Resource Center Architecture.....	6
Figure 3. Intended User Audience for Resource Center Services.....	10
Figure 4. Resource Center Functional Map.....	14
Table 1. Names and Purposes of Crosscut Resource Center Services.....	4
Table 2. Resource Center Service Functional Requirements.....	12
Table 3. Resource Center Service Content Inventory.....	15
Table 4. Resource Center Service Transactions.....	22

1.0 INTRODUCTION AND SCOPE

1.1 System Identification

This document provides preliminary design specifications for the Crosscut Virtual Resource Center. The Resource Center is a response by members of the U.S. shipbuilding and ship repair community to provide a portion of the support and resources necessary to revitalize the industry. The development and implementation of the Crosscut Resource Center is sponsored under the auspices of the MARITECH ASE program. The contents of this document will continue to change and be updated as a detailed design of the Resource Center is completed.

1.2 Background

The MARITECH ASE Strategic Investment Plan recognizes the importance of addressing people and organizational issues in revitalizing the U.S. shipbuilding and ship repair industry. This recognition is reflected in the creation of the Crosscut initiative. Education/training, organizational change, human resources, and technology transfer are identified as key elements impacting the successful implementation of industry change. These requirements cut across all of the major initiatives in the MARITECH ASE program.

In April, 1999, a one year contract was awarded by the MARITECH ASE program to a team of six U.S. shipyards and one university to design a virtual resource center for crosscut needs. The six shipyards included Avondale, Bath Iron Works, Cascade General, Electric Boat, NASSCO, and Todd Pacific. In the five years proceeding the award of the project, representatives from these shipyards and other industry participants had discussed the need for common industry support services and the potential for an online resource center. These discussions took place through the auspices of panel meetings, the MARITECH SHIP Program Culture Change Forum, and the MARITECH ASE Planning Workshops. With the advent of the MARITECH ASE Program, the six shipyards joined together to propose a Crosscut Virtual Resource Center for the industry. The shipyard team determined that the Resource Center probably was best developed in conjunction with the existing NSnet web site, and as a result, solicited the University of Michigan Transportation Research Institute (UMTRI) as a project team member. This document describes preliminary design guidelines for this Resource Center.

1.3 System Overview

The Crosscut Virtual Resource Center will provide a means by which the U.S. shipbuilding and ship repair community can obtain needed Crosscut resources and collaborate and communicate with one another. Users can select one of thirteen services that enable them to request materials or documents, to link to other web sites, or to conference or collaborate with other members of the industry and the industry's extended partners. The Resource Center will combine the best of an online electronic information environment with human interactions and collaborations. Table 1 identifies the thirteen services and describes the purpose of each service.

Table 1. Names and Purposes of Crosscut Resource Center Services

Service	Purpose
Crosscut Contacts and Communities	Provide a means by which industry users can obtain the names of contacts willing to help with crosscut topics and can participate in crosscut-related newsgroups
Crosscut Information Sources	Provide industry users with significant and timely resource material culled out by crosscut specialists on topics pertinent to crosscut concerns and issues
Crosscut Proposers & Managers Guides	Provide Maritech ASE proposers and industry project managers with guides to help them understand crosscut needs and issues and address crosscut requirements successfully in their proposals and projects
Crosscut Research Service	Provide a means by which industry users can request that research in crosscut areas be conducted and the results provided to the industry
Crosscut Web Links	Provide industry users with connections to good, current web sites with crosscut content
Industry Positive Image Material	Provide industry users with a set of public relations material that can be used in meetings, presentations, conferences, and with educational institutions and employment agents to portray the industry in a positive light
Model School/Industry Programs	Provide industry users with best practice models for school-to-work, intern, and co-op programs from shipbuilding and other industries
Project Results Sharing	Provide a means by which industry users can obtain an overview of the results of Maritech ASE and other non-proprietary shipyard projects
Training Course Library	Provide a means by which industry users can easily share training courses with one another
Virtual Teaming	Provide industry users with a set of tools that can be used to hold collaborative meetings, forums, and presentations
Virtual Workshops/Classes	Develop and present an annual course or workshop in response to a need identified in the Workforce Development Forum
Web Page for Education	Create an online mechanism that would help the industry to foster interactions and communications between the industry and educators and students at all levels
Workforce Development Forum	Sponsor, broadcast, and maintain outputs of an industry forum held to discuss continued workforce development needs and to identify course requirements associated with continued workforce development

The planned Crosscut Resource Center will be a “virtual” center. The Center will not be a building with an extensive staff where users gather to make use of the services and resources. Instead, a minimal infrastructure will exist to house the Center information resources and its online applications at a centralized site. A minimal staff will exist to maintain the physical infrastructure and operational software associated with the Center. However, the users of the Center will be distributed throughout the country. Human support advisors and consultants also will be located throughout the country. Likewise, subject experts responsible for the maintenance of information source content also can be distributed throughout the country. Figure 1 depicts the location nodes associated with the operation of the Crosscut Resource Center.

The Crosscut Resource Center will exist as a specialized environment aligned with the NSnet environment. NSnet services include online access of documents, a database of maritime-related Web links, a calendar of marine events, Web presence and support for the National Shipbuilding Research Program and other research projects, discussion groups, educational materials, and timely news information. NSnet is characterized by a general set of services useful to the shipbuilding and ship repair community. The Crosscut Resource Center, on the other hand, will provide users with information and services specifically organized from a Crosscut perspective. Figure 2 portrays the combined NSnet and Resource Center architecture.

