

How do
Cultural
Institutions
Employ Rights
Management
Technologies
and Policies ?

Digital Rights Management and Cultural Institutions

Case Study: The Variations Project, Indiana
University and Cook Music Library

The Variations Project

The Variations project is now in its third incarnation since it began in 1996 as a Indiana University (IU) project to provide online access to digitized streaming audio versions of music from Indiana's Cook Music Library. In 2000, IU received a National Science Foundation grant to create a new digital music library system known as Variations2. In addition to providing online access to audio recordings, Variations2 allowed users "to see the score of that music on their own computers, annotate it and use an online visualization tool to compare one performance to another" (Indiana University, 2005). Variations2 is still used to provide IU students with online access to digitized musical content. Students must access this content via designated computers on the IU campus or, if they are enrolled in a course with online music reserves, by installing the Variations software and logging in with a campus identification number and password.

The most recent version of Variations, known as Variations3, was developed in order to allow institutions outside of IU to implement the Variations system. The Variations3 website provides the following description:

Variations is a digital music library software system

Special points of interest:

- <http://variations2.indiana.edu/>
- Variations is a digital music library software system developed and first implemented by Indiana University. It is now available to other institutions as open source software.
- Variations uses the following technological tools to control access and use: user login and IP address authentication, streaming audio, and user interfaces without save and print features.
- Variations uses the following policy tools to control access and use: copyright and terms of use information displayed in audio player and score viewer.
- Recommendations from Variations include best practices for implementing access-controlled streaming audio and conducting fair use risk assessments.

that provides online access to streaming audio and scanned score images with a flexible access control framework to ensure respect for intellectual property. In addition to access tools, Variations also includes analysis and annotation tools useful in music teaching and learning. With Variations, institutions can digitize materials from their own collections and provide those materials to their students and faculty in support of teaching, learning, and

research. (<http://www.dlib.indiana.edu/projects/variations3/>)

Beginning in 2005, the Variations3 software was deployed as part of a study funded by the Institute of Museum and Library Services (IMLS) at the following universities: New England Conservatory, The Ohio State University, Haverford College, Swarthmore College, Bryn Mawr College, and University of Maryland. As of February 2009, the full Variations system was released as open source software that any institution can download and install.

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Variations is currently involved with research into ways of improving music cataloging through the development of a new metadata model specifically designed to enhance searching and re-

trieval. This research, based on the Functional Requirements for Bibliographic Records (FRBR) and funded by the IMLS, “builds upon the work of the Variations2 and Variations3 projects in developing and testing work-based metadata models, and will result in the entire score and recording holdings of the Cook Music Library being searchable through the Variations system” (<http://www.dlib.indiana.edu/projects/variations3/updates.html>).

Interview Responses

The following questions and responses were paraphrased from a meeting with Jon Dunn (Variations3 Project Director, Associate Director for Technology, Indiana University Digital Library Program), Mark Notess (Development Manager and Usability Specialist, Indiana University Digital Library Program), Philip Ponella (Director, William and Gayle Cook Music Library, Indiana University), and Jenn

Riley (Metadata Librarian, Indiana University Digital Library Program).

Collections with access and use controls

As discussed above, the IU implementation of the Variations software system limits access to either students enrolled in courses with electronic music reserves or users of designated on-campus computers. Students accessing Variations in either of these two ways are able to view and listen to all of the materials in Variations with the exception of materials in “personal collections”—compilations drawn from faculty’s personal CD collections. These files are limited to students enrolled in the class for which the professor has provided the compilation.

Because IU restricts access to all materials in Variations, public domain and copyrighted works are treated the same; however, the open source Variations3 software allows institutions to adopt a configuration of access controls that is consistent with their respective collection materials and institutional policies. The “Variations3 Project Proposal Narrative” (2005) describes this aspect of the software system:

The complex and difficult issue of intellectual property keeps some institutions from granting online access to locally digitized music content although most do provide some level of access, according to their interpretation of current copyright law. With its flexible access control mechanisms, this system will let institutions operate at their own comfort levels. For example, some institutions may feel comfortable allowing students to access course reserves from off campus providing they are registered for a given course. Other institutions may need to restrict access to on-site patrons. Yet other institutions may have material in the public domain for which they wish to provide open access. This system will support any of these access control models and will not require institu-

tions to switch to new software when their policy changes. (p. 3)

Reasons for controlling access and use

IU restricts access to all digitized materials in Variations in order to protect copyrighted materials. Limiting access to authorized users of on-campus computers and students in classes with electronic music reserves ensures that copyrighted materials contained in Variations will only be used for educational purposes. Other institutions implementing the Variations3 software system are able to use their own policies to customize access restrictions.

