

# White Paper Report

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# White Paper

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Project Title: Digital Music Notation Data Model and Prototype Delivery System

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Grantee Institutions: University of Virginia Library, University of Paderborn

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# DFG

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## Project Goals

The primary goal of the Digital Music Notation Model and Prototype Delivery System project was to demonstrate the enhanced capabilities of the Music Encoding Initiative (MEI) data model with respect to existing encoding schemes. Funding was provided for two graduate assistants in Germany and a 0.6 FTE music librarian in the U.S. as well as travel for the MEI advisory board (referred to as the “MEI Council”) and supporting developers. In addition to the face-to-face meetings of the Council, virtual meetings of project developers (collectively called the “MEI Technical Team”) were held quarterly. We are happy to report that all the goals defined by the proposal were met.

## Activities

A number of activities were carried out in support of the project goals. First, two consecutive releases of the MEI schema were published in 2012 and 2013 that added new functionality, improved modularity, aligned MEI closer with the Text Encoding Initiative (TEI) format<sup>1</sup>, and introduced the Functional Requirements for Bibliographic Records (FRBR)<sup>2</sup> model for better interoperability with current library practices for metadata. For each release, a revision of the documentation (referred to as the Guidelines) was provided.

Second, the capability to generate MEI instances from other file formats and derive other formats from MEI was significantly improved. For some metadata formats, such as Dublin Core and MARC, purpose-built converters were provided. Others, like MODS, were addressed by providing a generic, but customizable conversion. Converters targeting existing rendering engines for Conventional Western Music Notation (CWMN), like Vexflow and ABC, were also created or significantly improved. While the project proposal promised significant improvement of the conversion from Humdrum **\*\*kern** to MEI, due to requests in the wider community this was replaced by efforts to make the already-existing converter from MusicXML to MEI much more robust. Also, a basic converter from MEI to MusicXML was developed.<sup>3</sup>

Third, a collection of MEI sample encodings was created. This collection, though smaller in number and coverage of notational repertoires than initially planned, offers exemplary

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<sup>1</sup> Text Encoding Initiative. *TEI: Text Encoding Initiative*. <<http://www.tei-c.org>>

<sup>2</sup> IFLA Study Group on the Functional Requirements for Bibliographic Records. *Functional Requirements for Bibliographic Records*. IFLA Series on Bibliographic Control 19. Munich: K.G. Saur Verlag, 1998. <[http://www.ifla.org/files/assets/cataloguing/frbr/frbr\\_2008.pdf](http://www.ifla.org/files/assets/cataloguing/frbr/frbr_2008.pdf)>

<sup>3</sup> Of course, this particular transformation results in a loss of information because MEI has features with no equivalent in MusicXML.

encodings that help users and developers understand how MEI is designed to work. The collection continues to grow as other projects contribute their real-world samples. Additional support for learning MEI is available in the MEI1st tutorial, which has been used in various workshops run by project members and received enthusiastic feedback.

Finally, a web service for customizing the MEI schema—based on TEI's Roma service—was established. This service can be used to create a tailor-made schema that accommodates specialized needs not served by the standard schema.

## Audiences

The MEI model revisions and other project activities were designed to attract new audiences to the MEI community. The initial core contributors to MEI—the Universities of Virginia (music library) and Paderborn (scholarly editing) along with McGill University (optical music recognition)—have been joined by other partners to expand and stabilize the comparatively small, but very active, MEI community.

The primary audience for MEI is spread across a number of overlapping scholarly communities. First, there is a body of users in the field of scholarly editing. This includes the majority of recent long-term musicological projects funded by the Mainz Academy of Sciences and Literature, but also editorial projects based at Haverford College and the Universität der Künste Berlin. The notational repertoires covered range from medieval neumes to CWMN.

A second, equally large contingent comes from the field of music librarianship, where the focus is on capabilities to store metadata and, to a somewhat lesser degree, incipits in MEI. For example, the Danish Royal Library developed the Metadata Editor and Repository for MEI Data (MerMEId, pronounced like "mermaid") for the purpose of capturing metadata for thematic catalogs of prominent Danish composers. The Library of Congress recently announced its endorsement of MEI for copyright submission and long-term preservation of score-based representations.<sup>4</sup>

A third group comes from the fields of computational musicology and music information retrieval. We also see increasing interest from the wider digital humanities field, with individual researchers wanting to encode musical snippets contained in their—otherwise textual—witnesses.

In addition to academic users, there is a small group of music publishers who have recently shown interest in MEI. For example, some publishers have begun to publish "hybrid" historical-

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<sup>4</sup> <http://www.loc.gov/preservation/resources/rfs/textmus.html#digmus>

critical editions—of which Bärenreiter's OPERA publications are a good example—in which scores appear in traditional paper volumes, while musical and textual sources, dramatic texts, and critical commentaries are prepared and presented on an electronic platform, i.e. Edirom, which functions as an MEI editor/viewer.

