

**Strengthening Social Capital through Computer-mediated Community
Participation**

Usability Testing Methods and Analysis



Building an exclusive online professional and social networking community for The
National Association for Multi-ethnicity in Communications' Executive Leadership
Development Program members

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NAMIC is a 501(c)(6) trade association that educates, advocates and empowers for multi-ethnic diversity in the telecommunications industry. NAMIC was founded in 1980 and currently has a staff of ten that creates and implements national programs for its more than 1,500 members in 17 national chapters. NAMIC's Executive Leadership Development Program (ELDP), in association with UCLA Anderson School of Management, was launched in Fall 2001 as a result of a NAMIC research study that found that people of color are severely underrepresented in the cable industry's executive suites. ELDP provides education and mentor programs designed to help members develop their potential to gain access to the industry's executive level positions.

The ELDP targets upper-middle managers who have a minimum of two years experience at the director level and above from the telecommunications industry, and who are seeking senior-level positions. Their superiors who believe that their performance and potential puts them on track for future executive-level responsibilities must nominate members. Only a select few applicants each year are granted entrance to and graduate from the ELDP, which develops a pipeline of leaders of color who will be well prepared to take the next steps up the executive ladder.

The core values of the ELDP curriculum are areas that are critical to sustained success in the telecommunications industry: marketing and financial analysis; corporate strategy; organizational behavior; managing innovation; operations management; achieving optimal results from diverse teams; communication strategies in a multi-cultural context; change management; and entrepreneurship. Additionally, participants spend time in guided examination of individual leadership styles, strengths and "blind spots," emotional intelligence, and the unique experiences that executives of color have with power—acquiring it; using it wisely; comprehending in all its cultural and organizational complexity. (NAMIC.com)

Project Site / Project Description

Consultants created the NAMIC web site, NAMIC.com, and NAMIC administrative staff updates site content items as needed. The site is a largely informational site that prospective members, current members and donors can get information about past and present NAMIC events and initiatives. While the site does have a job bank component supplied through a third-party provider, NAMIC.com generally lacked any substantial interactivity. Because NAMIC does not have an internal IT department, they periodically solicit consultants to support various technology initiatives.

James Jones, Senior Director of NAMIC Education Programs and ELDP programs director, required a membership-only virtual community area on NAMIC.com that is exclusive to the ELDP alumni, and offers access to group e-mailing, discussion boards, event calendars, and blog creation tools. EDLP exclusivity of the virtual community on NAMIC.com is expected to support and reinforce the unique ties of the ELDP members as well as sustain the energy and enthusiasm that the alumni experienced during their coursework.

Of major importance to NAMIC is that the proposed online community imparts to the user at all levels of functionality and look-and-feel the NAMIC.com experience. Therefore, the virtual community was implemented with NAMIC's high-level requirement that the pages display a seamless visual design into the current NAMIC.com web site.

The type of usability testing performed is observation with protocol analysis. In a protocol analysis, the person being observed is asked to verbalize what they are thinking as they perform the process. The observer can offer no suggestions regarding the process, but prompts the user to verbalize if he or she falls silent. Protocol analysis allows the observer to gain an insight into the person's thoughts, and gain more detail about the process. (Myre)

Purpose

The purpose of the usability testing for the ELDP online community is to ensure that the navigation structure and sequence for accessing documents is not disorienting for users, and that users can find links and information with ease. "The most commonly acknowledged problem in using hypertext is navigation, or more specifically, user disorientation, contributing to users being hopelessly lost in hyperspace. The problem of disorientation seems to be getting worse as the Web grows larger and becomes more popular." (Brush) Disorientation occurs when users lose their way in their navigation through a hypertext system, are unable to formulate appropriate actions for the screen they are viewing within hypertext systems, or are unable to find information that they know is somewhere in the system. Overusing hypertext links, or poorly organizing hypertext links, presents the user with too many confusing choices. Web designs with poor hypertext linkage structures inhibit usability by requiring a user to traverse too many links for needed information. Users can become disoriented and lost while navigating web sites because of the ability to traverse in a nonlinear sequence through hyperlinked information. (Brush) Clearly visible, aptly positioned and well organized links are particularly important for the ELDP members because the average member does not have much time to spend on the Internet in social contexts and therefore needs to find links and information quickly. The ELDP online community usability testing will result in recommendations to ensure a navigation structure wherein ELDP members can quickly orient themselves and are able to grasp quickly the organization of the document in which they are currently positioned in relation to the initial point at which they accessed the community.