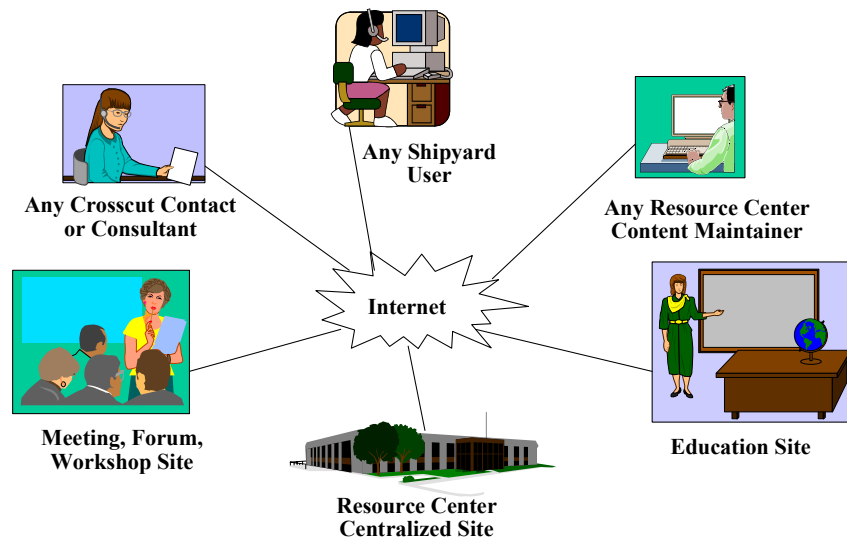


Figure 1. Crosscut Resource Center Location Nodes

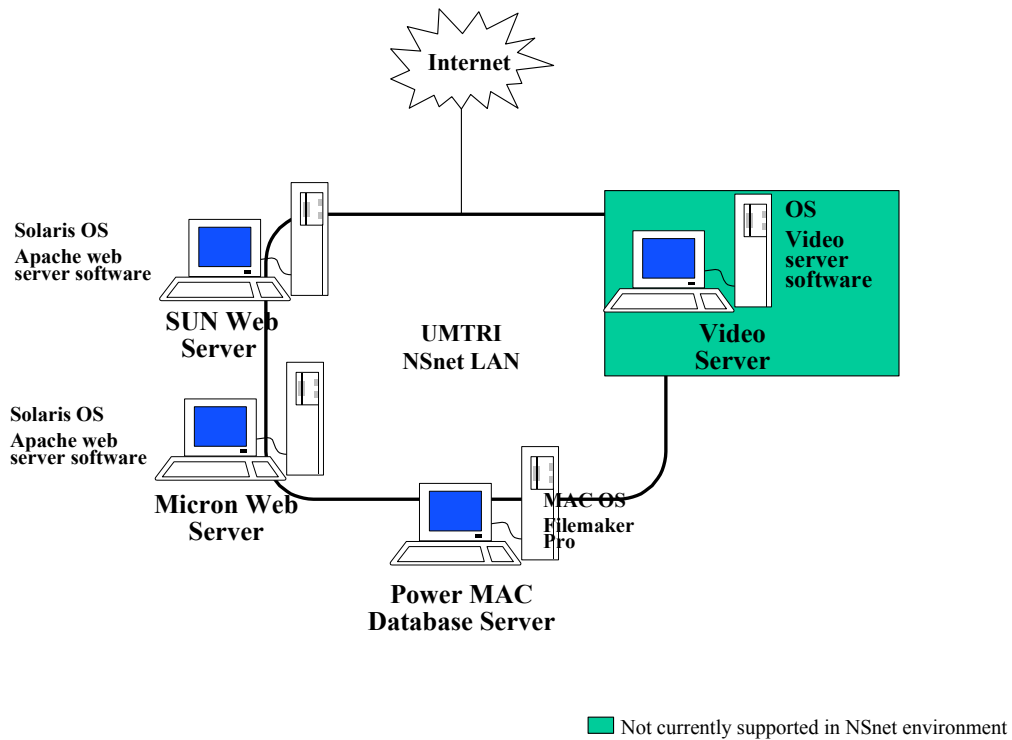


Figure 2. Combined NSnet and Resource Center Architecture

1.4 Document Overview

The objective of this document is to provide a preliminary set of design guidelines for the Crosscut Virtual Resource Center. The document summarizes in general what the Resource Center services need to do and the desired general appearance of the Resource Center. The document includes five sections. Section One provides an introduction and describes the scope of the Resource Center. Section Two identifies associated reference documents. Section Three describes an examination of virtual collaboration and conferencing capabilities applicable to the Resource Center. Section Four provides preliminary system and service design guidelines for the Resource Center. Appendix A describes typical operational scenarios for each Resource Center service. Appendix B provides a summary table for analysis results of virtual collaboration and conferencing tools. Appendix C provides Resource Center functional maps.

2.0 REFERENCE DOCUMENTS

NASSCO. **Crosscut Resource Center Requirements**, January 2000

Cascade General. **Virtual Resource Center Team Communication Plan**, November 1999

Electric Boat and University of Michigan Transportation Research Institute. **Crosscut Resource Center Architecture**, April 2000

3.0 VIRTUAL COLLABORATION AND CONFERENCING

3.1 Overview

The U.S. shipbuilding and ship repair industry is impacted by an inability to efficiently collaborate and communicate with each other and with the extended community of industry partners. The lack of effective communication mechanisms hinders the sharing of resources and the transfer of new technology and processes across the industry. The requirements assessment for the Crosscut Resource Center identified multiple ways in which the industry might better communicate and collaborate. The Resource Center with its planned services is in effect a means for industry communication and collaboration.

Three planned Center services in particular appeared to require the application of virtual collaboration and conferencing technology to provide appropriate support. The first service, the Workforce Development Forum, was designed to present at least one of the project's two scheduled forums online to industry users at their desk top. The second service, Virtual Workshops/Classes, was designed to provide online either a workshop or class each year of the project. The third service, Virtual Teaming, was designed to enable ongoing virtual meetings and a virtual workplace for industry teams.

