ABSTRACT
Functional Requirements for Bibliographic Records (FRBR) has a direct impact on the library and information science community in the areas of information organization, information representation, and system design. Although FRBR offers great potential for libraries to develop catalogs that function more effectively to help users access bibliographic data, there has been a lack of both guidance in FRBR implementation and FRBR user research in related development. In this session, panelists presenting three different projects will discuss how they implemented FRBR in library catalogs and what user research they have done to inform system design and to evaluate the effectiveness of the FRBR systems. This panel will help address some key questions about FRBR research and development: (1) To what extent does the FRBR model represent how users perceive bibliographic data? (2) How can FRBR be implemented in library catalogs? (3) How are FRBR-based systems helpful to users?

Keywords
FRBR, Functional Requirements of Bibliographic Records, user research, library catalog, online catalog, system design.

INTRODUCTION
In 1998 the International Federation of Library Associations and Institutions (IFLA) published the final report, Functional Requirements for Bibliographic Records (FRBR), which presents a new conceptual model of the bibliographic universe (IFLA, 1998). Since its inception, the library and information science (LIS) community has embraced FRBR with active explorations into its potential benefits to both LIS professionals and end users alike.

FRBR offers a new perspective and a broader view of the bibliographic universe, providing abundant opportunities for libraries to develop catalogs that function more effectively and provide better user services during the process of accessing bibliographic data in an information environment that is becoming increasingly electronic. However, after more than a decade of lively discussion, creative exploration, practical development, and active research about FRBR, there has been a lack of practical guidance in FRBR implementation and empirical FRBR user research in related development (Zhang & Salaba, 2009a). FRBR user research and evaluation is essential to a better understanding of the FRBR model and development of systems that support user information seeking.

In this proposed session, panelists represent three different projects involving in FRBR research and development:
- University of Ljubljana’s FRBR Project (Modeling of the Bibliographic Universe, J5-0361)
- Kent State University FRBR Project, and
- eXtensible Catalog (XC)

The panelists will report on their experience of developing library catalogs based on FRBR and related user research for their respective projects. This panel will help address some key questions related to FRBR research and development:
- Does the FRBR model represent how users perceive bibliographic data?
- How can FRBR be implemented in library catalogs?
- Are FRBR-based systems helpful to users?

The specific project presentations and presenter biographies are outlined in the sections below.
PRESENTATIONS

User Mental Model and Visualization for Designing FRBR-based Library Catalogs
Maja Žumer and Tanja Merćun

While the Functional Requirements for Bibliographic Records (FRBR) conceptual model has been internationally accepted as the backbone of new cataloging principles in libraries, there were no dedicated user studies done during its creation. As there are also no true FRBR catalogs yet in existence, there is no real evidence that FRBR would truly enhance user experience in library catalogs. This was identified as an important issue in a Delphi study of leading FRBR research by Zhang and Salaba (2009b).

This presentation will first report on a series of studies conducted in 2009 and 2011 that researched user mental models of the bibliographic universe (Pisanski & Žumer, 2010a; 2010b). The studies showed that (1) FRBR is intuitive and should serve as the basis for new bibliographic information systems and that (2) users prefer FRBR to non-FRBR displays, which further confirms that FRBR is an appropriate model of the bibliographic universe from the user’s standpoint.

The presentation will also report on new approaches to presenting FRBR-based data. So far, the display of and exploration within FRBRized records has hardly been discussed in the library community (Arastoopoor et al., 2011), but research on how to present FRBR-based data within user interfaces of library information systems to support discovery and exploration is urgently needed. Various visualization scenarios for displaying and interacting with FRBR-based data will be described. The preliminary results of user testing will give some indication on how useful the visualization techniques are for datasets of different complexity levels, provide valuable information on the functionalities that should be provided in the new interfaces as well as reveal problematic areas that will need to be further explored.

User Participatory Design and Implementation of a FRBR-Based Catalog Prototype
Yin Zhang and Athena Salaba

This presentation will report on the FRBR implementation and user research as part of the Kent State University FRBR project funded by an IMLS National Leadership Grant (Zhang & Salaba, 2010). The major goal of this project was to contribute to and enhance the development and research of FRBR-based systems to effectively support user tasks and facilitate information seeking.

The presentation will first discuss how FRBR is implemented in a prototype library catalog and related user research during the design and implementation process. The project sought direct user input and feedback on some important interface design issues for FRBR entities: work, expression, and manifestation. Specifically, for work, expression, and manifestation displays, what data elements and functions should be included and in what order. Also, possible relationships among user preferences, FRBR user tasks, and user-related variables will be discussed in the presentation.

Next, major findings from a user study comparing the FRBR prototype catalog with a current library catalog in supporting various user tasks will be highlighted.

The results help provide insight on user understanding of the FRBR model as implemented in the prototype catalog and provide system designers with informed guidelines on FRBR implementation options that help users perform various tasks using library catalogs.

