

Construction of a conceptual structure as a mediator between MARC and FRBR

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MARC is currently the most broadly used bibliographic standard for encoding and exchanging bibliographic data. However, MARC may not fully support representation of the dynamic nature and semantics of digital resources because of its rigid and single-layered linear structure. The FRBR model, which is designed to overcome the problems of MARC, does not provide sufficient data elements and adopts a predetermined hierarchy, resulting in a strict structure in which the rigid relationships among data elements do not support the flexibility necessary to fully describe various resources. There is need for a flexible structure for bibliographic data that can handle all kinds of resources, represent the relationships among bibliographic entities, and describe the multi-layered characteristics of resources. Integrating the MARC format with the hierarchical structure of FRBR is one approach to fulfill this need.

The purpose of this research is to propose an approach that can facilitate interoperability between MARC and FRBR. To achieve interoperability between these two heterogeneous structures and to fully utilize the advantages of each, the research constructed a conceptual structure that could function as a mediator and yet be flexible enough to cope with a variety of resource types.

To construct this conceptual structure, MARC data elements and FRBR entities/attributes and their corresponding structures were analyzed and the elements were categorized according to their intended application or use. In this process, only those elements that described resources (MARC) or indicated bibliographic relationships (FRBR) were categorized and elements that had the same or similar meanings in each structure were grouped together. This provided the basis for mapping elements from each structure: elements in one category from MARC were mapped only with the equivalent category from FRBR. Based on the matchings between MARC and FRBR, four types of element matchings were identified: *exact*, *analogous*, *partial*, and *non-matching*. A hierarchy of *Main Class*, *Class*, *Subclass*, and *Instance* was identified for the proposed conceptual structure. Finally, the matched elements were merged into a single conceptual structure. The approach used in this research utilizes the strengths of both merging and mapping to achieve interoperability by integrating the two methods. The proposed conceptual structure functions as a mediator between MARC data elements and FRBR attributes. It is not intended to describe specific information resources but to provide a set of core bibliographic elements. Elements in the conceptual structure can be connected to both MARC and FRBR because these elements are extracted from the core elements contained in the MARC and FRBR systems. If an element in the proposed conceptual structure can be connected with any of the corresponding MARC data elements and FRBR entities/attributes, a user can apply MARC for detailed descriptive elements and FRBR for representation of bibliographic relationships. Therefore, an element in the conceptual structure can indicate both detailed descriptive elements and bibliographic relationships.

This structure can also overcome some of the weaknesses of MARC and FRBR. MARC format does not provide sufficient bibliographic relationships because of its linear and single-layered structure. However, data elements in the MARC format can be supplemented with the bibliographic relationships in the FRBR structure through the connections established in the conceptual structure. In similar fashion, FRBR can incorporate descriptive elements from MARC through the same connections provided by the conceptual structure. In addition, subsets of the core bibliographic elements can be selected to describe resources in specific collections.