Coordinate and Facilitate User Testing of the LHC Research Data Finder

Final Report

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# Abstract

## Objectives:

The objective of this project is to suggest improvements to the overall design and functionality of the Lister Hill Center (LHC) Fast Health Interoperability Resources (FHIR) Research Data Finder1 by conducting a usability study with a small group of users familiar with FHIR.

## Methods:

The usability study was developed through discussions with Liz Amos on goals and objectives, and by using Usability.gov2 for guidance on developing a usability study. A semi-moderated study was conducted with three participants who shared their screens as they navigated a given prompt using the baseR5 test server. Participants were encouraged to voice any confusion or comments about the tool. These sessions were recorded, and Alex subsequently extracted data from the recordings, organizing them into overall themes, participant feedback, and recommendations.

## Results:

The usability study identified four common feedback themes: Need for Clarity and Information, Usability Issues, Desire for Functionality and Flexibility, and Trust in the Tool. The participant feedback was compiled into a technical report titled “LHC FHIR Research Data Finder Usability Study: Results and Recommendations”. This report provides practical advice for the technical team for future tool development.

## Conclusion:

The three participants provided valuable feedback for improving the usability and overall perception of the LHC Research Data Finder. Alex and Liz were able to highlight specific user issues, overall user sentiments, and suggestions for future development. The methodology developed for this study offers a standardized framework for conducting future usability studies, allowing for rigorous re-evaluation as changes are implemented.

# Introduction

The LHC Research Data Finder is a tool designed to pull cohorts and specific data elements from medical records and research databases, supporting the NLM’S commitment to developing clinical terminology and message standards, including the FHIR standard. The objective of this project is to suggest improvements to the overall design and functionality of the LHC Research Data Finder. Alex Henigman, the project lead, was responsible for planning and facilitating a usability study with a small group of users and consolidating their feedback into a report to the tool’s technical team. The results from this project will help guide future development efforts for the Research Data Finder.

# Methods

#### Background:

The project commenced by meeting with the project sponsor to craft a project plan and timeline. The project was divided into six phases: Background Knowledge, Study Development, Contacting Participants, Usability Testing, Synthesis, and Report Development. Alex began by familiarizing herself with the tool, researching usability study frameworks, and determining the scope of the project.

#### Development and Testing:

During the Background Knowledge phase, Alex became acquainted with the tool and researched usability testing principles. In the Study Development phase, Alex collaborated with Liz to develop the testing framework, identify institutional requirements for testing, and select participants. They formulated the project plan, which included a clear purpose statement: “The purpose of this user test is to better understand how and why researchers utilize the [NLM FHIR Research Data](https://lhcforms.nlm.nih.gov/fhir/research-data-finder/) Finder to better understand how user interact and needs in order to formulate feedback for future development of the tool” (Appendix A.).

In the Contacting Participants phase, Liz identified potential participants familiar with FHIR. Alex then contacted these participants asking for their interest in participating in the study. Three participants agreed, and Alex scheduled the usability studies. During the Usability Testing phase, Alex and Liz conducted the studies according to the steps outlined in the project plan.

#### Synthesis and Reporting:

In the Synthesis phase, Liz provided Alex with the recordings of the sessions. Alex extracted feedback, comments, and behaviors from these recordings into a Word document, organizing the information into common themes and dividing it into results and recommendations.

During the Report Development phase, Alex created a technical report titled, “LHC FHIR Research Data Finder Usability Study: Results and Recommendations” (Appendix B.). The report is divided into four sections: Introduction, Results, Recommendations, and Conclusion. The Results section provides background on participants, their first impressions of the tool, and the four common themes identified: Need for Clarity and Information, Usability Issues, Desire for Functionality and Flexibility, and Trust in the Tool. The Recommendations section provides a page-by-page explanation of feedback along with practical suggestions for improvement based of participants’ input.

# Results

All participants successfully completed the task outlined in the Project Plan and provided valuable feedback for improving the tool. Their insights, if implemented, could enhance clarity, improve the user experience, and increase researchers’ trust in the tool. Participants highlighted the tool’s unique capabilities, such as auto-converting test units, generating a downloadable CSV file, and serving as a sandbox for training. Their feedback reflected diverse perspectives on using the tool for research, training, and promoting the adoption of the FHIR standard.

# Conclusion

The “Coordinate and Facilitate User Testing of the LHC Research Data Finder” project successfully gathered high-quality feedback from participants familiar with FHIR across various fields, including research, computer science, and teaching. The report will be sent to the technical team and relevant staff involved in the tool’s development and promotion. The Project Plan will serve as a framework for future testing, enabling comparative studies as changes are made to the tool.

# Resources

1. [LHC FHIR Research Data Finder](https://lhcforms.nlm.nih.gov/fhir/research-data-finder/)
2. [Usability.gov](https://digital.gov/topics/usability/)

# Appendix A.



Usability Test Project Plan. Full text is located in SharePoint.

# Appendix B.



LHC FHIR Research Data Finder Technical Report. Full text is located in SharePoint.