The Crosscut Resource Center project team had identified the need for virtual teaming capability in their Virtual Resource Center Team Communication Plan. The Plan recommended the use of teleconferencing and email teaming methods, based upon a recognition of the short timeframe associated with the first year Resource Center design contract. However, the Plan noted the need for further evaluation of virtual teaming tools. Work on the Resource Center architecture also identified a need for further examination of virtual collaboration and conferencing technology in defining support for the three services described above. The development of preliminary design guidelines likewise required an examination of the technology and potential application tools. As a result, a more in-depth review was undertaken of virtual collaboration and conferencing technology.

3.2 Virtual Collaboration and Conferencing Tool Analysis

A virtual collaboration and conferencing tool is an application package that provides an online environment for teaming and communication. The teaming and communication needs associated with the three Resource Center services were identified. A comprehensive analysis of virtual collaboration and conferencing applications on the market was conducted. Collaboration and conferencing tools were analyzed for the following criteria: ease of use, ease of installation, firewall barriers, adequate speed, video conferencing, audio conferencing, ability to compose online, notebook/white board availability, user capacity, scalability, and upgrade capability. Cascade General Training Center in Portland, Oregon conducted the research and product comparison analysis.

The methodology for the comparative analysis included the following processes:

- 1) Established criteria for selection of product
- 2) Researched potential products cited in the Team Communication Plan
- 3) Conducted additional research through Groupware Systems, Inc.
- 4) Conducted website and related materials review of all products
- 5) Conducted real time assessment on three products: CUSeeMe, Placeware, and Net Meeting
- 6) Convened an onsite demonstration of InfoWorkSpace including demo of all criteria
- 7) Conducted evaluation of eRoom
- 8) Conducted telephone customer references for InfoWorkSpace

A summary table of the results of the tool analysis is provided in Appendix B. Based on the analysis conducted, a product demonstration to the project team, and product reference calls, the analysis team recommended InfoWorkSpace for prototyping during the development phase of the Resource Center. InfoWorkspace is a web-based, cross platform collaborative tool that provides video and audio conferencing, instant messaging, “whiteboard,” file sharing and document control. InfoWorkSpace is the only product that successfully met all of the specified criteria. InfoWorkSpace integrates three of the leading products—CUSeeMe, Placeware, and NetMeeting into its product, making it the most comprehensive tool.

4.1 Resource Center User Audience

In addition to the identification of the Resource Center audience, Appendix A provides a brief operational scenario for each of the services specified for the Crosscut Resource Center. These scenarios provide examples of typical end-users employing the Center services.

Figure 3. Intended User Audience for Resource Center Services

4.2 Service Functional Requirements

The system level functions of the Resource Center are those common to a web site. For example, it is assumed that these functions will include: system security, site navigation, management of interfaces to external connections (e.g., email to contacts, links, etc.), and system monitoring (e.g., tracking for email delivery failure notices).

Similar functions appear across a number of the Resource Center services. These common functions include:

- Input and update database or file content
- Delete database or file content
- Preview or display database or file content
- Download database or file content
- Print database or file content
- Connect directly to email address
- Connect directly to web URL
- Send material to review board/representative and receive approval
- Schedule collaboration/conferencing session
- Host online, real time virtual session
- Sign into and participate in online, real time virtual session
- Sign off from online, real time virtual session

The functions proposed for each Resource Center service are identified in Table 2. These functions are the required activities that are assumed to be associated with each service, aside from the system level functions of the Resource Center. Developers, maintainers, system administrators, or Center users will utilize these functions.

4.3 Resource Center Functional Map

Figure 4 depicts a functional map for the Resource Center site. The map shows how the functional elements of the site are grouped. The structure depicted in Figure 4 organizes the site into three logical categories: workforce development, crosscut information, and technology transfer. These categories were identified by the Resource Center project team as one means to organize the services requested by the industry. Other potential functional maps have been developed for later consideration. The maps are presented in Appendix C.

In each of the maps, the thirteen Resource Center services are represented by fourteen options available to users. The Crosscut Contacts and Communities service involves two different system functions. The Contacts function focuses on identifying and selecting contacts that can help with crosscut topics. The Communities function focuses on joining and participating in newsgroups aligned with crosscut topics. The two functions will be accommodated in two separate system options.

The Workforce Development Forum service also consists of two different system functions, online participation in the Forum itself and the subsequent delivery of Forum proceedings. The live participation function will be coupled with the Virtual Workshop/ Class option. This option will therefore represent the functions associated with registering for and participating in all live conferences or classes. The delivery of Forum proceedings, including a delayed broadcast of the Forum itself, will be provided under the Workforce Development Forum option.

Table 2. Resource Center Service Functional Requirements

Crosscut Contacts	➤ Input and update contacts in contact index ➤ Delete contacts in contact index ➤ Select contact from index and display contact info ➤ Connect contact directly through email
Crosscut Communities	➤ Input and update newsgroup index ➤ Register for newsgroup ➤ Display selected newsgroup page(s) ➤ Post input to newsgroup ➤ Reply to newsgroup posting ➤ Notify subscribers of newsgroup updates
Crosscut Information Sources	➤ Input and update information source ➤ Delete information source ➤ Select information source from source index and display ➤ Download information source ➤ Print information source ➤ Connect directly to source site
Crosscut Proposers & Managers Guides	➤ Send material to review board and receive approval ➤ Input and update guide material ➤ Delete guide material ➤ Preview guide material ➤ Download guide material ➤ Print guide material
Crosscut Research Requests	➤ Input research requests ➤ Process research requests ➤ Fill research requests ➤ Notify requestor and industry of research results ➤ Preview research results ➤ Download research results ➤ Print research results
Crosscut Web Links	➤ Input and update crosscut link in links index ➤ Delete a crosscut link in links index ➤ Select link from index and display link description ➤ Connect directly to link
Industry Positive Image Material	➤ Input and update public image material ➤ Delete public image material ➤ Preview public image material ➤ Download public image material ➤ Print applicable public image material ➤ Input order requests for applicable material
Model School/Industry Programs	➤ Send model program material to review board / receive approval ➤ Input and update model program material ➤ Delete model program material ➤ Preview model program material ➤ Download model program material ➤ Print model program material

Table 2. Resource Center Service Functional Requirements (Contd.)

