

Variations2

Women in Computing

Technical Hour

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Metadata Librarian

Indiana University Digital Library Program

IU Digital Library Program (1)

- A collaborative organizational unit – campuswide and systemwide – created to:
 - Provide financial support and human resources to support for existing digital library initiatives;
 - Provide infrastructure, financial support, and expertise to develop new digital initiatives across the campuses of Indiana University.
 - provide leadership in the development of digital libraries locally, nationally, and internationally.

IU Digital Library Program (2)

- Joint project of IU Libraries and UITS
- Research support from SLIS and Informatics
- Created in 1997
- 12 FTE permanent staff
 - 6 Libraries
 - 4 UITS
 - 2 jointly funded
- 10 FTE additional grant-funded staff

The Variations2 Project

- \$3M grant from the National Science Foundation through the Digital Libraries Initiative—Phase 2 program
- Builds on the high-profile Variations project
 - ~7000 recordings
 - ~200 scores
- Funding through UITS to the Digital Library Program to support Music Library and School of Music activities
- Will end in September 2005; additional funding applied for

Goals of Variations2

- An integrated multimedia library system to provide navigation, search, and retrieval functions for a large and diverse information space
- A software framework to make digital music objects accessible to music instructors and application developers, using a component-based programming architecture.

Formats currently covered

- Digital audio (from CD, LP, open reel tape, etc.)
- Scanned score pages
- Encoded scores
- What's missing?
 - Liner notes
 - Video
 - Record jackets
 - Concert programs

Variations2 staffing

- 5 FTE grant-funded staff
- 7 GAs
- Student employees
- Involvement from at least 8 other Libraries, School of Music and UITS staff and faculty
- Other faculty as project investigators

Research areas

- Copyright
- Metadata
- Instruction
- System Design
- Usability

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- **Metadata**
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- System Design
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Some staffing breakdowns

- Development team
 - 5 grant-funded staff (male)
 - 1 GA (male)
 - 1 manager (male)
- Metadata team
 - 3 librarians (female)
 - 1-2 GAs (female)
- Usability team
 - Headed by development team member (male)
 - 1 GA (female)

Variations2 demo



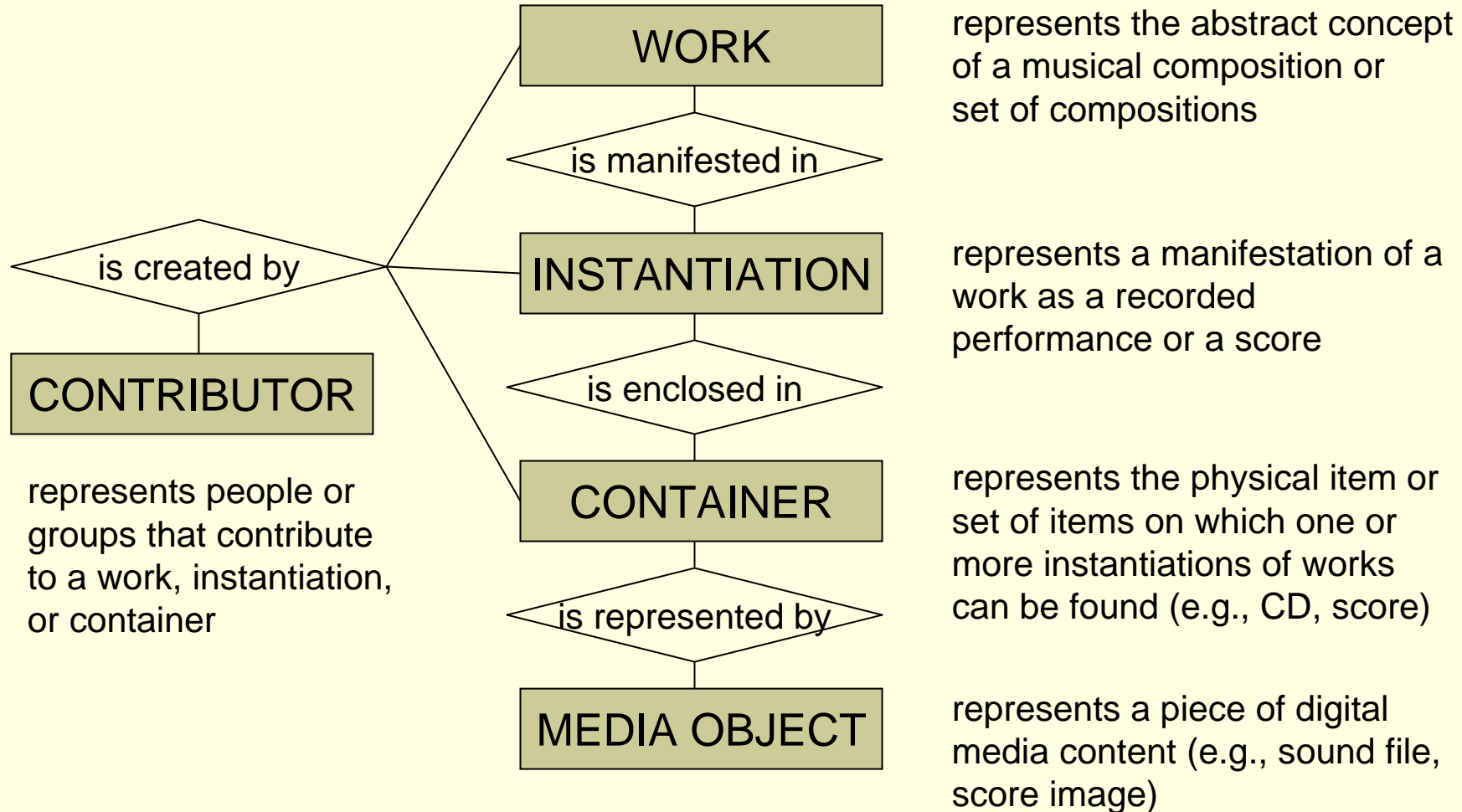
Technical environment

- Java client application / RMI servers
- Windows and Mac OS X client platforms
- Unix server
- QuickTime for Java, Darwin Streaming Server
- IBM DB2
- AT&T DjVu image compression

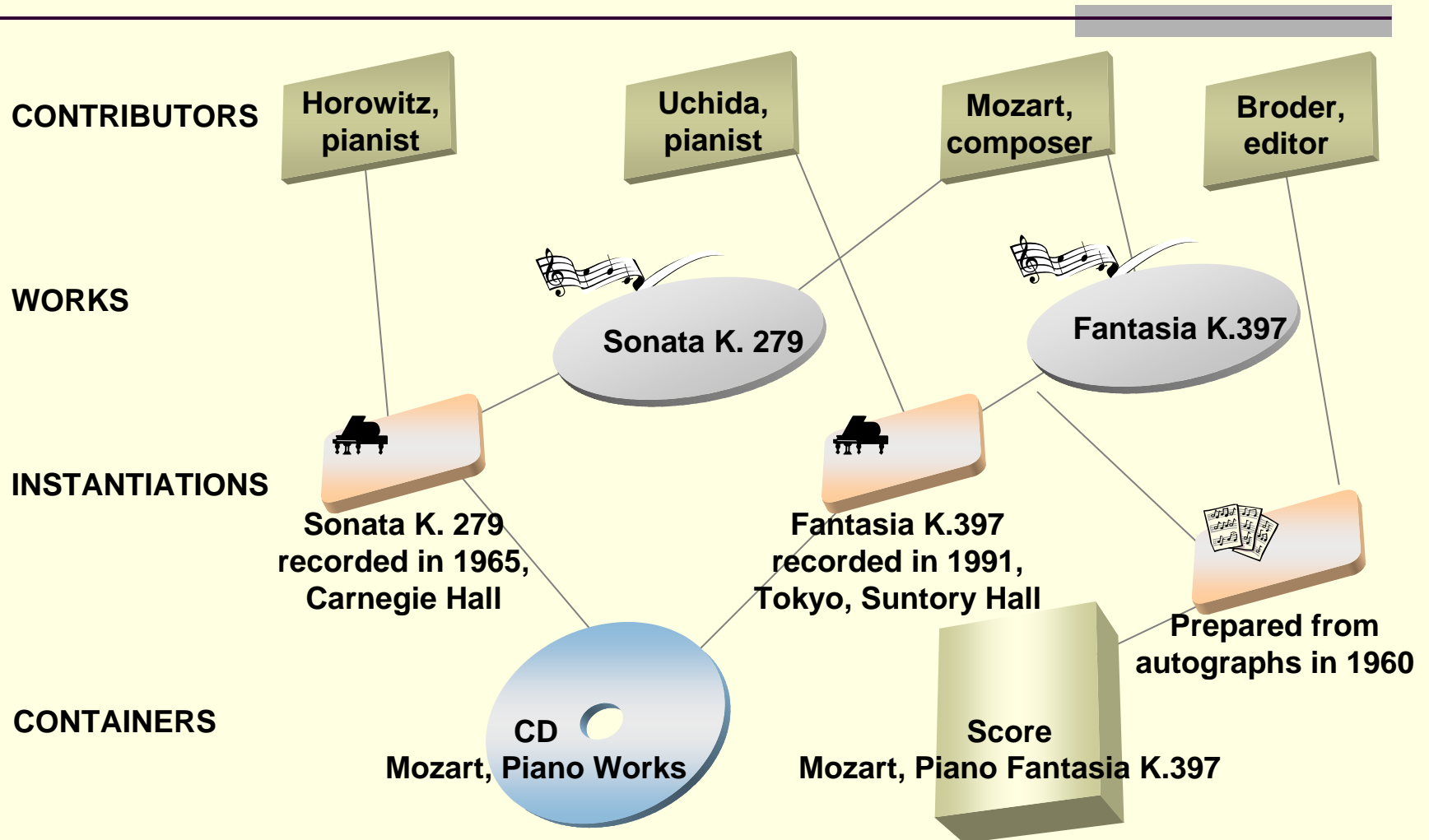
Variations2 Data Model

- Uses entity-relationship analysis to identify key concepts, properties, and relationships of musical objects
- Identifies, separates, and relates logical and physical layers of musical works and their physical manifestations
- Similar to FRBR from IFLA, but designed specifically for music
- In addition to descriptive metadata, also includes structural and technical metadata

Data Model: Entities



Data Model: Example



Data Model: Benefits

- Increases comprehensiveness and precision of search results
- Provides linkage of works in multiple formats on various levels
- Allows for navigation within the work and between its different instantiations
- Provides appropriate and complete descriptive, administrative, and structural metadata for each entity
- Provides for Variations2 as a research system in addition to a discovery system

Usability research

- To “study how students, faculty, and library patrons use digital music resources—and learn how technology can be used or adapted to help this process.”
- Users involved continuously at all stages of project development
- General evaluation of entire system and individual studies of specific aspects

Methodologies employed

- Contextual inquiry: observations of Variations2 actual usage
- Lab-based usability testing of prototypes and finished releases
- Questionnaire studies during pilot use of Variations2 by classes
- Interviews of instructors after using Variations2
- Interviews with instructors who do NOT use Variations2
- Log file analysis of Variations2 usage, both during pilot projects and during normal use

General usability evaluations

- Searching
- Audio Player
- Score Viewer
- Printing
- Bookmarking
- Timeline Tool
- Paired vs. Individual User
- Satisfaction Ratings

Usability evaluation of Variations

- Aid in user requirements and task analysis for Variations2
- Measure a baseline for comparison of satisfaction ratings between the original Variations system and Variations2
- Compare satisfaction measures in a usability lab testing situation vs. real contextual usage.

Usability evaluation of searching

- Evaluate the usability of the search interface
- Evaluate the functionality of the search results
- Investigate use of diacritics and multiple spellings in relation to searching

Usability evaluation of installation

- Usability of new installer program
- Effectiveness of installation help text

Usability evaluation of MMTT

- Evaluate student learning potential in light of a variety of lesson content and presentation formats (i.e. question difficulty, appropriateness of musical examples, ease of completing harmonic analysis, melodic dictation, etc.)
- Gauge student interest in using similar computer-based applications to complete music theory exercises
- Assess the usability of the interfaces in terms of navigation, content layout and design

Plans for Variations3

- Extend Variations2 into an open-source tool usable by music libraries of various types
- Improve sustainability of the Variations2 metadata model

- Other grants will cover:
 - OMR
 - Instructional use
 - Development of more MMTT modules

Further reading

- Mark Notess, Jenn Riley, and Harriette Hemmasi. *From Abstract to Virtual Entities: Implementation of Work-Based Searching in a Multimedia Digital Library*. ECDL 2004. Bath, UK, September 2004.
- Harriette Hemmasi. *Why Not MARC?* International Conference on Music Information Retrieval, Paris, France, October 13-17, 2002.
- Mark Notess. *Three Looks at Users: A Comparison of Methods for Studying Digital Library Use*. Toward a User-Centered Approach to Digital Libraries, Espoo, Finland, September 8-9, 2003.

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Questions?

- For more information:

- [Variations2 web site](#)

- jenlrile@indiana.edu

- These presentation slides:

- <<http://www.dlib.indiana.edu/~jenlrile/presentations/wic/v2.ppt>>