

Usability Inspection Report of NCSTRL

(Networked Computer Science Technical Report Library)

www.ncstrl.org

NSDL Evaluation Project - Related to efforts at Virginia Tech

Dr. H. Rex Hartson

Priya Shivakumar

Department of Computer Science

Virginia Tech

Sample NCSTRL Usability Evaluation Report

Please send feedback to nsdlevel@vt.edu

Overview of NCSTRL

The Networked Computer Science Technical Report Library (NCSTRL) is a distributed system that provides a single point of access to the technical reports from participating international computer science departments and laboratories, through its web interface accessible at www.ncstrl.org. Technical reports are gathered in NCSTRL via a process called "harvesting" from other repositories.

Some Terminology for Understanding NCSTRL and this Report

Computing Research Repository (CoRR): online repository of a partnership of ACM, the Los Alamos e-Print archive, and NCSTRL. CoRR is available to all members of the computing community at no charge.

Submitting a document to CoRR involves logging on and uploading a document (research article related to computing) to the CoRR repository, giving access to the article by a wide audience.

Open Archives Initiative (OAI) Protocol: Used for metadata harvesting to provide an application-independent interoperability framework that can be used by a variety of communities who are engaged in publishing content on the Web.

Harvesting: the process of issuing a request through some protocol (in this case OAI) to a data provider (a partner repository, or archive) and using the returned metadata as a basis for building value added services, such as search engines, browsing capabilities, and output formatting.

We harvest from other data providers into NCSTRL, but at the same time NCSTRL itself is also an open archive and hence is harvestable (it exposes the metadata that it harvested from other repositories). This function is accessed through a set of http protocol requests using query strings and is not strictly part of the normal Web user interface.

User Tasks Supported by NCSTRL

T1 - Search for technical reports based on a set of criteria.

T1a – Simple Search involves searching all bibliographic fields and grouping the results by archive and sorting.

T1b – Advanced Search provides for searching individual bibliographic fields with several filter options.

T2 - Browse the NCSTRL collection.

T3 - Register with NCSTRL to publicize (advertise) reports through NCSTRL.

T4 - Submit a technical report to CoRR.

T5 - Harvest from NCSTRL using OAI protocol suite.

Usability Inspection

Usability inspection is a usability evaluation method that:

- Applies to both early designs (e.g., low-fidelity prototypes) and deployed systems
- Is usually less expensive than lab-based usability testing
- Is expert-base (conducted by a trained usability engineering practitioner)
- Has the goal of predicting usability problems that users will encounter in real usage

Good Points of the NCSTRL Design

Since a usability inspection usually yields a list of usability problems, an inspection report can be perceived as only negative and critical. The goal of this report is, in fact, to list what we perceive to be usability problems, based on our usability inspection. However, we would like to say up-front that overall we found NCSTRL to be easy to understand and not difficult to use. The system functionality seems appropriate and the user interface is aesthetically pleasing.

However, very few user interfaces are so good that they cannot benefit from a usability evaluation. In that spirit, we present our candidate usability problems to consider in the event that a redesign effort occurs in the future.

Potential Usability Problems Revealed in Inspection

General Problems

User Task.Problem Number: Overall.1
Usability Problem Name: Homepage design
Usability Problem: Need for a splash page to help the user get an overview of NCSTRL.
Usability Principle: Explain the system model to the user, including what a user can do with this system.
User Action Framework Classification: Planning > User's Model of the System
Estimated Severity: TBD

Suggested Possible Redesign: Make the 'Splash Page' the default screen for the user instead of the 'Simple Search'. Add a 'Home' button to the menu bar which loads the splash page.

Location: In the Homepage.

Other problems subsumed: Fixing this problem also solves T1a.1

User Task.Problem Number: Overall.2

Usability Problem Name: Tabs need feedback

Usability Problem: Need for improved feedback for navigational grounding. Clicking on a "tab" (menu button in the top frame) does not result in feedback as an indication of which tab is the currently active choice.



Usability Principle: Provide good navigational grounding ("You are here"), so that the user doesn't feel lost while browsing the site.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Clicking on any tab in the top frame should highlight the tab indicating that it has been clicked on, to show which tab is currently active.

Location: In the Homepage.

Other problems subsumed: This will also solve the related problem (Problem T1a.1) that the tab choice for "Simple Search" is a "hidden" default.