Project Results Sharing	➤ Input and update project results description ➤ Delete project results description ➤ Preview project results description ➤ Download project results description ➤ Print project results description
Training Course Library	➤ Input and update training course ➤ Delete training course ➤ Select training course from index and display training course ➤ Download training course ➤ Print applicable training course material ➤ Send vendor course description to review board / receive approval ➤ Input and update vendor training course description ➤ Delete vendor training course description ➤ Select vendor course from index and display course info ➤ Connect training vendor directly through email
Virtual Teaming	➤ Input and update teaming tool descriptions and directions ➤ Delete teaming tool descriptions and directions ➤ Schedule teaming session ➤ Host teaming session ➤ Sign in to and participate in teaming session ➤ Sign off teaming session
Virtual Workshops/Classes	➤ Input and update workshop/class tool descriptions and directions ➤ Delete workshop/class tool descriptions and directions ➤ Schedule workshop/class session for participants ➤ Host workshop/class session ➤ Sign in to and participate in workshop/class ➤ Sign off workshop/class ➤ Input and update workshop or class material ➤ Delete workshop or class material ➤ Preview workshop or class material ➤ Download workshop or class material ➤ Print applicable workshop or class material
Web Page for Education	➤ Input and update web page content ➤ Delete web page content ➤ Navigate and display web page content ➤ Download web page content ➤ Print applicable web page content ➤ Connect contact directly through email ➤ Connect directly to link ➤ Input responses to web page
Workforce Development Forum	➤ Input and update Forum tool descriptions and directions ➤ Delete Forum tool descriptions and directions ➤ Schedule Forum session for participants ➤ Host Forum ➤ Sign in to and participate in Forum ➤ Sign off Forum ➤ Input and update Forum material ➤ Delete Forum material ➤ Preview Forum material ➤ Download Forum material ➤ Print applicable Forum material

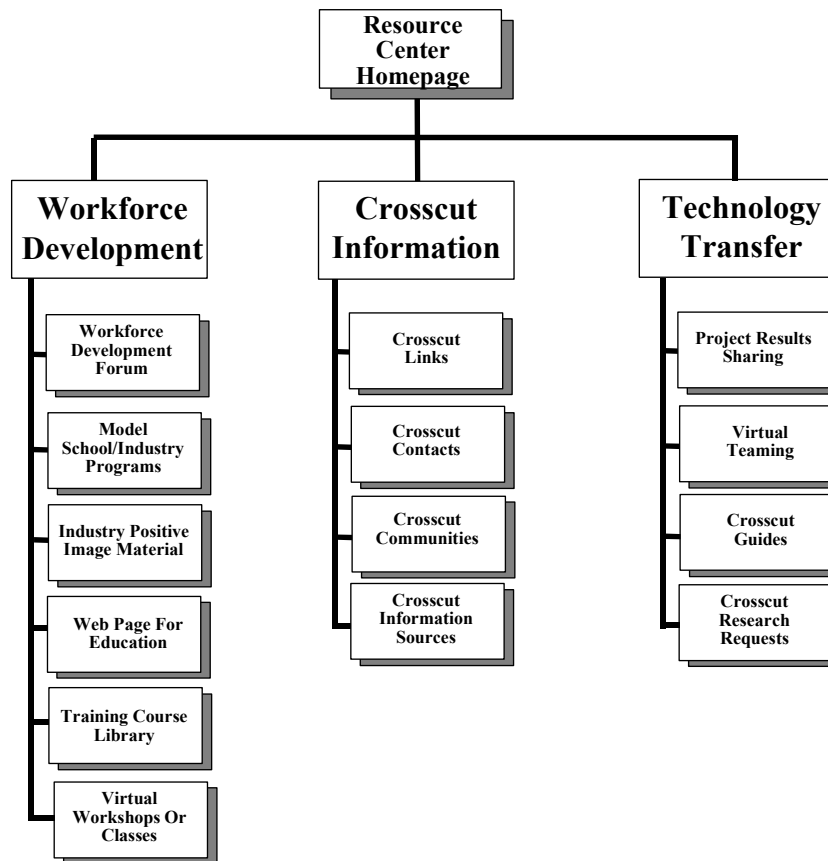


Figure 4. Resource Center Functional Map

4.4 Service Content Inventory

There is broad variation in the content associated with the Crosscut Resource Center services. Table 3 provides an inventory of the content required for each service. The inventory captures both content that is needed to support the operation of a Center service and content actually shared with end-users. The Inventory also identifies any anticipated conversion of content format that may be required to support efficient delivery of services. A further examination of content format will be completed during detailed design of the services. The content formats will help ensure compatibility with the broadest possible audience and will provide guidelines for content developers.

In addition, the Inventory provides the anticipated source of the content. Sometimes members of the industry or outside suppliers provide the content. Other times the content is provided by personnel appointed to develop the content. For a number of the services, the initial appointed content developer would be assigned through the Crosscut Resource Center project. The individual responsible for validating the appropriateness of the content also is identified in the Inventory. In some cases, the validation of content is left to the developer, while in other cases an administrator or moderator is designated.

