



Z-Tech Corporation

National Institute of Biomedical Imaging and Bioengineering Usability Test of the Redesigned NIBIB Web Site

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Executive Summary

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) of the National Institutes of Health (NIH) is mandated by the National Institute of Biomedical Imaging and Bioengineering Establishment Act (H.R. 1795), which was signed into law on December 29, 2000. The mission of the NIBIB is to improve human health by leading the development and accelerating the application of biomedical technologies. The Institute is committed to integrating the engineering and physical sciences with the life sciences to advance basic research and medical care.

The NIBIB maintains an Internet site at <http://www.nibib.nih.gov/>, which provides mission-related information to multiple stakeholders that include other federal agency staff, extramural researchers, health professionals, educators, students and patients. The NIBIB also maintains an Intranet site that serves intramural researchers as well as program and administrative staff. Both Web sites play a vital role in fulfilling NIBIB's mission to disseminate information and communicate health and research advances and new directions for research.

The NIBIB engaged Z-Tech Corporation to perform a small-scale usability study with 16 representative end users to test critical parameters of the public Web site, which was redesigned in 2005. The objectives of the study were to benchmark performance, measure stakeholder satisfaction, and document performance issues. The intended use for the study results is to recommend solutions to mitigate specific performance issues. These recommendations will be used for the purpose of prioritizing future enhancements to the NIBIB Web site.

While the sample size of 16 participants is not large enough to provide correlations, an analysis of both quantitative and qualitative data yielded the following results to meet study objectives:

- The NIBIB Web site is easy to use and provides useful information.
- Stakeholders rate their overall experience with the NIBIB Web site between “Good” and “Very Good.”
- The specific barriers to performance yielded recommendations that are focused and actionable.

This final report provides a description of the study design, methodology, protocol, and participants. It supplies relevant data tables for benchmarking site performance and stakeholder satisfaction, and a comprehensive list of recommendations for resolving the performance issues documented during testing. It also identifies opportunities for further study in specific areas where the findings were inconclusive.

Usability Test of the Redesigned NIBIB Web Site

1. Introduction

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) of the National Institutes of Health (NIH) is mandated by the National Institute of Biomedical Imaging and Bioengineering Establishment Act (H.R. 1795), which was signed into law on December 29, 2000. The mission of the NIBIB is to improve human health by leading the development and accelerating the application of biomedical technologies. The Institute is committed to integrating the engineering and physical sciences with the life sciences to advance basic research and medical care.

The NIBIB maintains an Internet site at <http://www.nibib.nih.gov/>, which provides mission-related information to multiple stakeholders that include other federal agency staff, extramural researchers, health professionals, educators, students and patients. The NIBIB also maintains an Intranet site that serves intramural researchers as well as program and administrative staff. Both Web sites play a vital role in fulfilling NIBIB's mission to disseminate information and communicate health and research advances and new directions for research.

The purpose of the study is to test critical parameters of the public Web site, which was redesigned in 2005.

1.1 NIBIB Web Site Performance Goals

The performance goals of the NIBIB Web site are to:

- Communicate mission-related activities, timely information, and accomplishments to NIBIB stakeholder groups; and
- Provide information to stakeholders in the amount of time and with the level of effort that satisfies them.

1.2 Usability Study Objectives

The objectives of the study are to benchmark performance after the most recent Web redesign, measure stakeholder satisfaction with its ease-of-use, and document performance issues.

The intended use for the results of this study is to recommend solutions to mitigate specific performance issues for the purpose of prioritizing future enhancements to the NIBIB Web site.

1.3 Key Research Questions

The key research questions for this study are:

1. Do NIBIB constituencies report high satisfaction with the Web site?
2. Can they find the information they need on the Web site?
3. How quickly do they find what they need?

4. How easily do they find what they need?
5. What are the specific barriers they encounter in trying to find the information they need?

2. Usability Study Methodology

The User Task Analysis testing method was selected to achieve the objectives of this study. In an in-person, one-on-one setting, participants in this type of study are given tasks to perform on the Web site based on their role with respect to the organization. Key stakeholder groups for the Web site are identified, their critical tasks are determined, and test scenarios are developed based on these tasks. Participants are typically given three tasks to complete in addition to pre- and post-test questionnaires during the course of an hour.

The NIBIB study protocol adapts the User Task Analysis to the study objectives utilizing automated tools to capture quantitative and qualitative data. Tasks are administered using software that counts clicks, tracks time to perform each task, and records facial expressions simultaneously with mousing behaviour. The latter provides an additional layer of user experience information to accompany performance metrics.

To benchmark satisfaction with the NIBIB Web site, participants are also asked to respond to questionnaires administered by the automated tool.

In this protocol, participants were debriefed after testing and encouraged to speak candidly about problems they encountered and suggestions for improvement. This qualitative data provides the richness required to document performance issues and make recommendations for improvement.

2.1 Participants

The sample of 16 participants was drawn from NIBIB's key stakeholder groups, identified as:

- **Advocacy/Professional Society Members (4)**—Representing patient groups and/or the scientific community, these participants are interested in NIBIB's leading-edge research.
- **Other Federal Agency Staff (4)**—Representing agencies such as the Veterans Administration, these participants seek to collaborate with the NIBIB on research projects.
- **Extramural Researchers (5)**—Scientists who are not directly employed by NIBIB, but who are eligible to receive funding from the Institute. This audience was separated into:
 - **Grantees (3)**—Scientists receiving funding from NIBIB for current projects.
 - **Non-grantees (2)**—Scientists not currently funded by NIBIB.
- **Intramural Researchers (3)**—Scientists employed by NIBIB.