FRBR and the eXtensible Catalog: Participatory design as part of the software development process
Jennifer Bowen and Rebekah Kilzer

As part of the development of eXtensible Catalog (XC), a project sponsored by the University of Rochester’s River Campus Libraries, and funded by the Mellon Foundation and project partners, four institutions conducted eighty interviews and numerous workshops to understand how researchers learn about, acquire, and use scholarly resources (Foster, Clark, Tancheva, & Kilzer, 2011). Research findings informed the design and development of XC, a set of open-source applications that provides access to resources across a range of databases, metadata schemas, and standards.

The processes researchers use to find known items, and to discover new items, are interrelated with the goals of FRBR-based interfaces. The XC user research study analyzed these processes and used this analysis to directly inform the software architecture design. This presentation will report on key findings of the user research that was done at Cornell University, The Ohio State University, the University of Rochester, and Yale University relating to the IFLA FRBR (Functional Requirements for Bibliographic Records) data model, and demonstrate how these findings have been incorporated into the design of XC’s discovery interface and underlying FRBR-based metadata management architecture.

The presentation will explain how the XC software creates linked metadata records representing FRBR Group 1 entities automatically from legacy MARC metadata, describe XC’s implementation of a subset of the RDA (Resource Description and Access) element set in a FRBRized environment, and showcase how the customizability of the XC discovery interface can enable libraries to meet the needs of different groups of users.

ORGANIZERS AND MODERATOR

Co-organizers
Yin Zhang, Maja Žumer, and Athena Salaba

Moderator
Diane Neal
BIOGRAPHIES

Jennifer Bowen is Assistant Dean for Information Management Services at the University of Rochester River Campus Libraries and Co-Executive Director of the eXtensible Catalog Organization. She has spent much of her career as a librarian working in the areas of cataloging and metadata, initially as a specialist in music cataloging and then as a manager of cataloging and technical services. In recent years she has focused her attention upon metadata standards development (RDA), the FRBR data model, and the use of legacy library metadata in next-generation discovery and metadata management systems.

Rebekah Kilzer earned her M.S. in Library Science and Information Systems from Drexel University. In addition to her current position as Technology Partnerships Librarian and Manager of Partnership Program Development at the Drexel University Libraries, she is also an adjunct professor at Drexel’s iSchool, the College of Information Science and Technology where she teaches cataloging and metadata courses for the graduate program. Her professional interests include the evolving technological landscape in the library environment, changes in metadata and system standards, and how users are affected by these changes.

Tanja Merčun earned a degree in library and information science in 2007 and is now a researcher and doctoral student under the advisory of professor Dr. Maja Žumer at the Department of Library and Information Science and Book Studies at University of Ljubljana (Slovenia). Her main research interests are library catalogs, user interfaces, human-computer interaction, Web 2.0 and FRBR. She has taken part in a number of local and international conferences and is a member of ELAG program committee.

Diane Neal is an assistant professor in the Faculty of Information and Media Studies at The University of Western Ontario. Her research interests include image and music tagging, online consumer health information seeking, and user-centered design. A former information technology professional and systems librarian, she teaches courses in information organization, database systems, Web usability, research methods, and social media. She currently serves as Past Chair of SIG CR and of SIG VIS as well as the chair of the 2011 Annual Meeting’s Knowledge Organization Track, and is a 2011 candidate for the ASIS&T Board of Directors.

Athena Salaba is an associate professor at the School of Library and Information Science at Kent State University. Her research interests include organization of information, knowledge organization systems, and information-seeking behavior. She teaches courses in Organization of Information, Cataloging & Classification, Metadata, and Digital Libraries. Dr. Salaba has a number of publications and presentations on FRBR, FRSAD, subject access to information, and knowledge organization systems (controlled vocabularies). She and Dr. Yin Zhang have received a three-year IMLS Research Grant for FRBR Research and Development. She has served as the Co-chair and Secretary of the IFLA Working Group on the Functional Requirements for Subject Authority Records (FRSAR).

Yin Zhang is a professor at the School of Library and Information Science at Kent State University. Her research and teaching areas include user information-seeking behavior, information systems, and information organization. She and Dr. Athena Salaba have been working on the FRBR research project funded by the Institute of Museum and Library Services (IMLS). The research project addresses the crucial need for developing effective tools in general and effective library catalogs in particular that support user tasks in the electronic environment. They recently published a book on implementing FRBR in libraries.

Maja Žumer is a professor of Information Science at University of Ljubljana (Slovenia). Her research interests include design and evaluation of information retrieval systems, usability, and conceptual modeling. She has been involved in several IFLA working groups, NISO committees, and EU projects. She has received several international and national research grants. She is a member of IFLA FRBR Review Group and co-chair of IFLA Working Group on the Functional Requirements for Subject Authority Records (FRSAR).

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