User Task.Problem Number: Overall.3

Usability Problem Name: Jargon (Discovery-Date)

Usability Problem: The term 'Discovery Date' (as found, for example, in the Sort Results By pull-down list in the Simple Search function) is not user centered.

Usability Principle: Use user-centered wording (i.e., words the average user is likely to use).

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Replace it by a term that is more meaningful to the user.

Location: In the Homepage, under "Sort results by"

Other problems subsumed:

User Task.Problem Number: Overall.4

Usability Problem Name: Inappropriate term (hits), slang

Usability Problem: The term "hits" is an inappropriate slang term. In usability circles, "hit" is considered unattractive and can offend the sensibilities of some users.

Usability Principle: Use appropriate word choices, not slang or jargon.

User Action Framework Classification: TBD

Estimated Severity: Minor, cosmetic, aesthetic.

Suggested Possible Redesign: Replace by 'Matches with Search Term'.

Location: Access Homepage, click on 'Browse', the term is on the left frame of the Browse page.

Other problems subsumed:

User Task.Problem Number: Overall.5

Usability Problem Name: Inconsistent terms

Usability Problem: The terms Groups and Archives have been used apparently interchangeably in this design.

Groups

archive	Hits
AI Group at NASA	2
Auburn-Eng	86
BostonUniv	186

Usability Principle: Use precise, complete and consistent wording. Two or more terms with the same meaning can be confusing.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: 'Institutions' (who own the various archives) might be more meaningful to the user. The final choice for a consistent term (as for any terminology question) is, of course, up to the subject matter experts.

Location: Access Homepage, click on 'Browse', the term is on the left frame of the Browse page, as shown above.

Other problems subsumed:

User Task.Problem Number: Overall.6

Usability Problem Name: Links that look like buttons, but don't behave like buttons.

Usability Problem: The gray background to the links in the menu bar make them seem like buttons. User might click on the background assuming it is a button, and not get any result.

Simple Search

Advanced Search

Browse

Register

Submit to CoRR

About NCSTRL

Usability Principle: Make the interaction with the user interface objects easy.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Change the links to real buttons in the menu.

Location: In the constant top frame.

Other problems subsumed:

User Task.Problem Number: Overall.7

Usability Problem Name: Tabs need organization

Usability Problem: The tabs lead to a mixture of both information-seeking tasks and other interactive functionality. Organizing tasks by major task categories can reduce cognitive workload for users.

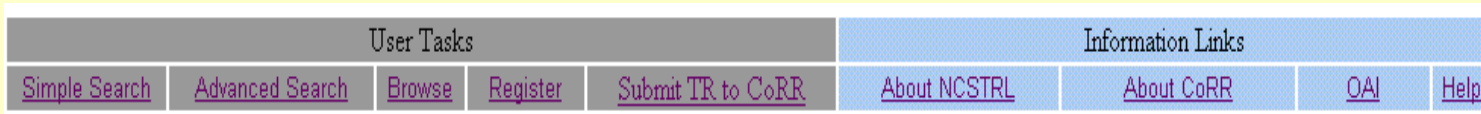


Usability Principle: Group related functions/tasks.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Group the tabs by 'User Tasks' and 'Information Links'. The user tasks would then contain the 'Simple Search', 'Advanced Search', 'Browse', 'Register' and 'Submit Technical Report to CoRR', which leads directly to the Submit page in CoRR i.e. <http://TBD.lanl.gov/submit> (see problem T4.2). The information links would contain the tabs 'About NCSTRL', 'About CoRR', 'OAI' and 'Help' as shown below.



Location: On all pages, in the constant top frame

Other problems subsumed:

User Task.Problem Number: Overall.8

Usability Problem Name: Consider combining search and browse functions.

Usability Problem: Organization of functionality may not match user's task view.

Usability Principle: This problem is only conjectural at this point and would require more user input to validate. Search and browse are usually provided as separate functions (as they are in NCSTRL). This is often because developers see them as having different underlying mechanisms. However, we believe that some/many users naturally view both searching and browsing as parts of a more general task of information seeking. By following a functional view of keeping them separate (e.g., invoked by different tabs), the user may be discouraged from using them together in a more integrated way where the two functions can work together. In this view, the search can be seen as a filter to prune the browsing space. Or, browsing can be seen as a way to peruse the retrieved results list from a search.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: In this design, "Simple Search/Browse" would lead to an interface similar to the one shown below. The user would then be able to search within the subset of retrieved results from his previous "Search/Browse" action. "Advanced Search/Browse" would also lead to a similar interface, but with more search/filter options that are currently provided under "Advanced Search" in NCSTR.