Several candidates for participation were recommended by the NIBIB. Additional recruiting was performed by an outside firm to complete the sample.

Participants were remunerated for their time.

2.2 Critical Tasks by Stakeholder Group

The critical tasks identified for each stakeholder group are listed in the table below:

Critical Tasks by Stakeholder Group	
Advocacy/Professional Society Members <i>4 participants</i>	Look for information related to the NIBIB budget.
	Find the NIBIB Strategic Plan.
	Look for information about “E-Advances.”
	Find more information related to leading-edge research supported by NIBIB.
	Browse the NIBIB Web site and tell us what you like or disliked about the site.
Federal Agency Staff <i>4 participants</i>	Depending on the participant’s previous experience with NIBIB, look for more information about NIBIB.
	Look for relevant meeting reports and summaries.
	Browse the NIBIB Web site and tell us what you like or disliked about the site.
Extramural Researchers, Non-Grantees <i>2 participants</i>	Find information about writing a grant.
	Look for an Initiative/Project/Program Area of interest – look for funding.
	Contact the Program Officer of the nanotechnology program area.
	Look for information about the Electronic Submission of Grant Applications.
	Look for research information.
	If you had to find resources available to the scientific community, where would you go?
	Browse the NIBIB Web site and tell us what you like or disliked about the site.
Extramural Researchers, Grantees <i>3 participants</i>	Look for an Initiative/Project/Program Area of interest – look for funding.
	Contact the Program Officer of the nanotechnology program area.
	Look for information about the Electronic Submission of Grant Applications.
	Look for research information.
	If you had to find resources available to the scientific community, where would you go?
	Browse the NIBIB Web site and tell us what you like or disliked about the site.
Intramural Researchers <i>3 participants</i>	Look for training opportunities such as postdoctoral positions within the labs.
	Browse the Intramural section of the NIBIB Web site and tell us what you think.
	Browse the NIBIB Web site and tell us what you like or disliked about the site.

2.3 Test Environment

The usability evaluation sessions were conducted in an 8' x 10' office at Z-Tech headquarters. The room featured a standard office desk, a chair, a window, and a door that closed for privacy. Framed posters were hung on the walls to make the room feel more like a typical office environment. The test administrator was seated to the participant's right to take notes.

The participants used a laptop configured with TechSmith Corporation's Morae Testing Software and Bailey's Usability Testing Environment (UTE). These tools were used to assist in the quantitative evaluation of the site by automating the capture of usability data in detail. The tools administered tasks, logged the time to perform tasks, and counted clicks.

Test data was compiled automatically, providing summary data that formed the basis of the results analysis and recommendations. The Morae tool was used during the test to record facial expressions simultaneously with mousing behavior, providing crucial user experience data.

2.4 Study Protocol

Each of the 16 user task analysis sessions was conducted according to the following protocol (see Appendix B for the Moderator's Guide and Test Instruments):

2.4.1 Orientation

Participants received a brief, verbal, scripted introduction and orientation to the study which explained the study's purpose and methodology and what was expected of them. The test administrator assured them that the Web site was being evaluated, not their abilities, and that they should perform in a manner that was comfortable to them.

2.4.2 Informed Consent

Participants were asked to read the consent form. The form verified that participants agreed with the recording of their actions (both audio and video) during the test. The form also assured confidentiality, explained that their information would be used for research purposes only, and noted that Z-Tech and NIBIB would only use their information for the purposes of the study.

2.4.3 Pre-Test Questionnaire

Once participants agreed and signed the consent form, they were given a short background questionnaire to complete, which compiled demographic, behavioral, and attitudinal information. These questions established participant characteristics and their baseline familiarity with the NIBIB Web site. Refer to Appendix B, Test instruments, for the complete list of questions.

2.4.4 Web Site Performance Evaluation

The performance evaluation consisted of tasks that were administered and evaluated separately and sequentially according to each participant's stakeholder group. Participants completed the tasks using the Usability Test Environment (UTE) tool while being recorded by the Morae tool and observed by the test administrator.

The test administrator instructed them to begin their test session. After the participants began working through the task scenario, they were encouraged to work without guidance from the test administrator.

At times, the test administrator asked the participant to verbalize his or her thoughts if he or she became disoriented. The test administrator recorded any of these occurrences and used them to pinpoint problem areas in the Web site.

2.4.5 Post-Test Questionnaire

After participants had completed their assigned tasks, they were asked a series of post-test questions, beginning with a satisfaction metric rating their overall experience:

How would you describe your overall experience with the NIBIB Web site today?

- (5) Excellent
- (4) Very Good
- (3) Good
- (2) Poor
- (1) Very Poor

Then, using a Likert scale of 1 to 5, where 1 = Strongly Disagree and 5 = “Strongly Agree”, the participants were asked to express the extent to which they agreed or disagreed with the following statements:

- The NIBIB Web site is easy to use.
- I always know "where I am" in the NIBIB Web site.
- It's easy to get lost in the NIBIB Web site.
- The NIBIB Web site is difficult to learn
- The features and content of the NIBIB Web site are useful.

Additional questions provided a brief, subjective review of the testing environment. These questions are provided in Appendix B, Test Instruments.