Table 3. Resource Center Service Content Inventory

SERVICE	CONTENT DESCRIPTION	CONTENT SOURCE	REQUIRED CONVERSION	CONTENT VALIDATION
Crosscut Contacts	Contact admin profile containing, name, crosscut expertise, address, phone, profession and experience, and email address	Contact person	None	Contact person
	Contact service profile containing name, crosscut expertise, profession and experience, and email address	Contact person	None	Center Admin
Crosscut Communities	User registration file containing name, newsgroup name, email address, shipyard or business	Industry users	None	Center Admin
	Questions and answers, comments, user name, posting date and time, posting short title	Industry users	None	Moderator for content
Crosscut Information Sources	Descriptive text abstracts of reports, articles, or seminars, some with embedded web link URLs	Appointed content developer	None	Content Developer
Crosscut Proposers and Managers Guides	Interactive document containing guidelines for addressing crosscut areas. Includes text with some graphics, minimal audio and video clips, hypertext links; perhaps containing embedded web link URLs	Appointed content developer	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics in .jpeg or .gif or .pdf Audio in .au, .aiff, .wav, .mp2 Video in .mpeg, .avi, .mov	Board or Board Representative

Table 3. Resource Center Service Content Inventory (Contd.)

SERVICE	CONTENT DESCRIPTION	CONTENT SOURCE	REQUIRED CONVERSION	CONTENT VALIDATION
Crosscut Research Requests	Request form containing type of research requested, requestor's name, company, phone, email address, and requestor's brief text description of expected output	Industry requestor	None	Center Admin
	Research results for best practices, literature search, lessons learned, etc., containing text and graphics	Appointed researcher	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics in .jpeg or .gif or .pdf	Content Developer
Crosscut Web Links	List of links to pre-selected URLs related to crosscut and text descriptions of each URL's content	Appointed content developer	For descriptions: Text in .doc or .pdf format	Content Developer
Industry Positive Image Material	Color brochures containing text, video images, graphics relating to shipbuilding and ship repair; motion video of shipyard(s)	Appointed content developer	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf Streaming media in RealVideo, Windows Media or AVI	Content Developer
Model School/Industry Programs	Model program descriptions containing text and video images, some with embedded web link URLs and email addresses	Appointed content developer	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf	Board or Board Representative

Table 3. Resource Center Service Content Inventory (Contd.)

SERVICE	CONTENT DESCRIPTION	CONTENT SOURCE	REQUIRED CONVERSION	CONTENT VALIDATION
Project Results Sharing	Project results descriptions, containing text, video images, and graphics; some with embedded web link URLs and email addresses	Project content developer	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf	Project Content Developer
Training Course Library	Course material containing text, video images, graphics, audio and video clips, hypertext links, and motion video	Shipyard training developers	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf Streaming media in RealVideo, Windows Media or AVI	Board or Board Representative
	Training vendor registration file including text with POC, business name, product description, references, embedded email address	Vendor	Formats supported by common browsers, e.g. Text in .doc or .pdf format	Center Admin
Virtual Teaming	Live audio and video of team members, live text messaging, live whiteboard with images, project files containing text and graphics	Team members	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf Streaming media in RealVideo, Windows Media or AVI	Team Leader

Table 3. Resource Center Service Content Inventory (Contd.)

SERVICE	CONTENT DESCRIPTION	CONTENT SOURCE	REQUIRED CONVERSION	CONTENT VALIDATION
Virtual Workshop/Class	Live audio and video of attendees, live text messaging, live whiteboard with images, material files containing text and graphics	Workshop director or instructor	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf Streaming media in RealVideo, Windows Media or AVI	Workshop Director or Instructor
Web Page for Education	Links to public image material, school/industry program models, shipyard homepages, university homepages; interactive lessons, presentations, and/or games, containing text, graphics, video images, audio and video	Appointed content developer	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf Streaming media in RealVideo, Windows Media or AVI	Content Developer; Advisory Board
Workforce Development Forum	Live audio and video of attendees, live text messaging	Forum director	Streaming media in RealVideo, Windows Media or AVI	Forum Director
	Forum minutes containing text, graphics, video images, and motion video	Forum director	Formats supported by common browsers, e.g. Text in .doc or .pdf format Graphics/images in .jpeg or .gif or .pdf Streaming media in RealVideo, Windows Media or AVI	Forum Director

4.5 Resource Center Service Rules

The following initial set of rules or principles has been identified for the services in the Resource Center:

General

- No classified data or content with services
- A common set of crosscut topics/key words will be used to organize choices in services

Crosscut Contacts

- Only email addresses will be provided online for contacts
- Contacts may come from an appointed representative or from a list of validated volunteers

Crosscut Communities

- Users will not have to re-enter complete registration when joining additional newsgroups
- Moderator will monitor newsgroup data for adherence to established newsgroup conventions

Crosscut Information Sources

- Sources may come from an appointed developer or from a list of validated suggestions

Crosscut Proposers and Managers Guides

- None

Crosscut Research Requests

- Only employees of shipyards or their designated representatives may request crosscut research through this service
- Each shipyard will be allotted a set number of requests per year
- Research results will be published for the industry at large in the Resource Center

Crosscut Web Links

- Links may come from an appointed developer or from a list of validated suggestions
- The link list will be updated at least once a month

Industry Positive Image Material

- Materials should be read only
- Shipyards may contribute shipyard specific material and are responsible for the content

Model School/Industry Programs

- Model programs may come from an appointed developer or from a list of validated suggestions
- Model program content should be updated every three months

Project Results Sharing

- Reported project results should be non-proprietary

Training Course Library

- Training course vendors in vendor list must have established business record
- Only courses without copyright or with authorizing copyright may be donated to the library
- Training course library is available to shipyard employees only