Search all bibliographic fields

Search for

search

Group results by

Archive

Sort results by

relevance ranking

Groups

archive	Hits
AI Group at NASA	2
Auburn-Eng	86
BostonUniv	187
Brookes	21
Brown Univ	836
CMU	273
ENRI	309
CU-Denver	172
Caltechstr	246
Chicago Journal of CS	21
Cornell University	2109
Dartmouth	267
Discrete Mathematics and CS	385
Duke Univ	369
EPFL	1
ERCIMCNR	102
ERCIMCNRNUCE	152
ERCIMCWI	681
ERCIMGMD	119
ERCIMSICS	94
Erasmus Univ	3
FIT	135

SEARCH RESULTS GROUPED BY ARCHIVE**ARCHIVE :AI Group at NASA****Title***Automating the Process of Optimization in Spacecraft Design***Authors**

Fukunaga A.S. | Chien S. | Mutz D. | Sherwood R.L. | Stechert A.D.

Abstract

Spacecraft design optimization is a difficult problem, due to the complexity of optimization cost surfaces and the human expertise in optimization that is necessary in order to achieve good results. In this paper, we propose the use of a set of generic, metaheuristic optimization algorithms (e.g., g

Archive

AI Group at NASA

Discovery Date

1996-12-01

Location: On all pages, in the constant top frame.**Other problems subsumed:** Fixing this problem also solves the problem T2.3**Search Problems:**

User Task.Problem Number: T1a.1

Usability Problem Name: Hidden default for function/task.

Usability Problem: The site uses the Simple Search as a default. So the user sees the Simple Search screen without clicking on a link and may wonder what that is and how he arrived at it. This is the active choice when the user arrives at this page, but it is not indicated (other than indirectly via the contents of the lower frame).



Search all bibliographic fields

Search for

Group results by

Sort results by

search

Usability Principle: Make default choices clear.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: It is probably enough to highlight the Simple Search tab initially.

Location: Access Homepage.

Other problems subsumed: The solution to problem Overall.1 will also solve this problem.

User Task.Problem Number: T1a.2

Usability Problem Name: Can't see query and result together

Usability Problem: Search results do not display criteria used for the search.

SEARCH RESULTS GROUPED BY ARCHIVE

ARCHIVE :CNRI

<i>Title</i>	<u>National Digital Library of Theses and Dissertations: A Scalable and Sustainable Approach to Unlock University Resources</u>
<i>Authors</i>	Fox, Edward A. Eaton, John L. McMillan, Gail Kipp, Neill A. Weiss, Laura Arce, Emilio Guyer, Scott
<i>Archive</i>	CNRI
<i>Discovery Date</i>	1996-09-15
<i>Document ID</i>	oai:ncstrlh:cnri_dlib:cnri.dlib//september96-fox

Usability Principle: Supporting user task thread continuity and supporting human memory limitations by establishing a connection between two related parts of a task. Searches are usually designed as a one-shot function where the user submits a query, gets the results, and is done. But in reality, the task is often an iteration of these steps, in which the user modifies the query based on retrieved results, refining it to get just the right results. The user needs to see the query along with the results to visualize the relationship between the two, as a likely next step, in order to do this refinement.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: A small note like ‘You searched for ‘search string’’, would help the user in refining the query based on results, while reducing the user memory load.

Location: Access Homepage, do a search to obtain the result page.

Other problems subsumed:

User Task.Problem Number: T1a.3

Usability Problem Name: Hidden default for search criteria

Usability Problem: Searching without specifying any search criteria lists entire contents in the archive of the first institution - an unlikely candidate even for a default. But nowhere does the user interface say this, either before or after the search.

Usability Principle: Explain system model for default case.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Make the default explicit, by including a selection of an institution (archive) as part of the query, with "All" as a visible default. The "Search for" field should also have "All" as a visible default and have it selected (highlighted) so that any typed input would replace it.

Location: Access Homepage, do a search without specifying a criteria

Other problems subsumed:

User Task.Problem Number: T1a.4

Usability Problem Name: Simple search label needs to match tab.

Usability Problem: The Simple Search tab (also the default task/function) leads to the screen shown below, which is labeled "Search all bibliographic fields". This is not close enough to the label on the tab for users to be sure they arrived at the right place.