The consent form, pre-test questionnaire, performance test, and the post-test questionnaire were administered directly from the UTE tool. Participants completed all forms directly on the laptop.

2.4.6 Debriefing

The debriefing sessions were audio-recorded and included the following:

- Participants’ overall comments about his or her experience.
- Participants’ responses to probes from the evaluation monitor about specific errors or problems encountered during the evaluation.

The debriefing session allowed the participants to speak openly about their rationale for performing specific actions, and it allowed for the collection of subjective preference data about the application and its supporting documentation.

After the debriefing session, the participants were thanked for their efforts and were compensated for their time in the study.

3. Evaluation Measures/Data Collected

3.1 Performance and Preference data

Performance and preference data were collected along with demographic data on participant characteristics and familiarity with the NIBIB Web site. While the sample size of 16 participants is not large enough to provide correlations, quantitative data has been aggregated for each stakeholder group for the purpose of weighting suggestions for Web site improvement. The following tables are provided in Appendix A for each group:

- **Demographics**—Participant characteristics of gender, age range, and level of education.
- **NIBIB Web Site Usage**—Frequency of visits to the Web site provides baseline familiarity with the content and navigation.
- **Task Completion Time**—Defined as the time required for one participant to complete one task, starting from the home page and ending when they achieve their information-seeking goal.
- **Number of Pages Browsed by Task**—Defined as the number of pages viewed by the participant, starting from the home page and ending when they achieve their information-seeking goal.

The preference data collected from the post-test questionnaire (see section 2.3.5, above) was subjective and consisted of each of the participant's opinions and experiences related to user satisfaction and ease-of-use. Refer to Appendices A for complete data tables.

4. Findings and Recommendations

4.1 Overall Trends

While the sample size of 16 participants is not large enough to provide correlations, the following user trends were observed across all stakeholder groups:

- The NIBIB Web site is easy to use and provides useful information.
- The search feature is popular.
- The picture and video gallery features are popular.
- The links in the top navigation bar are too easily overlooked by users who need access to contact information.
- The mental model for the site may be unclear. Some participants had difficulty figuring out where they were in the Web site and had to navigate to the home page for reorientation when they wanted to try a new browsing strategy in pursuit of a particular piece of information.

4.2 Key Research Questions Answered

While the sample size of 16 participants is not large enough to provide correlations, it is possible to answer the key research questions after a high-level review of the qualitative and quantitative data.

4.2.1 Do NIBIB constituencies report high satisfaction with the Web site?

All 16 participants were satisfied with the NIBIB Web site. The average score across all stakeholder groups for the overall satisfaction question was 3.975 – between “Good” and “Very Good.” Most of the users had a positive response to the post-test questions involving ease of use and usefulness of the NIBIB Web site.

4.2.2 Can they find the information they need on the Web site?

All 16 participants completed their assigned tasks. Participants who couldn't find particular information after browsing switched information-seeking strategies and used the search function. All participants who used the search function were satisfied by the results of the search.

4.2.3 How quickly do they find what they need?

Overall, participants completed their assigned tasks fairly quickly. The majority of participants did not need to spend a lot of time browsing to find the information they were looking for. Participants who couldn't find particular information after browsing switched information-seeking strategies and used the search function.

Some participants had difficulty figuring out where they were in the Web site and had to navigate to the home page for reorientation when they wanted to try a new browsing strategy in pursuit of a particular piece of information.

4.2.4 How easily do they find what they need?

Overall, participants located the information they were tasked to find fairly easily. The participants did not have to dig deep into the site to find the information. However, some participants had difficulty figuring out where they were in the Web site and had to navigate to the home page for reorientation when they wanted to try a new browsing strategy in pursuit of a particular piece of information.

4.2.5 What are the specific barriers they encounter in trying to find the information they need?

Specific barriers to task performance and basic browsing were obtained directly from qualitative data and organized by stakeholder group, as follows.

Overall

- The top navigation bar links (Site Map, Help) are too easily overlooked.
- The mental model of the site may be unclear.

Advocacy/Professional Society Members

- The title “E-Advances” does not adequately describe the content of the page.
- The main “Publications & Features” page needs more description of its information products to be understood in context.
- Participants expected “Leading-edge Research” material to be under the “Research” section.
- Participants expected the “Budget” information to be under Funding/Resources for Researchers/News & Events sections.

Federal Agency Staff

- Text is too technical; not written in Plain Language.
- There are too many links on some pages, which creates confusion when browsing.
- The NIBIB mission is too easily overlooked on the home page.
- Contact information (i.e., phone number and single e-mail address) should appear on the home page.

Extramural Researchers – Non Grantees

- Participants were confused about where to look for information about specific research program areas such as Nanotechnology.
- Participants struggled to find the contact information for a specific Program Officer, assuming it would be listed under “Staff Directories.”
- The “Quick Links” box doesn’t stand out.
- The “en Español” link is misleading; one might expect the entire Web site to be translated in Spanish as opposed to specific pages of content.

Extramural Researcher – Grantees

- The “Labs at NIBIB (Intramural)” section requires an “Overview” on the main page.
- There is a need for more contextual information around “Program Areas” (e.g., links to the grant application process).
- The “Quick Links” box doesn’t stand out.
- The Listserv link is only available in the footer.
- “E-Advances” is buried too deeply within the site architecture.
- Participants navigated to the “Health and Education” to look for “Resources for Scientific Community.”
- The information about the program areas is too broad.

Intramural Researchers

- Participants did not expect to view “Grant” information under the Undergrad section of the Training area of the Web site.