Virtual Teaming

- Scheduling will be done on a first come, first serve basis
- Scheduling may be done two months in advance
- A three hour limit will be placed on a session unless no other sessions are scheduled
- The service will be open to any U.S. shipyard employee meeting with at least one other shipyard or industry business or education partner (not meant for internal company meetings)

Virtual Workshop/Classes

- Scheduling may be done six months in advance
- Attendee must register in workshop or class to ensure adequate licensing
- The service will be open to any U.S. shipyard employee or their invitees from U.S. industry business partners, U.S. education partners, or U.S. Government or State partners
- An eight hour limit will be placed on a workshop or class unless no other sessions are scheduled

Web Page For Education

- Web page content may come from an appointed developer or from validated material prepared by a shipyard employee or educator
- Web page content will be updated at least every two weeks

Workforce Development Forum

- Scheduling may be done six months in advance
- Attendee must register with Forum to ensure adequate licensing

4.6 Resource Center Service Tracking

The following requirements have been identified for tracking usage in the Resource Center:

General

- Track hits on the Resource Center site
- Monitor usage by Resource Center options
- Monitor usage by shipyards vs. other users
- Monitor login by direct connection vs. link to Resource Center
- Track additions and deletions for each service
- Version control content that gets updated

Crosscut Contacts

- Monitor individual contact usage
- Monitor contact usage by crosscut topic

Crosscut Communities

- Track participant registration for newsgroup
- Monitor newsgroup usage by crosscut topic

Crosscut Information Sources

- Monitor information source usage by crosscut topic

Crosscut Proposers and Managers Guides

- Monitor usage of Proposers vs. Managers Guide

Crosscut Research Requests

- Track number of research requests against allotted number allowed
- Monitor types of research requested and crosscut topics selected
- Monitor usage of stored research results
- Provide audit trail of research requests and responses

Crosscut Web Links

- Monitor usage of individual links
- Monitor link usage by crosscut topic

Industry Positive Image Material

- Monitor usage by types of material
- Provide audit trail of hard copy orders

Model School/Industry Programs

- Monitor usage by type of school/industry program

Project Results Sharing

- Monitor usage by content type of project

Training Course Library

- Monitor course usage by topic
- Track contributors of courses to library

Virtual Teaming

- Track requests for teaming sessions
- Track individual inputs during teaming session
- Track number of sessions held and number of participants in each

Virtual Workshop/Classes

- Track registration and attendance
- Track number of participants

Web Page For Education

- Monitor usage by web page options

Workforce Development Forum

- Monitor registrations for online Forum
- Track questions, comments from online participants during live session

4.7 Resource Center Service Security

The following requirements have been identified for security in the Resource Center:

General

- System will limit online access to site servers and their data stores and applications only to system administrators and designated content developers
- System will provide virus control for incoming materials
- No classified data
- Guardianship of sensitive or proprietary data is responsibility of data provider
- Marking of data is responsibility of data provider

Crosscut Contacts

- Center administrator will control updates and changes to list of contacts
- No password required for access to service

Crosscut Communities

- System will check newsgroup registration of participants

Crosscut Information Sources

- Content developer will control updates and changes to crosscut information sources
- No password required for access to service

Crosscut Proposers and Managers Guides

- Content developer will control updates and changes to Guides
- Advisory board will ratify Guides
- No password required for access to service

Crosscut Research Requests

- System will check privileges for requesting research to be accomplished
- Content developer will control input of research results

Crosscut Web Links

- Content developer will control updates and changes to links
- No password required for access to service

Industry Positive Image Material

- Center administrator will control updates and changes to image material
- No password required for access to service
- System will check privileges for ordering image material

Model School/Industry Programs

- Content developer will control updates and changes to models
- Advisory board will ratify model programs
- No password required for access to service

Project Results Sharing

- Content developer will control updates and changes to results sharing material
- No password required for access to service

Training Course Library

- System will check privileges for access to training courses
- Content developer will control updates and changes to courses
- Advisory board will ratify course additions
- Center administrator will control updates and changes to training vendor list

Virtual Teaming

- System will check privileges for scheduling of meetings
- System will check privileges for initiating meeting
- System will check privileges for access to virtual team files

Virtual Workshop/Classes

- Content developer will control updates and changes to workshop or class material
- System will check workshop or class registration password for participants
- System will check privileges for scheduling of workshop/classes

Web Page For Education

- Center administrator will control updates and changes to web page content
- Advisory board will ratify web page content
- No password required for access to service

Workforce Development Forum

- System will check forum registration password for participants
- System will check privileges for scheduling of forums
- No password required for access to read-only Forum material

4.8 Service Transactions

Table 4 provides an initial view of the transaction requirements and transaction frequency associated with each Resource Center service. Transmission requirements will be further refined during detailed design of the services. It is anticipated that it may be necessary to encode some media for delivery at different connection speeds to accommodate varying levels of connectivity (i.e., 28.8 modem, 56K modem, T-1, etc.).