## Grant Products/Accomplishments

The following items were produced and made available online during the course of the project:

1. Project website <[www.music-encoding.org](http://www.music-encoding.org)>
2. MEI specification 2012 <[https://music-encoding.googlecode.com/files/MEI2012\\_v2.0.0.zip](https://music-encoding.googlecode.com/files/MEI2012_v2.0.0.zip)>
3. MEI specification 2013 <[https://music-encoding.googlecode.com/files/MEI2013\\_v2.1.0.zip](https://music-encoding.googlecode.com/files/MEI2013_v2.1.0.zip)>
4. MEI Guidelines 2012 <[https://music-encoding.googlecode.com/files/MEI\\_Guidelines\\_2012\\_v2.0.0.pdf](https://music-encoding.googlecode.com/files/MEI_Guidelines_2012_v2.0.0.pdf)>
5. MEI Guidelines 2013 <[https://music-encoding.googlecode.com/files/MEI\\_Guidelines\\_2013\\_v2.1.0.pdf](https://music-encoding.googlecode.com/files/MEI_Guidelines_2013_v2.1.0.pdf)>
6. Customization service <<http://custom.music-encoding.org>>
7. Sample collection <<http://music-encoding.org/documentation/samples>>
8. Metadata-based search of sample collection <<http://music-encoding.org/documentation/meiSearch>>
9. MEI 1st tutorial <<http://music-encoding.org/support/MEI1st>>
10. MEI incubator <<http://code.google.com/p/mei-incubator/>>
11. Converter from Humdrum **\*\*kern** to MEI <<http://extra.humdrum.org/man/hum2mei/>>
12. Converter from MusicXML to MEI <<https://music-encoding.googlecode.com/svn/trunk/tools/musicxml2mei/musicxml2mei-3.0.xsl>>
13. Converter from MARC to MEI <<https://music-encoding.googlecode.com/svn/trunk/tools/marc2mei/marc2mei.xsl>>
14. Converter from MEI to ABC  
<<https://raw.github.com/Edirom/mei2abc/master/xsl/mei2abc.xsl>>
15. Converter from MEI to MusicXML <<https://music-encoding.googlecode.com/svn/trunk/tools/mei2musicxml/mei2musicxml.xsl>>
16. Converter from MEI to MARC <<https://music-encoding.googlecode.com/svn/trunk/tools/marc2mei/marc2mei.xsl>>
17. Converter from MEI to MODS <<https://music-encoding.googlecode.com/svn/trunk/tools/mei2mods/mei2mods.xsl>>
18. Converter from MEI to Dublin Core <<http://music-encoding.org/documentation/mei2dublincore/>>

[encoding.org/downloads/MEI2DC.xsl](http://encoding.org/downloads/MEI2DC.xsl)>

19. Converter from MEI2010 to MEI2012 <<https://music-encoding.googlecode.com/svn/trunk/tools/mei2010To2012/mei2010To2012.xsl>>
20. Converter from MEI2012 to MEI2013 <<https://music-encoding.googlecode.com/svn/trunk/tools/mei2012To2013/mei2012To2013.xsl>>

Interest in the grant products—and in MEI more generally—increased substantially over the course of the grant. The number of subscribers to the MEI mailing list nearly tripled during the project, resulting in more than 100 current subscribers. More than half of these are active participants, affirming the vitality of the community. In addition, a conference-style meeting was held in the third year of the grant. The "Music Encoding Conference: Concepts, Methods, Editions", held 22-24 May, 2013 at the Mainz Academy for Literature and Sciences, in Mainz, Germany, attracted more than 80 scholars from more than ten countries, and received very positive feedback from the attendees.<sup>5</sup> The conference program also included an open MEI Advisory Board meeting in which plans were set in motion to establish a closer relationship with the Mainz Academy and to create an MEI governing body.

## Long Term Impact

MEI has gained significant momentum in recent years. Many of the projects using it would not have been possible without such a format. In addition, an international community has been created around MEI that brings together practitioners from divergent disciplines. The project has provided new methods—or improved existing ones—for capture and manipulation of music notation data and metadata, significantly improved the ability to render MEI instances as music notation, built an often-sought bridge between libraries and scholarly projects, and disseminated MEI to a wider audience.

## Continuation of the Project

Building on the foundation laid by this project, the impact of MEI can be further increased by building new tools that utilize the current capabilities of MEI, improving the schema and software to better address underrepresented areas of music notation (such as genetic editions), improving the documentation, and disseminating information to new audiences.

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<sup>5</sup> Due to the success of the initial conference, a second, post-grant meeting was held in Charlottesville, VA May 21-24, 2014. Plans are underway to hold a third iteration in Italy in 2015.