- The information for the “Intramural” section needs to be updated.
- The right-most column of the page layout looks “empty” and should be repurposed to make better use of the space.
- The title “Labs at NIBIB (Intramural)” did not encompass the actual page content.

4.3 Recommendations

A key objective for this study is to provide specific recommendations for Web site enhancements as a list of action items for prioritization. The following is a comprehensive summary of the specific ways in which the NIBIB Web site can be improved, organized by design and page layout, information architecture, and content.

4.3.1 Design and Page Layout

- Incorporate pictures of staff and the labs for the Intramural section.
- Redesign Photo Gallery to include short captions.
- Redesign the Picture Gallery and Video Gallery buttons.
- Redesign top navigation to increase visibility.
- Redesign the page layout to use right hand column space.
- Restructure page to make Quick Links box stand out.
- Restructure the footer to include the NIBIB physical/ mailing address.
- Restructure/rewrite the Home Page to include a list of grants funded by NIBIB.
- Reposition the Listserv link for more prominence.

4.3.2 Information Architecture

- Refine breadcrumbs to address “where am I?” problem.
- Refine/reword search tool/search keywords to avoid confusion.
- Rename the E-Advances link.
- Rename “en Español” to “Información en Español.”
- Rename title “Labs at NIBIB (Intramural)” to “Intramural Research at NIBIB.”
- Rename “Quick Links.”
- Relocate Budget information under Funding/Resources for Researchers/News & Events sections.
- Relocate Grant information under the Undergrad section of the Training area.
- Relocate Leading-edge Research material under the Research section.
- Highlight the E-Advances content.

4.3.3 Content

- Add a link on the Web site for “NIBIB contacts.”
- Add a link to the Electronic Grant Application from the program area page.
- Update/edit the Staff Directory to include all the names of NIBIB’s researchers.
- Write an “about us” section for the Home Page.
- Write an overview to add more context to the Labs at NIBIB (Intramural).
- Write more context for the Publications & Features section.
- Write/add biographies of staff members of the Intramural Research at NIBIB.
- Write/edit/update information for the Intramural section.
- Rewrite the program areas to be more specific.
- Write more contextual information for the program areas.
- Restructure the content, assessing usefulness of number of links on the pages.
- Rewrite content to use more plain language.

5. Opportunities for Further Study

There was some evidence in this study that the mental model of the site, as reflected in the information architecture, may be unclear. There was a trend among approximately half of the participants who felt that it was easy to get lost in the site and did not know where they were. This is reflected in the post-test question measurement for “Context” (see Appendix A for data tables). This requires further study and a more detailed analysis to understand the specific reasons for this response.

Appendix A – Data Tables

Appendix A consists of data tables generated by the Usability Testing Environment (UTE) tool. Performance data is organized according to the stakeholder group representatives that participated in the study, which include:

1. Advocacy/Professional Society Members
2. Federal Agency Staff
3. Extramural Researchers – Non-Grantees
4. Extramural Researchers – Grantees
5. Intramural Researchers

1. Advocacy/Professional Society Members – Pre-Test Questions

Table 1. Demographics					
Gender		Age		Education	
Female	2	18-39	1	High school	0
Male	2	40-59	2	Some	0
		60-75	1	College	2
				Advanced	2

Table 2. NIBIB Web Site Usage					
NIBIB Web Site Usage		NIBIB Usage Frequency			
Yes	2	At least 5	0		
No	2	About once	0		
		About once	1		
		Less often	1		
		Never	2		

Advocacy/Professional Society Members – Post-Test Questions

Table 3. Overall Experience					
Experience		Easy to Use		Context	
Excellent	3	Strongly	1	Strongly	0
Very Good	0	Agree	3	Agree	2
Good	1	Neutral	0	Neutral	2
Poor	0	Disagree	0	Disagree	0
Very Poor	0	Strongly	0	Strongly	0

Table 4. Overall Experience					
Lost in Site		Difficult-to-learn		Usefulness	
Strongly	0	Strongly	0	Strongly	1
Agree	0	Agree	0	Agree	3
Neutral	0	Neutral	0	Neutral	0
Disagree	4	Disagree	3	Disagree	0
Strongly	0	Strongly	1	Strongly	0

Advocacy/Professional Society Members – Task Performance

Table 5. Advocacy/Professional Tasks	
Task No.	Task
Task 1.	Look for information related to the NIBIB budget.
Task 2.	Find the NIBIB Strategic Plan.
Task 3.	Look for information about “E-Advances”
Task 4.	Find more information related to leading-edge research supported by NIBIB.
Task 5.	Browse the NIBIB Web site and tell us what you like or disliked about the site.

