# Critical Issues and Challenges Facing FRBR Research and Practice

by Yin Zhang and Athena Salaba

Functional Requirements for Bibliographic Records

*Functional Requirements for Bibliographic Records* (IFLA Study Group on the Functional Requirements for Bibliographic Records, 1998) has been discussed and explored for nearly a decade. In this article, the authors highlight the major findings of a recent Delphi Study (March to May 2007) that aims to identify critical issues and challenges within FRBR research and development. The selected experts in this study met at least one of the following criteria: they had published on FRBR, served on FRBR review groups or were directly involved in FRBR system development. As of February 2007, 123 individuals met the selection criteria and were invited to participate in the study; 33 of these accepted the invitation to form the FRBR panel for this study.

For the first round of the Delphi survey, the panelists were asked to suggest up to three of the most critical issues facing FRBR research and development today in each of five major categories, based on the following themes found in existing literature: (1) the FRBR model, (2) FRBR-related standards, (3) FRBR applications, (4) FRBR system development and (5) FRBR research. In addition, the panelists were asked to provide a brief rationale justifying the importance of each issue they raised. In Round 1, the panelists raised a total of 197 individual FRBR issue items with respective rationales. These items were condensed into 55 FRBR issues and presented to the panel in Round 2. Panelists were asked to rate each of the 55 issues on a 10-point scale, where 1 indicated the least important and 10 the most important. Round 2 also provided participants an opportunity to suggest new issues/challenges that may have been missed in Round 1. Round 3 followed a similar rating procedure to seek group consensus regarding the most important issues.

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Below are the top 10 most critical issues overall when comparing all issue ratings across all FRBR areas:

#1: Need to develop cataloging rules in line with FRBR.

#2: Need to address FRBR-based record structures, record encoding standards and frameworks for FRBR implementations.

#3: Need to develop and test tools/software that will facilitate FRBRization processes.

#4: Need to explore, develop and test various means for FRBR implementation.

#5: Need to conduct user studies on FRBR-based systems to ensure implementations benefit end users.

#6: Need to address the FRBRization of existing data from a variety of differing standards and practices.

#7: Need to verify and validate the FRBR model against real data and in different communities to make sure the model is valid and applicable.

#8: Need to develop FRBR-oriented authority work standards for FRBR implementations.

#9: Need [for] guidelines and examples for FRBR applications.

#10: Need to explore, design and develop effective user interfaces in general, with result displays in particular based on the FRBR model.

Notably, three of the top 10 issues (#1, #2 and #8) address FRBR-related standards. The most critical issue is developing cataloging rules in line with FRBR. More specifically, it is deemed important to address FRBR-based record structures and record encoding standards and frameworks, which are considered essential steps for FRBR implementations. In addition, it is critical to develop FRBR-oriented authority work standards that support effective navigation, display and collocating functions, as well as standards that ensure interoperability for exchange and sharing of data with other communities. These top-rated issues also received a higher level of consensus among panelists compared to issues in other FRBR areas. >

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FRBR system development is an area in which the panel raised a number of highly critical issues, and four of the top 10 issues (#3, #4, #6 and #10) relate to this area. The panel recognized the critical need to develop and test tools and software to facilitate the FRBRization processes that convert existing data and systems so that they conform to FRBR requirements. Also, the panel agreed that various means for FRBR implementation need to be explored, developed and tested at this early stage of FRBR system development, with particular emphasis on user interfaces and result displays with users in mind. Indeed, creating effective user interfaces is a key element in developing FRBR-based systems that effectively support user tasks. Since current library online catalogs and cataloging practice largely support manifestation-level searches and displays, different search and display options based on the FRBR model need to be explored.

Also, for FRBR system development, the FRBRization of existing data from a variety of differing standards and practices needs to be addressed from a practical standpoint. Particularly, FRBR implementations must account for legacy data, such as MARC (MAchine Readable Catalog) records upon which the majority of current library online catalogs are based. A number of algorithms and tools have been developed for interpreting and processing MARC records and automatically extracting FRBR structure from them. The FRBRization of existing data created following other standards, such as Dublin Core (DC), Metadata Object Description Schema (MODS) and Metadata Authority Description Schema (MADS), causes similar concerns for digital collections.

FRBR research has currently been the least addressed facet of the FRBR development effort. To ensure that FRBR-based implementations benefit end users, the panel identified the need to conduct user studies as the most critical issue in the FRBR research category (ranked #5 overall). This need is supported by our own observation, based on a recent review and survey of current FRBR projects, that very few of these projects have actually conducted or reported user studies on their developed FRBR systems, although several have had plans to do so. It remains to be determined how best to present FRBR to end users to support search dialogs and the presentation of entities and relationships. The panel also noted that the development of current systems needs to be justified and supported by user research.

The panel raised the largest number of issues in the FRBR model area. FRBR model verification and validation, using real data and in different communities, stands out as the most critical issue in this area (ranked #7 overall). As current applications have been limited, the panel suggested that such model verification and validation would help ensure the model's validity and applicability to bibliographic information. Such work is needed for future model refinement and extension, as well as application. A critical issue closely related to FRBR user research is the verification of the model through user studies.

In the area of FRBR application, the panel recognized that FRBR applications lack guidelines and examples demonstrating how FRBR as a conceptual model may be applied (ranked #9 overall). This type of information is particularly critical during this early stage of FRBR development. A better understanding of FRBR is also vital to its application. Some panel members observed that applications based on a different interpretation of FRBR can create problems regarding interoperability and that an incorrect understanding of FRBR will result in applications that do not provide any information on the utility of FRBR.

Finally, other issues that did not fall within the categories mentioned above were also raised and deliberated upon by the panel. Although none of the issues in this miscellaneous category were in the top 10 most critical issue list, the issues demonstrate some interesting aspects of FRBR development. These issues include working with vendors for FRBR development, particularly with those vendors who offer services in data enrichment that may help fill in missing data elements and those with services that assist in the identification of entities needed to facilitate the FRBRization process. Other issues include analyzing semantic and syntactic relationships to support navigation, which is considered a key issue for FRBR as a whole; deciding who is going to drive FRBR research and development; and solving practical concerns by providing service programs for FRBR implementation in many environments.

### Acknowledgement

### Resource Mentioned

IFLA Study Group on the Functional Requirements for Bibliographic Records. (1998). *Functional requirements for bibliographic records: Final report.* UBCIM Publications-New Series. Vol. 19, München: K. G. Saur. Also available at www.ifla.org/VII/s13/frbr/frbr.htm