Table 4. Resource Center Service Transactions

Resource Center Service	Transaction Description	Average Maximum Use (2000 hits a day)
Crosscut Contacts	Small transaction for text descriptions and email transmission	100 a day
Crosscut Communities	Small transaction for text postings, questions and answers	100 a day
Crosscut Information Sources	Small transaction for text abstracts and link transmissions	100 a day
Crosscut Proposers and Managers Guides	Medium transaction depending upon amount of embedded audio, video, or graphics	100 a day
Crosscut Research Requests	Small to medium transaction depending upon amount of graphics in published research results	5 requests for research a week; 60 a day for research results
Crosscut Web Links	Small transaction for text descriptions and link transmissions	200 a day
Industry Positive Image Material	Medium to large transaction depending upon amount of video, graphics, and streaming media	200 a day
Model School/Industry Programs	Medium transaction depending upon amount of video images	100 a day
Project Results Sharing	Medium transaction depending upon amount of video images and graphics	200 a day
Training Course Library	Medium to large transaction depending upon amount of video, audio, and streaming media	200 a day
Virtual Teaming	Large transaction for live audio and video	200 a day
Virtual Workshops/Classes	Large transaction for live audio and video	15 a week
Web Page For Education	Medium to large transaction depending upon amount of graphics, video, audio, and streaming media	500 a day
Workforce Development Forum	Medium to large transaction depending upon if transmitting text and graphics from Forum materials or media streaming	20 a day

4.9 User Interface

Users will enter the Crosscut Resource Center site directly through a designated online locator (URL) or via a connection through the NSnet homepage. The Crosscut Resource Center will have its own user interface to distinguish it as a specialized environment dedicated to crosscut services. The Resource Center will share a physical infrastructure and applications with NSnet, but appear to be a separate but linked environment to Center end-users.

The Resource Center will contain a homepage that provides a site navigation mechanism, a definition of “crosscut,” and a brief description of the purpose of the Resource Center. A special logo will be created for the Resource Center that can be used to identify the Center’s web pages and to return the user directly to the homepage when needed. Users will travel among Center services by using the site navigation mechanism that will be located in a standard position on every web page.

Two navigation schemes will be investigated through mock-ups of Resource Center screens. One scheme will use the elements from the selected functional map to represent the Center’s structure. For example, if the functional map in Figure 4 was adopted, the standard navigation area might include Workforce Development, Crosscut Information, and Technology Transfer with the specific services in each category provided to the users to support navigation to those services. A second navigation scheme will use an organizing visual metaphor where the service options will be embedded within the visual representation. For example, if a shipyard was adopted as an organizing metaphor, there might be a conference room in the shipyard where users would go to connect to the Virtual Teaming and Virtual Workshop/Class services.

It is assumed that the Resource Center site will handle navigation to external connections via functions built into the web page of the given service. For example, a user will navigate to a crosscut expert via the selection of an embedded email function inside the Crosscut Contacts service.

It is anticipated that as part of developing the user interface some services will be renamed to more appropriately represent the service offered. For example, the “Positive Image Material” label is indicative of the goal of the public relations material provided through the service, but not the label that the industry wants presented to potential users. During the development of the user interface for the Center, attention also will be given to integrating the Resource Center interface with associated applications having their own user interface. For example, the web page for education, sponsored through the Resource Center, might have its own look and feel and user interface, or an application adopted for use in the Virtual Teaming service might have an entirely different interface presentation that users will step into when using the service.

APPENDIX A

RESOURCE CENTER OPERATIONAL SCENARIOS

Scenarios for Crosscut Resource Center Services

Crosscut Contacts and Communities	Jim is a manager for a new welding approach project at a shipyard. He wants to find out what training is normally done when this new approach is introduced and used. He goes to the Resource Center and checks through the contact topic list, finds a couple of topics related to his question, and reviews the contact list. He selects two people to contact and forwards emails directly to them from the Resource Center web page.
	Gretchen would like to find out what others in the shipbuilding and ship repair industry are doing about proving training ROI. She goes to the Resource Center and selects the Training Newsgroup. She searches for previous questions and responses on this topic, and finding none, she puts in a question about training ROI. The question is forwarded to all of the subscribers of the Training Newsgroup.
Training Course Library	Judy needs a training course that reviews the use of basic tools in the shipyard. To determine if a course exists which could be used, she goes to the Resource Center site and chooses the Training Course Library option. She sorts through the available course list and previews a course on shipyard tools. She downloads the course for use at her shipyard.
Industry Positive Image Material	Annie has to give a presentation at career day at the high school. She goes to the Resource Center site and previews the public relations material available, looking for content particularly suited for high school students. She downloads material to take with her to the high school, and orders some glossy handouts to be mailed to take with her to the high school.
Project Results Sharing	Sean is a manager at a shipyard who wants to see if any new methods have been tested by industry that might be applicable to his shipyard. Sean goes to the Resource Center and reviews the list of project results available in the Center. He quickly previews two projects that sound interesting. He then downloads the overview descriptions on the projects.
WorkforceDevelopment Forum	Joe wants to submit a proposal to a program to get funding to build courses for the shipbuilding industry. He has heard that the industry discussed their common course needs for continued Workforce Development at their last Forum. To determine the courses to propose building, Joe goes to the designated Crosscut web site and downloads a copy of the minutes from the last Forum. He also downloads two video segments from the Forum. Pat can't get away from the shipyard to get to this year's Workforce Development Forum. However, she can spare half a day to participate in the Forum online from her desk. She accesses the designated web site and picks up the live feed from the Forum.
Crosscut Information Sources	Sam is an HR specialist at his shipyard. He wants to check out and see if there are any new articles or reports that he's interested in from the current sources identified by the Crosscut Resource Center. He goes to the site and looks through a brief description of the updated offerings. He downloads an abstract on benefits programs and uses the attached URL to link to a web site where the article is available.

Scenarios for Crosscut Resource Center Services (Contd.)