Table 6. Task Completion Time (in seconds)					
	T1 Budget	T2 Strategic Plan	T3 E-Advances	T4 Leading Research	T5 Browse NIBIB
P1	43	59	228	230	414
P2	322	125	240	104	579
P3	70	70	63	171	598
P4	72	13	53	74	351

Table 7. Number of Pages Browsed by Task					
	T1 Budget	T2 Strategic Plan	T3 E-Advances	T4 Leading Research	T5 Browse NIBIB
P1	3	3	5	12	20
P2	8	3	6	5	18
P3	5	6	4	9	36
P4	3	3	4	4	23

2. Federal Agency Staff – Pre-Test Questions

Table 1. Demographics					
Gender		Age		Education	
Female	2	18-39	1	High School	0
Male	2	40-59	2	Some	0
		60-75	1	College	2
				Advanced	2

Table 2. NIBIB Web Site Usage			
Web Site Usage		NIBIB Usage Frequency	
Yes	0	At least five	0
No	4	About once	0
		About once	0
		Less often	0
		Never	3

Federal Agency Staff – Post-Test Questions

Table 3. Overall Experience					
Experience		Easy to Use		Context	
Excellent	0	Strongly	0	Strongly	0
Very Good	1	Agree	2	Agree	2
Good	3	Neutral	2	Neutral	2
Poor	0	Disagree	0	Disagree	0
Very Poor	0	Strongly	0	Strongly	0

Table 4. Overall Experience					
Lost in Site		Difficult-to-learn		Usefulness	
Strongly	0	Strongly	0	Strongly	0
Agree	1	Agree	0	Agree	3
Neutral	2	Neutral	1	Neutral	1
Disagree	1	Disagree	3	Disagree	0
Strongly	0	Strongly	0	Strongly	0

Federal Agency Staff –Task Performance

Table 5. Federal Agency Staff Tasks	
Task No.	Task
Task 1	Depending on the participant's previous experience with NIBIB, look for more information about NIBIB.
Task 2	Look for relevant meeting reports and summaries.
Task 3	Browse the NIBIB Web site and tell us what you like or disliked about the site.

Table 6. Task Completion Time (in seconds)			
	T1 More Info	T2 Meeting Reports	T3 Browse NIBIB
P1	273	132	174
P2	2283	58	2
P3	241	51	154
P4	286	93	298

Table 7. Number of Pages Browsed by Task			
	T1 More Info	T2 Meeting Reports	T3 Browse NIBIB
P1	8	3	3
P2	47	4	1
P3	13	3	1
P4	5	4	10

3. Extramural Researchers, Non-Grantees – Pre-Test Questions

Table 1. Demographics					
Gender		Age		Education	
Female	2	18-39	1	High school	0
Male	0	40-59	1	Some	0
		60-75	0	College	0
				Advanced	2

Table 2. NIBIB Web Site Usage					
NIBIB Web Site Usage		NIBIB Usage Frequency			
Yes	1	At least five	0		
No	1	About once	0		
		About once	0		
		Less often	1		
		Never	1		

Extramural Researchers, Non-Grantees – Post-Test Questions

Table 3. Overall Experience					
Experience		Easy to Use		Context	
Excellent	0	Strongly	2	Strongly	1
Very Good	2	Agree	0	Agree	0
Good	0	Neutral	0	Neutral	0
Poor	0	Disagree	0	Disagree	1
Very Poor	0	Strongly	0	Strongly	0

Table 4. Overall Experience					
Lost in Site		Difficult-to-learn		Usefulness	
Strongly	0	Strongly	0	Strongly	2
Agree	1	Agree	0	Agree	0
Neutral	0	Neutral	0	Neutral	0
Disagree	0	Disagree	1	Disagree	0
Strongly	1	Strongly	1	Strongly	0

Extramural Researchers, Non-Grantees – Task Performance

Table 5. Extramural Non-Grantee Tasks	
Task No.	Task
Task 1	Find information about writing a grant.
Task 2	Look for an Initiative/Project/Program Area of interest – look for funding.
Task 3	Contact the Program Officer of the nanotechnology program area.
Task 4	Look for information about the Electronic Submission of Grant Applications.
Task 5	Look for research information.
Task 6	If you had to find resources available to the scientific community, where would you go?
Task 7	Browse the NIBIB Web site and tell us what you like or disliked about the site.

Table 6. Task Completion Time (in seconds)							
	T1 Grant	T2 Funding	T3 Contact Program	T4 Electronic Submission	T5 Research Info	T6 Scientific Resources	T7 Browse NIBIB
P1	53	106	133	40	206	15	548
P2	99	204	540	42	286	21	801

Table 7. Number of Pages Browsed by Task							
	T1 Grant	T2 Funding	T3 Contact Program	T4 Electronic Submission	T5 Research Info	T6 Scientific Resources	T7 Browse NIBIB
P1	2	4	4	4	10	3	19
P2	8	11	33	8	4	2	42

4. Extramural Researchers, Grantees – Pre-Test Questions

Table 1. Demographics					
Gender		Age		Education	
Female	0	18-39	2	High school	0
Male	3	40-59	1	Some	0
		60-75	0	College	0
				Advanced	3

Table 2. NIBIB Web Site Usage			
NIBIB Web Site Usage		NIBIB Usage Frequency	
Yes	3	At least five	0
No	0	About once	0
		About once	1
		Less often	2
		Never	0

Extramural Researchers, Grantees – Post-Test Questions

Table 3. Overall Experience					
Experience		Easy To Use		Context	
Excellent	1	Strongly	0	Strongly	0
Very Good	1	Agree	3	Agree	3
Good	1	Neutral	0	Neutral	0
Poor	0	Disagree	0	Disagree	0
Very Poor	0	Strongly	0	Strongly	0

Table 4. Overall Experience					
Lost in Site		Difficult to learn		Usefulness	
Strongly	0	Strongly	0	Strongly	0
Agree	0	Agree	0	Agree	2
Neutral	1	Neutral	0	Neutral	0
Disagree	1	Disagree	3	Disagree	0
Strongly	1	Strongly	0	Strongly	0

Extramural Researchers, Grantees – Task Performance

Table 5. Extramural Grantee Tasks	
Task No.	Task
Task 1	Look for an Initiative/Project/Program Area of interest – look for funding.
Task 2	Contact the Program Officer of the nanotechnology program area.
Task 3	Look for information about the Electronic Submission of Grant Applications.
Task 4	Look for research information.
Task 5	If you had to find resources available to the scientific community, where would you go?
Task 6	Browse the NIBIB Web site and tell us what you like or disliked about the site.