Usability Principle: Maintain consistency between arrival and departure labels.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Add a label 'Simple Search' next to the Search heading.

Simple Search	Advanced Search	Browse	Register	Submit to CoRR
---------------	-----------------	--------	----------	----------------

Simple Search: Search all bibliographic fields

Search for

Group results by

Sort results by

search

Location: Access Homepage.

Other problems subsumed:

User Task.Problem Number: T1a.5

Usability Problem Name: Advanced button in Simple Search

Usability Problem: The user might want to do an advanced search when at the Simple Search. Although the advanced search is accessible through the tabs on the top frame it is not shown as part of (or begin related to) the Simple Search.

Usability Principle: Support Task Continuity.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Include an 'Advanced Search' button to the Simple Search page to support task continuity. Although redundant, this button can appear at the right time and place for a user who needs to extend a simple search into an advanced one.

Search all bibliographic fields

Search for

Group results by

Sort results by

search

[Advanced Search](#)

Location: Access Homepage.

Other problems subsumed:

User Task.Problem Number: T1a.6

Usability Problem Name: Search label not clear

Usability Problem: In the Simple Search page the heading does not say what or where the user is searching.
Usability Principle: Use precise and complete labels.
User Action Framework Classification: TBD
Estimated Severity: TBD
Suggested Possible Redesign: Change 'Search all bibliographic fields' to 'Search all bibliographic fields in archives'. With this, add a sentence about what an archive refers to in this context. For e.g. 'Each archive contains the technical reports from one institution'.
Location: Access Homepage.
Other problems subsumed:

User Task.Problem Number: T1a.7
Usability Problem Name: Need cognitive affordance for search box entry.
Usability Problem: There is no indication of what the user needs to enter in the search box.
Usability Principle: Provide good cognitive affordances to help translation.
User Action Framework Classification: TBD
Estimated Severity: TBD
Suggested Possible Redesign: Add a string like '<Enter text string to search for>' to the Search box, which would be highlighted and would disappear when the user clicks on the text box.
Location: Access Homepage.
Other problems subsumed:

User Task.Problem Number: T1a.8
Usability Problem Name: Missing functionality
Usability Problem: The site does not support for searching within a subset of results.

Usability Principle: Provide adequate functionality. Support task thread continuity, likely next task. Users often wish to prune their retrieved results list and a query on that list is often the most natural way.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Provide the ability to search within a subset of results of a previous search in addition to a whole archive.

Location: Access Homepage, do a search to obtain the results page.

Other problems subsumed:

User Task.Problem Number: T1a.9

Usability Problem Name: Needs user control of result display

Usability Problem: The site does not allow the user to specify the number of results he/she wants displayed at one time.

Usability Principle: Provide adequate functionality. Task Structure and control.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Place the user more in control by allowing him/her to specify the number of results he/she wants displayed, at one time.

Location: Access Homepage.

Other problems subsumed:

User Task.Problem Number: T1a.10 (& T2)

Usability Problem Name: Non-persistent highlighting

Usability Problem: The selected institution (archive), the contents of which are currently displayed in the right hand frame, is not highlighted at all times. When clicked, it highlights, but doesn't stay highlighted.

Groups	Hits
archive	
AI Group at NASA	2
Auburn-Eng	86
Boston Univ	187
Brookes	21
Brown Univ	836
CMU	273
CNRI	309

Usability Principle: Existence, noticeability and persistence of feedback, especially for long-term state information needed beyond the immediate user action that sets it.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Highlight the link in such a way that it stays highlighted until another link in that group or at a higher level is clicked.

Location: In the Homepage.

Other problems subsumed:

User Task.Problem Number: T1b.1

Usability Problem Name: Spacing of Search button

Usability Problem: Search button is too close to other elements. The Search button is actually associated with the entire Search box, but appears very close to the OR choice, or at least to the "Combine fields with" feature.

•▶ **Search specific bibliographic fields**

Author

Title

Abstract

Combine fields with AND OR

Usability Principle: Layout and Grouping; group and label by related functions.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Place it a little farther away and group it to show that it goes with whole search mechanism.

Search specific bibliographic fields

Author

Title

Abstract

Combine fields with AND OR

search

Location: In the Homepage.

Other problems subsumed:

User Task.Problem Number: T1b.2

Usability Problem Name: Imprecise Filter options label

Usability Problem: The label "Filter options" for the "Advanced Search" is not very precise.