Technological controls employed

The Variations software controls access primarily through authentication employing individual user names and passwords and limited IP address ranges. As previously mentioned, the Variations software allows for multiple access configurations, so each institution that implements the system is able to decide for itself which users should have access to which materials. At IU, remote access to Variations is limited to students who are enrolled in classes with electronic music reserves. In order to access music files for their classes, students must install the Variations application which prompts them to log in with a username and password when they attempt to open a restricted file (Variations3 also provides a browser-based web application that users do not need to install). Variations administrators at IU regularly download class rosters in order to maintain an accurate list of the students who are authorized to access Variations remotely and to determine which students should have access to various compilations provided by professors for course reserves.

In addition to authorized students, any user can access Variations through designated computers located at various locations on the IU campus. Users of these computers can access the materials in Variations via IP address authentication. All public computers at IU also require an ID

and password use, so users who are not affiliated with the university must obtain a guest login in order to access Variations. These public computers prominently display a notice that members of the public can obtain a guest login --a process that requires working with a librarian. Although this is a campus-wide policy that was not adopted specifically for Variations, it nevertheless helps to ensure that public access to digitized music files will occur in an educational context.

Variations streams audio files using Apple's QuickTime Streaming Server or the open source Darwin Streaming Server. Streaming, as a technological control, prevents

users from easily downloading and distributing audio files. Similarly, the Variations score viewer lacks features that allow users to easily print or save score files. Both of these features are intended to discourage unauthorized copying and limit usage to authorized educational use.

Recommendations for use of technological controls

The Variations team provided an example of how a streaming audio system with appropriate access controls can provide online access to music recordings while actually reducing unauthorized copying. Before faculty compilations were included in Variations, students had to check out closed reserve compilation compact discs for classes with required listening. The music library staff noticed that many students would only use the discs for a few minutes before returning them. This led the staff to assume that students were likely ripping the discs to their

“Other institutions implementing the Variations3 software system are able to use their own policies to determine which access restrictions to utilize.”

own computers. With the Variations system, all students in the same class can access recordings simultaneously, from home, and as frequently as needed throughout the semester. This convenience removes much of the motivation for students to make unauthorized copies. At one point, the Variations team conducted a user survey about whether Variations made them more or less likely to make illegal copies of music, and most respondents reported that they were less likely to make copies when they were able to access Variations. This example illustrates how careful use of technological controls can both increase access and protect copyrighted materials.

Policy controls employed

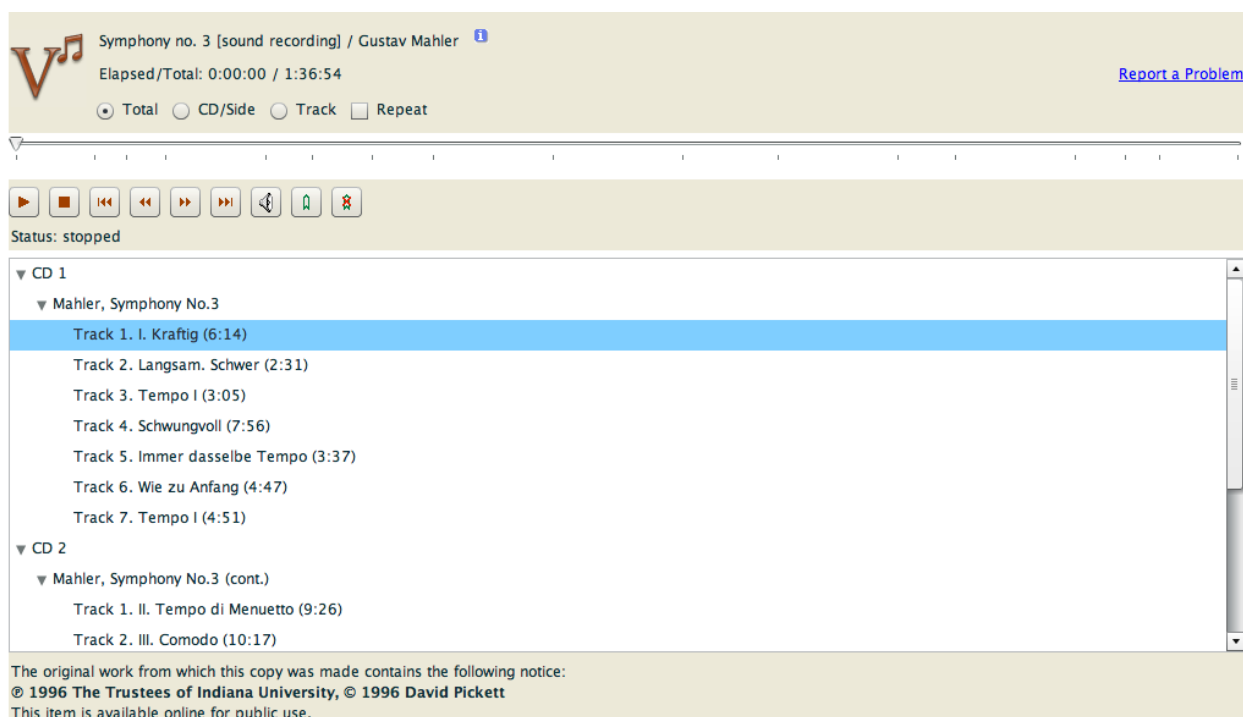
The Variations software system facilitates display of rights metadata in the interface for its audio player and score viewer. At IU, a copyright statement is displayed for the materials in Variations (see Figure 1). These statements also provide the user with information regarding the allowed uses for each item. Other institutions are able to

tailor the rights metadata statements to reflect their copyright and use policies.

Recommendations for use of policy controls

As previously discussed, the technological controls included in Variations are flexible enough to allow institutions to implement a variety of access restrictions based on their respective policies. It is important to emphasize the interplay of policy and technology involved with managing access to digital music through Variations. Variations employs a number of technological tools including username/password authorization, IP address authentication, streaming, and absence of printing or saving interface features. These tools however are tied to institutional policies and levels of risk tolerance. Each institution must make policy decisions about who can access resources (i.e. all institutional users, students registered in a course). Institutions must also develop policies determin-

Figure 1. Screenshot of the Variations browser audio player. Note the copyright statement in the bottom left corner.



ing how much risk they are willing to take regarding fair use of copyrighted materials. The Variations team points out that if their institution had not been willing to allocate funds toward a fair use risk assessment and take some amount of risk in digitizing copyrighted materials, then they would not have been able to develop the Variations system and annotation tools that they believe have profoundly and positively changed the field of music education. It is the Variations team's impression that there is a great deal of misinformation about copyright in the library and cultural institution communities that is contributing to an overall passive stance towards copyright. They encourage librarians and people involved with cultural institutions to be proactive with regards to projects

involving copyrighted materials and to be willing to undertake a fair use risk assessment instead of simply seeking out the safest established route.

References

- Indiana University. (2005, September 20). *IU receives national grant to extend its digital music library* [Press release]. Retrieved from <http://newsinfo.iu.edu/news/page/normal/2453.html>
- Variations3 Project Proposal Narrative* [PDF document]. Retrieved April 26, 2010, from



Digital Rights Management and Cultural Institutions: Case Study of the Variations Project

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The case studies portion of the project identified six exemplary projects that employed a variety of rights management technologies and policies to serve as examples from which other institutions might learn.

Related study outputs include:

Eschenfelder, K.R. (2009). Controlling Access to and Use of Online Cultural Collections: A Survey of U.S. Archives, Libraries and Museums for IMLS. University of Wisconsin-Madison School of Library and Information Studies: Madison, Wisconsin. (<http://minds.wisc.edu/handle/1793/38251>)

Eschenfelder, K.R.; Agnew, G (2010) "Technologies Employed to Control Access to or Use of Digital Cultural Collections: Controlled Online Collections" *D-Lib Magazine*.