Table 6. Task Completion Time (in seconds)						
	T1 Funding	T2 Contact Program	T3 Electronic Submission	T4 Research Info	T5 Scientific Resources	T6 Browse NIBIB
P1	258	232	124	546	195	1251
P2	130	205	72	86	33	33
P3	177	150	67	523	12	399

Table 7. Number of Pages Browsed by Task						
	T1 Funding	T2 Contact Program	T3 Electronic Submission	T4 Research Info	T5 Scientific Resources	T6 Browse NIBIB
P1	11	19	6	20	9	64
P2	10	14	4	8	3	3
P3	4	6	4	15	1	16

5. Intramural Researchers – Pre-Test Questions

Table 1. Demographics					
Gender		Age		Education	
Female	2	18-39	1	High school	0
Male	1	40-59	2	Some	0
		60-75	0	College	0
				Advanced	3

Table 2. NIBIB Web Site Usage			
Web site Usage		NIBIB Usage Frequency	
Yes	3	At least five	0
No	0	About once	1
		About once	0
		Less often	2
		Never	0

Intramural Researchers – Post-Test Questions

Table 3. Overall Experience					
Experience		Easy to Use		Context	
Excellent	0	Strongly	1	Strongly	2
Very Good	3	Agree	2	Agree	1
Good	0	Neutral	0	Neutral	0
Poor	0	Disagree	0	Disagree	0
Very Poor	0	Strongly	0	Strongly	0

Table 4. Overall Experience					
Lost in Site		Difficult-to-Learn		Usefulness	
Strongly	0	Strongly	0	Strongly	2
Agree	0	Agree	0	Agree	1
Neutral	1	Neutral	1	Neutral	0
Disagree	1	Strongly	0	Disagree	0
Strongly	1	Disagree	2	Strongly	0

Intramural Researchers – Task Performance

Table 5. Intramural Researcher Tasks	
Task No.	Task
Task 1	Look for training opportunities such as postdoctoral positions within the labs.
Task 2	Browse the Intramural section of the NIBIB Web site and tell us what you think.
Task 3	Browse the NIBIB Web site and tell us what you like or disliked about the site.

Table 6. Task Completion Time (in seconds)			
	T1 Training	T2 Browse Intranet	T3 Browse NIBIB
P1	251	781	301
P2	423	263	567
P3	224	217	1130

Table 7. Number of Pages Browsed by Task			
	T1 Training	T2 Browse Intranet	T3 Browse NIBIB
P1	8	34	7
P2	14	3	15
P3	10	5	32

Appendix B – Usability Test Instruments and Moderator’s Guide

Appendix B consists of the following study-related documents for further reference:

- NIBIB Usability Test Instruments
- NIBIB Usability Test Moderator’s Guide



Z-Tech Corporation

NIBIB Usability Test – Instruments

Version: 1.0
July 7, 2006

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Contract Number:
1435-04-03-CT-73268
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Task Order:
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Project:	NIBIB – Usability Study	
Title:	NIBIB – Usability Test Instruments	Version: 1.0
Contract Number:	1435-04-03-CT-73268; Order #62028	Date: 07/07/2006

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July 6, 2006	0.1	Initial Draft	Jaishree Alreja
July 7, 2006	0.2	Format	Catherine Sandy
July 7, 2006	1.0	Final Draft	Jaishree Alreja

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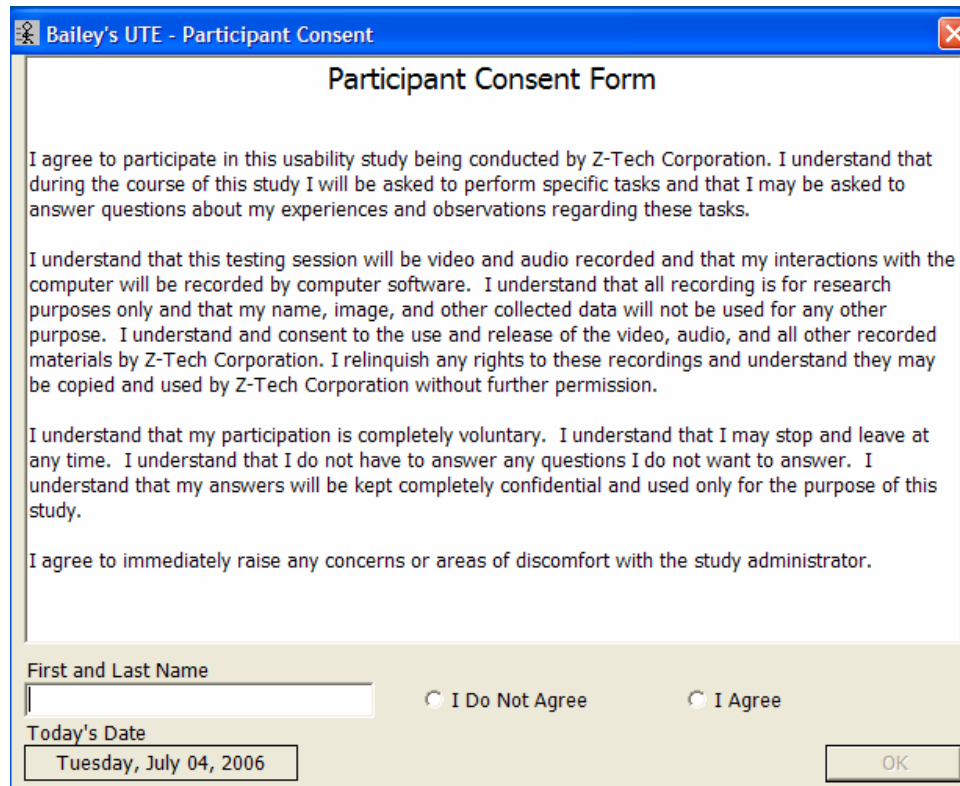
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NIBIB Usability Test Instruments

1. Participant Consent Form



Participant Consent Form

I agree to participate in this usability study being conducted by Z-Tech Corporation. I understand that during the course of this study I will be asked to perform specific tasks and that I may be asked to answer questions about my experiences and observations regarding these tasks.

I understand that this testing session will be video and audio recorded and that my interactions with the computer will be recorded by computer software. I understand that all recording is for research purposes only and that my name, image, and other collected data will not be used for any other purpose. I understand and consent to the use and release of the video, audio, and all other recorded materials by Z-Tech Corporation. I relinquish any rights to these recordings and understand they may be copied and used by Z-Tech Corporation without further permission.

I understand that my participation is completely voluntary. I understand that I may stop and leave at any time. I understand that I do not have to answer any questions I do not want to answer. I understand that my answers will be kept completely confidential and used only for the purpose of this study.

I agree to immediately raise any concerns or areas of discomfort with the study administrator.

First and Last Name

I Do Not Agree I Agree

Today's Date

Figure 1 – Participant Consent Form

2. Pretest Questions for NIBIB Website Usability Test Plan Scenarios

Pre-Test Questions:

1. **Gender:** What is your gender?
 - Female
 - Male
2. **Age:** What is your age?
 - 18-39
 - 40-59
 - 60-75
3. **Education:** How much education have you completed?
 - High school or less
 - Some college
 - College degree
 - Advanced Degree
4. **Job Title:** What is your job title? Please explain, very briefly, some of your job duties.
5. **Job Duration:** Please specify length of time in this job (please select one):
 - Less than 1 month
 - 1 month to 6 months
 - 6 months to 2 years
 - 2 years to 10 years
 - More than 10 years
6. **Internet Usage:** How often do you use the Internet? (please select one):
 - Daily
 - At least 5 times a week
 - About once a week
 - Less than once a week
7. **NIBIB Web Site Usage:** Have you ever used the NIBIB web site?
 - Yes
 - No
8. **NIBIB Web Site Usage Frequency:** If you answered 'yes' for the previous question, how often do you use the NIBIB Web site? (please select one):
 - At least five times each week
 - About once a week
 - About once a month
 - Less often than monthly
 - Never

- 9. Information Type:** If you have used the NIBIB site before, what type of information have you looked for on the NIBIB Web site?

3. Scenario(s): Extramural Researchers – Grantees (5)

3.1 Scenario 1 – Funding

Consider that you are looking for funding and are interested to find out what the National Institute of Biomedical Imaging and Bioengineering has to offer. Starting at the home page, use the NIBIB Web site to look for Nanotechnology research area and funding opportunities for the same.

3.2 Scenario 2 – Contact Information

Starting from the NIBIB home page, use the Web site to contact the Program Officer of Nanotechnology program area.

3.3 Scenario 3 – Electronic Grant Submission

Consider that you are looking to submit a grant application to NIBIB. Starting from the home page of the NIBIB Web site, look for information about the Electronic Submission of Grant Applications.

3.4 Scenario 4 – Research Information

Starting from the NIBIB home page, use the Web site to look for Research information - as you browse, please tell me what would be of most interest to you.

3.5 Scenario 5 – Scientific Community

If you had to find resources available to the scientific community, where would you go on the NIBIB Web site?

4. Scenario(s): Extramural Researchers – Non-Grantees (5)

4.1 Scenario 1 – Look for Information

Consider that you are interested in submitting a grant application to NIBIB. Starting from the home page, use the Web site to look for information about writing a grant application.

4.2 Scenario 2 – Funding/Research Area

Consider that you are looking for funding and are interested to find out what the National Institute of Biomedical Imaging and Bioengineering has to offer. Starting at the home page, use the NIBIB Web site to look for Nanotechnology and funding opportunities for the same.

4.3 Scenario 3 – Contact Program Officer

Starting from the NIBIB home page, use the Web site to contact the Program Officer of Nanotechnology program area.

4.4 Scenario 4 – Electronic Submission of Grant Applications

Consider that you are looking to submit a grant application to NIBIB. Starting from the home page of the NIBIB Web site, look for information about the Electronic Submission of Grant Applications.

4.5 Scenario 5 – Research Information

Starting from the NIBIB home page, use the Web site to look for Research information - as you browse, please tell me what would be of most interest to you.

4.6 Scenario 6 – Scientific Community

If you had to find resources available to the scientific community, where would you go on the NIBIB Web site?

5. Scenario(s): Federal Agency Staff

5.1 Scenario 1 – Look for Information

Consider that you are seeking information on the NIBIB Web site that could be of interest to you. Starting from the home page, use the Web site to look for such information and information about NIBIB.

5.2 Scenario 2 – Meeting Reports and Summaries

Starting from the home page, look for relevant meeting reports and summaries on the NIBIB Web site.

6. Scenario(s): Advocacy Professionals/Society Members

6.1 Scenario 1 – Budget

Using the NIBIB Web site, look for information related to NIBIB budget.

6.2 Scenario 2 – Strategic Plan

Using the NIBIB Web site, find the NIBIB Strategic Plan.

6.3 Scenario 3 – E-Advances

Using the NIBIB Web site, look for information about 'E-Advances'.

6.4 Scenario 4 – Leading-Edge Research

Using the NIBIB Web site, look for information related to leading-edge research supported by NIBIB.

7. Scenario(s): Intramural Researchers

7.1 Scenario 1 – Graduate Students Training Opportunities.

Using the NIBIB Web site, look for training opportunities such as summer internships.

7.2 Scenario 2 – Post Doctoral Training Opportunities.

Using the NIBIB Web site, look for training opportunities such as postdoctoral positions within the labs.

8. Post Test Questions for NIBIB Website Usability Test

1. **Overall Experience:** How would you describe your overall experience with the NIBIB Web site today?
 - Excellent
 - Very Good
 - Good
 - Poor
 - Very Poor
2. **Easy to Use:** Please express the extent to which you agree or disagree with the following statements: The NIBIB Web site is easy to use.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
3. **Context:** I always know "where I am" in the NIBIB Web site.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
4. **Lost in Site:** It's easy to get lost in the NIBIB Web site.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
5. **Difficult-to-learn:** The NIBIB Web site is difficult to learn
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
6. **Usefulness:** The features and content of the NIBIB Web site are useful.
 - Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree

Session Experience

- 7. Surroundings:** Please indicate the extent to which you agree or disagree with the following statement: The test surroundings were comfortable and non-intimidating.
- Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
- 8. Test materials:** The test materials and equipment were well prepared and explained.
- Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree
- 9. Tasks:** The tasks were clear and understandable.
- Strongly Agree
 - Agree
 - Neutral
 - Disagree
 - Strongly Disagree



Z-Tech Corporation

NIBIB Usability Test – Moderator’s Guide

Version: 1.0
June 14, 2006

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Moderator's Guide

1. Participant Introduction

[Welcome the participant, offer them refreshments. Offer them the opportunity to use the restroom facilities.]

Thank you for coming today.

My name is Jaishree Alreja; I am working with a team to perform benchmark usability testing of the National Institute of Biomedical Imaging and Bioengineering (NIBIB) Web site. As a part of the process, we will be asking you to perform some typical tasks and we would like you use the Web the way you would on any other day. This process will help us obtain baseline data for ongoing assessment of the Web site's usability.

At this time, I'd like to stress that we are testing this Web site, not your abilities. If you find sections of the Web site difficult to understand, so could other people, and this in no way is a reflection of your personal ability. Identifying such areas is the purpose of our session today and we appreciate your time and help.

During today's session, you will be presented with some questionnaires. I encourage you to be candid. I will be taking notes during the session. These notes will only be used internally for research purposes and will not be published. Your comments will be kept confidential.

Today's session will last for approximately one hour. If you want to stop for a break at any time, please feel free to say so.

2. Explain Equipment

We will be using an HP laptop for our session today. The laptop is configured with TechSmith Corporation's Morae Testing Software and Bailey's Usability Testing Environment (UTE). These tools are used in combination to assist quantitative usability evaluation of Web sites and Web applications by automating the capture of usability data in detail. The Morae tool will be used during the test to record videos of user interaction with the system.

[Address questions]

3. Contact Information Sheet

I have a contact information sheet that I'd like you to complete before we begin. It should take only a few minutes. Again, your name will not be directly associated with your responses.

The information you provide will only be used internally within Z-Tech for NIBIB's usability purposes and will not be published for any other purpose.

4. Test Session

Today's test session, will be conducted in the following process:

- Consent Form
- Pre-test Questionnaire
- Performance Test
- Debrief and Post-test Questionnaire

All the steps listed above will be conducted using the laptop. When you begin, you will be prompted by the system to read and fill out a consent form. After filling out the consent form, you will be required to fill out a pre-test questionnaire. Once you have completed the pre-test questionnaire, the system will prompt you with test tasks that you will be required to complete within a certain time limit. We have a total of (number will depend on user group) tasks. After you have completed all the test tasks, you will be prompted to fill out a post-test questionnaire.

During the test session, I may prompt you from time to time to ask you what you are thinking. If you come across something that you do not understand, please say “I don’t know what this is for”. If you would like to quit a task at any time, please inform me and we will move on to the next task.

We have attempted to select tasks that should be able to completed within (time will depend on the task) minutes. If you require more than the stipulated time for any task, I may ask that you stop work to begin the next task. However, please don’t rush yourself through any task.

Do you have any questions before we begin?

[Address questions]

5. Debrief

Once again, I’d like to thank you for coming and donating your time today.

How did you like today’s session?

Do you have any other comments or questions? You are welcome to express any thoughts that you might have that will help us improve the usability of the NIBIB Web site.

[Address questions or comments]

This is for you [give Z-Tech pen and remuneration] to thank you for your participation.

If you have any additional feedback for us after you leave here today, please feel free to contact me at any time.

[Provide contact card]