Crosscut Proposers & Managers Guides	Jane is writing a proposal for testing a new welding process for the industry. She reads that she must describe how the project will address crosscut issues. She doesn't know what crosscut issues are or what she might do on her proposed project about crosscut. She was told at the MARITECH ASE bidder's conference that a Crosscut Guide guide is available for proposers at the Resource Center. She goes to the Center and downloads the Proposer's Guide. Brad is responsible for implementing a pretty significant technology change in his shipyard. He knows that he needs to do something about training and maybe something else with HR because everybody's job is going to be affected in the area of implementation. Before he goes and talks with someone at his yard, he wants to get some idea of the kinds of things that he should be thinking about. He heard about some Manager's Guide from Dan that gives hints about what to do. He goes to the Resource Center and downloads the Manager's Guide.
Crosscut Research Service	Matt and Lynn talk at a Crosscut panel meeting about the need for a best practices examination on compensation programs. Others at the meeting agree that their shipyards would be interested in this best practices examination. Matt and Lynn go to the Resource Center and request that the best practices examination be done and the results published for the industry. Jack is looking for creative ways to keep employees at his shipyard. He goes to the Resource Center and requests that a search be completed on employee retention methods by other industries. He receives an acknowledgment that his search will be done and provided through the Resource Center to the industry at large. Jack is given an anticipated completion date for his requested search. In three weeks, Jack receives an email that the research results are posted in the Resource Center.
Web Page for Education	Steve has an online game developed by personnel from his shipyard and kids from the local junior high. He thinks that it would be worth sharing through the education web page. He reviews it with the Resource Center industry advisory committee rep and forwards it to be installed on the web page. Bill is checking to see if there's anything new on the shipbuilding web site that he could use with his students. He accesses the education web page site and finds a game about shipbuilding built by students and a shipbuilder. He uses the game during his class the next day to talk about measurements and metrics.
Model School/Industry Programs	Caroline wants to find out what other industries are doing with their latest co-op programs. She goes to the resource Center site to check for model programs. She downloads the co-op program descriptions to read at her desk.

Scenarios for Crosscut Resource Center Services (Contd.)

Virtual Workshops/Classes	Doug has heard about an introductory class being held online about supervising multi-skill work groups. He goes to the Resource Center to get the information on the course. A week later, Doug signs on through the Resource Center to participate online in the live class. Two weeks after the class is held, Doug describes what he learned to John. He suggests that John access the class material for himself from the Resource Center.
Crosscut Web Links	Terry wants some information on compensation methods offered by other employers and industries. He goes to the Resource Center site and finds a set of HR topic links. He selects a few links that are listed about compensation and goes directly to the listed sites.
Virtual Teaming	Jenny wants to get five shipyards together to discuss a potential workshop for supplier integration. Jenny goes to the Resource Center and schedules the online meeting. A few days later, Jenny and four other shipyard employees go to the Resource Center and use the virtual teaming tool set online to send files back and forth and draw diagrams on a white board while talking during their meeting. Bob wants to hold a virtual panel meeting. He goes to the Resource Center and schedules the virtual meeting. At the designated meeting time, the panel members sign in to the Resource Center and participate in the meeting from their desktops.

APPENDIX B

REVIEW OF COLLABORATIVE SOFTWARE

<i>Review of Collaborative Software</i>														
<i>Software Name</i>	<i>Price Estimate</i>	<i>Ease of Use</i>	<i>Ease of Installation</i>	<i>Firewall Issues</i>	<i>Adequate Speed</i>	<i>Privacy/ Security</i>	<i>Video Conferencing</i>	<i>Audio Conferencing</i>	<i>Compose on server</i>	<i>Ntbk/wt bd</i>	<i>User Capacity</i>	<i>Scalability</i>	<i>Upgrade Capability</i>	<i>Notes</i>
CU See Me	\$70.00	3	3	Yes	Yes *	None **	Yes	Yes	Yes	Yes	12 Video	Yes	Yes	Most video-conferencing programs attach themselves to Cu SeeMe. For file sharing and white board CU See Me uses MS Net Meeting as a carrier. For multi-user video/audio conferences a conference server must be used which can cause security problems if used for communication outside of a LAN. Audio and video require firewall patches and use of a proxy server to maintain security. * 56K or T1 connection ** Security lacking on Internet
Net Meeting	\$0.00	3	3	Yes	Yes **	None ***	Yes *	Yes *	Yes	Yes	2 Video	Yes	No	*Net Meeting has limitations on the number of users. In a standalone operation Net Meeting is able to connect two users in video/audio conferencing. With the addition of several available programs such as CU See Me or Info workspace the capabilities of NetMeeting's Video and Audio can provide multi-user online conferencing. Microsoft Site Server increases multi-user capabilities for all features except video and audio. **56 k or T-1 for video and audio conferencing

Software Name	Price Estimate	Ease of Use	Ease of Installation	Firewall Issues	Adequate Speed	Privacy/ Security	Video Conferencing	Audio Conferencing	Compose on server	Ntbk/wt bd	User Capacity	Scalability	Upgrade Capability	Notes
Placeware	*	3	3	None	Yes **	Adequate	n/a	n/a	Yes	Yes	1000	Yes	Yes	PlaceWare is a Conference system that provides online White Board, Data Transfer, and Online Presentations. Is used by InfoWorkSpace as a driver for their Conferencing software program. PlaceWare is available on line for up to four (4) users for free. *The service will handle up to 1000 seats and numbers are scalable between those numbers at the rate of \$400 per seat per annum * *28.8 K or higher
InfoWorkSpace	TBD	3	1	Yes *	Yes **	Adequate	Yes	Yes	Yes	Yes	1000+	Yes	Yes	Uses Placeware as a driver. Uses Net Meeting For Audio and Video Conferencing * Video and Audio Conferencing uses MS Net Meeting * *56K or T-1
eRoom	TBD	3	?	No	Yes	Yes	No	No	Yes	Yes	1000	Yes	Yes	Project collaboration software with central Web based file storage.
Caucus	TBD	3	N/A	N/A	Yes	Yes	N/A	N/A	No	No	Not Limited	Yes	N/A	On-Line Conferencing and Learning WWW based site. Caucus sets up sessions and does all of the gatekeeping for a conference.

APPENDIX C

RESOURCE CENTER FUNCTIONAL MAPS