Filter options

Archive

Archive's Set

Usability Principle: Use complete and precise wording.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Change the label to 'Search filters'.

Location: Access the Homepage, click in the "Advanced Search".

Other problems subsumed:

User Task.Problem Number: T1b.3

Usability Problem Name: Unclear wording

Usability Problem: Wording of filter fields is not clear.

▶ Filter options

Archive	<input type="text" value="All"/>
Archive's Set	<input type="text" value="All"/> ▼
DateStamp	<input type="text"/> (yyyy/mm/dd)
Discovery Date	<input type="text"/> (yyyy/mm/dd)

Usability Principle: Use complete and precise wording.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Change Archive to Institution. Archive's Set, DateStamp and Discovery Date are not self-explanatory. So change them to a user centered word and provide a brief explanation of what they mean.

Location: Access the Homepage, click in the "Advanced Search".

Other problems subsumed:

User Task.Problem Number: T1b.4

Usability Problem Name: Page layout for Advanced Search needs grouping by function

Usability Problem: Overall page design

Usability Principle: Grouping by related tasks, so that it is apparent that the Search button applies to everything.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign:

The screenshot displays an 'Advanced Search' interface with the following components:

- Advanced Search** (Section Header)
- Search** (Button)
- Search specific bibliographic fields** (Section Header)
 - Author** (Label) and
 - Title** (Label) and
 - Abstract** (Label) and
 - Combine fields with** (Label) and AND OR
- Search with filters** (Section Header)
 - Institution** (Label) and
 - Archive's Set** (Label) and
- Use display options** (Section Header)
 - Group By** (Label) and

Sort By

Relevance Ranking ▾

Search

Location: Access the Homepage, click in the "Advanced Search".

Other problems subsumed:

Browse Problems

User Task.Problem Number: T2.1

Usability Problem Name: Incorrect wording – Search results

Usability Problem: Clicking on the Browse tab displays the first set with the heading 'Search Results Grouped By Archive', but search results are not involved in the browsing function unless they are combined as we suggest in Overall.8. (Is this a copy/paste or code sharing problem?)

Advanced Search

Browse

Register

Submit to CoRR

About NCSTRL

OAI

SEARCH RESULTS GROUPED BY ARCHIVE

ARCHIVE :AI Group at NASA

*Title**Automating the Process of Optimization in Spacecraft Design**Authors*

Fukunaga A.S. | Chien S. | Mutz D. | Sherwood R.L. | Stechert A.D.

Abstract

Spacecraft design optimization is a difficult problem, due to the complexity of optimization cost surfaces and the human expertise in optimization that is necessary in order to achieve good results. In this paper, we propose the use of a set of generic, metaheuristic optimization algorithms (e.g., g

Usability Principle: Use precise, complete and consistent wording.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Change it to 'Browse by Archive'.

Location: Access the Homepage, click in the "Browse".

Other problems subsumed:

User Task.Problem Number: T2.2

Usability Problem Name: Incorrect wording – Result pages

Usability Problem: On clicking the Browse tab and selecting an institution (archive), at the top of the right hand display the pages are displayed as links and the heading is the 'Result Pages'. The term Result seems inappropriate for browsing. (Again, this looks like a copy and paste problem due to reusing the design with the search function.)

This is page 1 of total 42 pages, hits (1--10) of total 418 hits.

Results Pages: [1](#) [2](#) [3](#) [4](#) [5](#) [6](#) [7](#) [8](#) [9](#) [10](#) [11](#) [12](#) [13](#) [14](#) [15](#) [16](#) [17](#) [18](#) [19](#) [20](#) [Next >>]

ARCHIVE :Brown Univ

Usability Principle: Use precise, complete and consistent wording. Provide meaningful feedback.

User Action Framework Classification: TBD

Estimated Severity: TBD

Suggested Possible Redesign: Change it to 'Browse Pages'

Location: Access the Homepage, click in the "Browse".


Other problems subsumed:

User Task.Problem Number: T2.3

Usability Problem Name: Limited browsing functionality

Usability Problem: The system does not allow browsing technical reports grouped by Author, Year of Publication etc.