Environment

The ELDP membership is geographically dispersed and represents a prime candidate for remote usability testing using synchronous communications. Studies show that there is virtually no difference in usability test results between usability tests performed in local laboratory settings and tests performed using synchronous communications. Bernheim Brush et al. performed a study of remote and synchronous testing of 20 users, 12 synchronous and 8 remote. The remote testing used computer screen-sharing software called Glance, and testers communicated with the participants in phone conversation during the testing. The results of the study revealed that the median number of issues

found in the laboratory and the remote conditions are very similar, both overall and broken down by categories. There also was no significant difference between the median severities of issues found by participants in the two conditions. 75% of participants thought that their comfort level talking to the facilitator was about equal in both conditions, and 71% felt that it was equally easy to remember to think aloud in both conditions. (Bernheim Brush et al. 1180) Most participants felt that the remote condition was more convenient, and none preferred local testing over remote testing. (Bernheim Brush et al.1181)

In a comparison of methods that included laboratory and remote synchronous conditions using 24 subjects, Andreasen et al.'s study results also concluded that the majority of participants felt that the remote setting was more convenient and preferred remote testing to participating in a laboratory test. No participants stated that they preferred laboratory testing. More importantly, there was no significant difference in the number of usability problems identified between the remote synchronous testing and the laboratory testing. (Andreasen et al.1410)

The technical requirements for the ELDP synchronous usability testing, for both the test host and test volunteers, was a high speed Internet connection with Internet Explorer 7+ browser, and a telephone. WebEx's Meet Me Now, a web-based meeting conference application, was used to facilitate the connection, and Meet Me Now also supplied a teleconferencing number for the meeting host and attendees to communicate during the session. The Meet Me Now software operates over HTTP and HTTPS, which means that firewalls do not need any special configuration to allow the software to operate.

In the ELDP usability testing sessions, the host and attendee do not see each other because no web camera is used for the session. Users can dial into the conference number either before they setup the software on their computers or after the software setup is complete. When the attendee logs into the Meet Me Now session, the host passes control of the meeting to the attendee, and the attendee clicks a button to share his computer screen. The host is then able to view all actions that the attendee makes on screen. During the session the host takes notes on the attendee's actions and statements. When the attendee falls silent or inactive, the host prompts the attendee to verbalize what he is thinking.

The meeting software setup procedure for participants is:

- At the start time of the usability session, click on the link in the meeting invitation email to access the meeting
- Users are presented with a page with a "Join a Meeting" form and a link to click to join the meeting
- The next page presents a form that requests users to enter a name and email address, and then click submit
- After users click submit, the Meet Me Now system checks users' computers to determine if either Active X or Java components should be downloaded, and then displays a dialog box for the user to agree to the software download. The software

- download takes an average of two minutes to complete and displays a progress bar to show status
- When the software download completes, the Meet Me Now software alerts the user and then opens the Meet Me Now interface window on screen. The interface displays a list of persons in attendance at the meeting, buttons to share your computer, as well as other buttons to communicate with other meeting attendees.
 - The host advises the attendee to close all sensitive documents and then click the button to start sharing his computer screen

Subjects

The usability test volunteers were members of the ELDP. The survey deployed to the ELDP requested email addresses for those interested in volunteering for testing, and 15 members responded with interest. An email was deployed to the 15 respondents wherein they were asked to select a testing session time, anytime between March 17 and April 4, at the top of each hour, between the hours of 11:00 am and 10 pm, EST. The email also outlined time and technical requirements of the testing session. See Appendix B for the Usability Volunteer Request email. The 15 emails that were deployed resulted in six replies received from committed volunteers. Microsoft Outlook meeting invitations containing the Meet Me Now URL to access for the test sessions, and the telephone number for teleconferencing, were then individually sent to volunteers to confirm each session.

The usability test prototype pages used the layout and navigation structure of NAMIC's newly redesigned Web site. NAMIC employed a web design firm to redesign the site and expects to launch the new site in late April. None of the volunteers have seen the redesigned NAMIC.com; all however, have visited and were familiar with the older NAMIC.com site layout. In terms of user experience, five of the six volunteers were familiar with bulletin board interfaces. None of the volunteers had used a Web-based event calendar software similar to the one used in the usability test.

Tasks

Users were asked to perform two separate tasks using the community tools that respondents stated they would most like to use—social networking (54%) and discussion board (46%). The first task was to logon to the ELDP Community and fill out a form for an event in the event calendar. The second task was to post to the discussion board. After the initial communications software setup, users were given a URL to enter into their browser window's location field to access the usability test site.

Observation

Task I. Logon to the Community and Post an Event

1. Find the link to the ELDP Online Community
 - A User A easily located the link to the online community
 - B. User B easily located the link to the online community
 - C. User C clicked the "Professional Development" link and then scrolled the page, searching for the link: "I'm used to going to Professional Development to get to the ELDP pages."

- D. User D easily located the link to the online community
- E. User E initially did not see the link, and scrolled up and down the page searching for the link, and then finally located the link: "I was looking for a button that said online community."
- F. User F easily located the link to the online community

2: Logon to the ELDP Online Community

All users followed without difficulty the directions centered on the page that instructed them to enter their email address into the text box, and then click submit

3. Locate the link to the event calendar

- A. User A easily located the link to the event calendar
- B. User B easily located the link to the event calendar
- C. User C found the link to the event calendar after searching through the navigation at the top of the page: "I didn't see it because it kind of blends in with all the others."
- D. User D easily located the link to the event calendar.
- E. User E found the link to the event calendar, but with studied determination, she read each link out loud as she moused-over each, until she located the Event Calendar link.
- F. User F easily located the link to the event calendar

4. Login to the event calendar

All users found without difficulty the centrally located login link for the event calendar.

The user name and password to gain access to the calendar displayed above the textbox fields. (Users will be pre-registered for the calendar application.)

Users then entered in the user name and password, and clicked submit.

Users A, B, and E were taken directly to the event posting form. Users C, D, and F were taken to a page that informed them that their browser needed to be configured to receive cookies for the site.

Users C, D, and F read through the instructions on the page to set browser cookie preferences. Users A and F were familiar with how to set cookies. User C had to read each instruction line and perform the steps in sequence.

5. Post an event to the event calendar

Users were asked to enter appropriate information into the various fields of the calendar to create an event posting, and then click the "Save" button.

Clicking the "Save" button returns a Javascript alert that informs the user that the information was saved, but does not navigate users away from the page. The event calendar page displays a tabbed-interface form with labeled fields. Users were asked to enter in as much or as little information as they felt necessary to create their event.

The image shows a web-based form for posting a calendar event. At the top, there are six tabs: 'General', 'Description', 'Recurrence', 'Resources', 'Exceptions', and 'Attachments'. The 'General' tab is selected. The form fields are as follows:

- Calendar:** A dropdown menu showing 'Main Calendar'.
- Title:** A text input field.
- Approved:** A checked checkbox.
- Event Type:** A dropdown menu showing 'Class'.
- Privacy:** A dropdown menu showing 'None'.
- Contact Name:** A text input field.
- Contact Info:** A text input field.
- Addl. Info URL:** A text input field.
- Starting Date:** A date input field.
- Start Time:** A time input field.
- End Date:** A date input field.
- End Time:** A time input field.

At the bottom of the form, there are two buttons: 'Save' and 'Return Home'.

Fig. 5. The calendar application's event posting form

- A. User A easily filled out the information in the first tab; however, he was confused by the "Privacy" field and did not know which selection to choose, so he "left it in the default position." User A clicked through the remaining tabs to view the fields displayed in them but chose not to enter any information in the fields because he felt he "had nothing else to add."
- B. User B easily filled out the information in the first tab except for the "Privacy" field because he "did not know what privacy meant here." Upon completing the first tabbed form, user B clicked the "Save" button. When prompted for why he did not fill out any of the other tabs, user B said that he "did not notice any other tabs."
- C. User C easily filled out the information in the first tab except for the "Privacy" field because she "didn't know what it was for." User B clicked through the remaining tabs and added descriptive text in the form field for the "Description" tab. She stated that she was finished, and then clicked the "Save" button.
- D. User D easily filled out the information in the first tab except for the "Privacy" field because she "didn't know what it meant in this context." User C clicked the "Description" tab and added descriptive text for the event. User C then click through the remaining tabs and read the field choices but chose not to enter any information because "I didn't need to use any of the other options." User C then clicked the "Save" button.
- E. User E easily filled out the information in the first tab except for the "Privacy" field because she "didn't know what to choose for it, so I didn't change it." User C then clicked on the "Description" tab and entered descriptive text in the form field. User C clicked through the remaining tabs and read the form fields but chose not to select any options because they didn't "apply." When prompted to explain in more detail how they didn't

“apply,” User C said that she “didn’t find them relevant” for what she was posting. User C then clicked the “Save” button.

- F. User F easily filled out the information in the first tab, and chose the “Included (Show as Busy)” option for the “Privacy” field. When prompted, User F stated that she made the selection because she thought about her Microsoft Outlook calendar and what privacy meant in that application, and assumed that it meant the same thing here. User F then clicked the “Save” button and did not access any of the tabbed information. When prompted, User F stated that she did not recognize that there were more options to choose, and that the gray color made the tabs easy to overlook.

6. View the newly posted event on the calendar

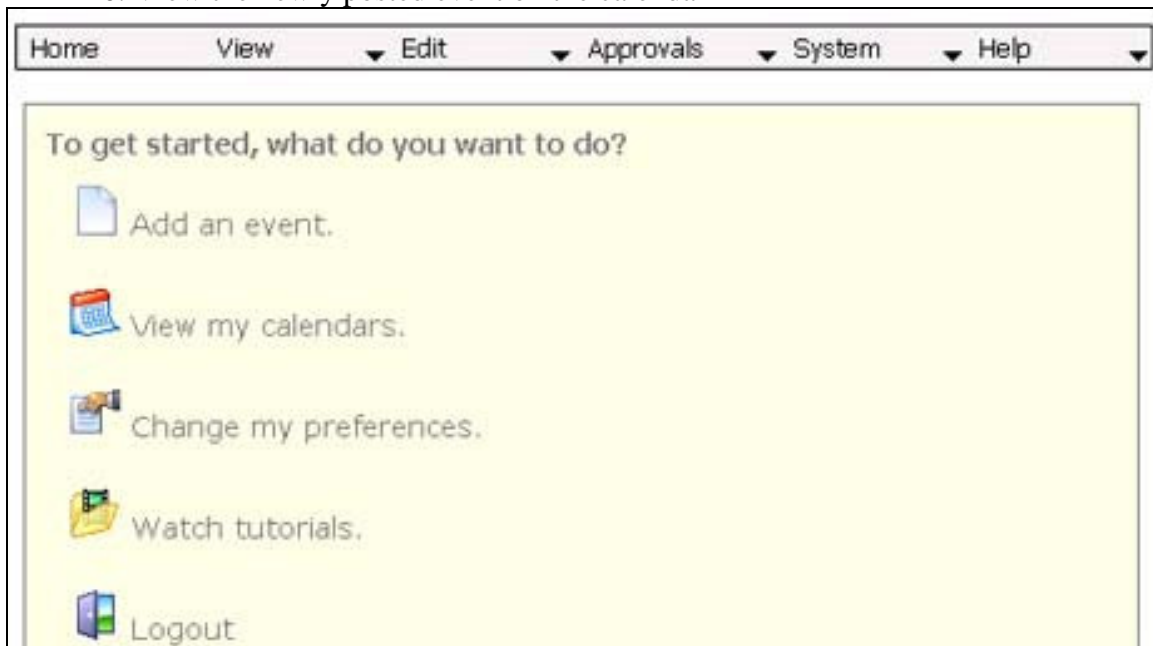


Fig. 6. Users were presented with a list of items to choose from to view the newly created event posting

- A. User A clicked the “Return Home” button on the event posting form, and then clicked the “View my calendars” text link next to the calendar icon on the event posting home page.
- B. User B clicked the “Return Home” button on the event posting form, and then clicked the “View my calendars” text link next to the calendar icon on the event posting home page.
- C. User C moused-over the horizontal navigation links located above the tabbed boxes in the event posting form. On mouseover, the links return dropdown menu items. User C scrolled through each menu item and each dropdown link and finally settled on the “View” menu item. User C then clicked “Calendars” in the “View” dropdown menu.
- D. User D clicked the “Return Home” button on the event posting form, and then clicked the “View my calendars” text link next to the calendar icon on the event posting home page.

- E. User E clicked the “Return Home” button and then clicked on the “View” item in the horizontal navigation links located above the tabbed boxes in the event posting form. User C scrolled through the menu item list and then chose “Calendar.”
- F. User F went directly to the “View” link in the horizontal navigation and selected “Calendar.”

Task II. Post to the Discussion Board

1. Locate the link for the Discussion Board

All users found without difficulty the link for the discussion board.

2. Gain access to the board

The discussion board contains five forums. Users were instructed to select any forum and then try to gain access to post to the forum.

- A. User A selected a forum but was as unsure of what link would grant him access to post, so he scrolled the page looking for clues. User A finally selected the login link: “I don’t see any other way of getting in there, so I’ll go to the Login link.” User A then selected the “Register” link. User A entered a user name, password, and email address on the register page and submitted the form. User A then clicked on the “Back to Message Board” link.
- B. User B selected a forum, but was unsure of how to proceed: “Do I need to register? I’ll register and see if that lets me in.” User B then entered a user name, password and email address in the form on the registration page and submitted the form. User B then clicked on the “Back to Message Board” link.
 - C. User C selected a forum and was unsure of how to proceed to gain access for posting: “What do I do here? I think I’ll click login. Shouldn’t it tell me if I have to login?” User C selected the login link.” User C then selected the “Register” link, and entered a user name, password, and email address on the registration page, then submitted the form. User C then clicked on the “Back to Message Board” link.
- D. User D selected a forum topic to browse but was unsure of how to gain access to post: “I’m going to click login because I think that’s what I’m supposed to do.” User D then entered her email address into the username field, and then paused. When prompted, she stated that she “didn’t have a password to fill in.” When asked what she thought her next step should be, she stated, “I probably need to register since I don’t have a password.” User D then clicked the “Register” link. User D filled in the user name, password and email address fields on the registration page and submitted the form, and then clicked on the “Back to Message Board” link.
- E. User E selected a forum topic and was unsure of how to gain access to post. User E verbalized, “I guess I need to register.” User E then clicked the register button and filled in the user name, password, and email address fields on the registration page, submitted the form, and then clicked the “Back to Message Board” link.

F. User F selected a forum topic, and then selected “New Posts.” At this point, User F was unsure of how to gain access to post. User F clicked the back button on the browser and verbalized, “I cannot tell how to create a message. I’m assuming I’m already logged in, but the link says login, so I’m not sure.” User F then clicked the login button, and then clicked the register button. User F then filled in the user name, password, and email address fields on the registration page, submitted the form, and then clicked the “Back to Message Board” link.

3. Add a post to the board

Users were instructed to either start a new topic or add to an ongoing discussion.



The screenshot shows the 'eLDP - Forums' page. At the top, it says 'You last visited Yesterday at 08:15 PM' and provides links for 'Register | Login | Search | New Posts'. Below this is a table listing various forum categories. Each row includes a folder icon, the forum name, the number of posts and threads, and the date and author of the last post.

Forum	Posts	Threads	Last Post
Welcome to Your Discussion Board	2	2	03/25/08 by Alumni Giving kathyjohnson
Resources	0	0	No posts
Career	2	1	03/18/08 by Ad Sales event wwarrior
Networking	0	0	No posts
ELDP Suggestion Box	0	0	No posts

Fig. 7. The discussion board forum selection interface

A, B, C, E, F: Users A, B, C, E and F selected a forum to add a post. The Users then:

- Clicked on the “New Topic” link located in the center of the page.
- Filled in the topic title field
- Filled in the text area field with the message text
- Clicked the submit button

D. User D selected the forum to add a post. User D then:

- Clicked on the “message subject title” text link in the list of message posts.
- Read the post in the forum
- Clicked on the “Reply” button in the center of the page
- Filled in the topic title field
- Filled in the text area field with the message text
- Clicked the submit button

Open-ended responses from users

Both Users A and F stated that the tabbed forms on the event calendar should be changed to a different color to make them stand out more. All tabs, including the user-selected tab, were a similar shade of gray, which User A stated, “made them seem like all one large box instead of several different boxes.”

Users unanimously agreed that there should be some kind of indication on the bulletin board page that lets users know that it is necessary to create a login to post to the board. It is not that they found the login process difficult; actually users stated that they found it rather easy and intuitive; however, they all found it frustrating that there was no clear indication that it was necessary to complete a registration form in order to post to the board.

Five out of the six users wanted to see more color in the navigation structure to differentiate the current page from visited and other page links. Users stated that finding the links to the bulletin board and event calendar was not difficult, but color separation would make the links placement obvious and take less time to locate specific sections.

Recommendations

The recommendations from the usability testing that all selected software applications must meet are:

- Login features must be clearly labeled and easily accessible
- The login process must be intuitive and contain the least amount of required field sets
- Navigation information architecture must provide clearly defined descriptive text
- The applications must provide a high level of customization for link navigation placement and layout positioning and style
- Users must be able to access links that provide answers intuitively and quickly, and help sections must be highly accessible, well documented and easy to navigate and access information.

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