Usability Principle: Provide adequate functionality.
User Action Framework Classification: TBD
Estimated Severity: TBD
Suggested Possible Redesign: Adding the facility to browse by Author, Year of Publication, etc. Additionally the more general approach that we suggest, combining search and Browse, would solve this problem.
Location: Access the Homepage, click in the "Browse".
Other problems subsumed: Overall.8

User Task.Problem Number: T2.4
Usability Problem Name: Inappropriate wording – number of "hits"
Usability Problem: On clicking the Browse tab and selecting an institution (archive), the message ‘hits (1-10) of total 418 hits’ displayed at the top of the right hand side is irrelevant. These words appear to come from the Search design.
 <p>SEARCH RESULTS GROUPED BY ARCHIVE</p> <p>This is page 1 of total 42 pages, hits (1--10) of total 418 hits.</p>
Usability Principle: Correctness of wording.
User Action Framework Classification: TBD
Estimated Severity: TBD
Suggested Possible Redesign: Change ‘This is page 1 of total 42 pages, hits (1-10) of total 418 hits’ to ‘This is page 1 of total 42 pages, documents 1-10, of total 418 documents’.
Location: Access the Homepage, click the "Browse" tab.
Other problems subsumed:

Submission Problems

User Task.Problem Number: T4.1
Usability Problem Name: Incomplete wording in a label as a cognitive affordance.
Usability Problem: ‘Submit to CoRR’ button does not state what is to be submitted.
Usability Principle: Use precise and complete labels; help user predict full functionality behind a label.
User Action Framework Classification: TBD
Estimated Severity: TBD
Suggested Possible Redesign: Reword tab to something like: ‘Submit Technical Report(s) to CoRR’.
Location: Access the Homepage, on the constant top frame.
Other problems subsumed:

User Task.Problem Number: T4.2
Usability Problem Name: Half-way link to Submit to CoRR
Usability Problem: Poor support for the user's task thread. The link ‘Submit to CoRR’ is indirect (a "part-way there" link), leading to the Home/welcome page of CoRR, which in turn has the link for submitting a TR.
Usability Principle: Use precise labels and ensure that responses to user actions are predictable. Avoid function overloading.
User Action Framework Classification: TBD
Estimated Severity: TBD

Suggested Possible Redesign: This is a very difficult problem that occurs often when designers want a button in their own Web pages to access functionality in another site. Here the designers want the Submit to CoRR button to access a function in the CoRR site. But, in fact, this button in NCSTRL only takes users to CoRR, where they can use the functionality of CoRR to submit a technical report. In general, there are three possible solutions; none is perfect:

- 1) Warn the user that another click will be needed (label has to tell user to use tab to go to CoRR site and then click on "submit". Although it makes for a long and messy tab label, this is probably the only viable solution for this NCSTRL/CoRR case, as explained further below.
- 2) Use a direct link to the other site's function, by-passing the other site's home page.
- 3) Have a "Submit TR to CoRR" tab take the user to a new page within NCSTRL that has its own "Submit TR to CoRR" button and explains the situation.
 - a) This is function within CoRR, not NCSTRL.
 - b) Clicking the "Submit TR to CoRR" button here will take you to the CoRR home page.
 - c) The CoRR page will open in a new window and the back button will not return you to NCSTRL.
 - d) You will then have to click on the "Submit" link in the CoRR home page.

The third solution is the preferred solution. The extra click it requires is more than compensated for by the information gained and this task will not occur frequently anyway.

Incidentally whatever path taken from NCSTRL to CoRR leads to several serious usability problems in the CoRR site. First, the Submit link within the CoRR home page does not, in fact, go directly to the Submit function either. It leads to a pop-up dialogue box for logging in. This serves as a terse, unarticulated indication to the user that logging in is required before submitting. This is information overloading of the login dialogue box and does not support the user's task thread well. That support is even worse for user's who haven't already subscribed to (registered with) CoRR. Those users get deflected even more from their intended task stream, to go off and register.

A solution for this multiple problem in CoRR is to have the Submit button go to a new Web page used to explain everything and to serve as a "base" of operations for going back to register, logging in, and moving forward to submit. This page would explain the need to log in, in order to submit and would offer a button leading to the dialogue box for logging in. This page would also explain the need to be registered/subscribed in order to log in and would offer a button to go elsewhere to register. Finally, since this is the CoRR page that the CoRR submit button leads to, it should be labeled at the top "Submitting Technical Reports to CoRR" and should have a button (after the other items about logging in and registering) leading to the submit function.

This is a good solution that helps the user with the complicated mental model needed to understand the inter-related constraints among registering, logging in, and submitting, and would support the user's task stream for submitting in any of the states the user might be in.

Location: Access the Homepage, on the constant top frame.

Other problems subsumed: