Sound Directions

Digital Preservation and Access for Global Audio Heritage

Indiana University
Harvard University

Archives of Traditional Music
Indiana University

- Established 1948 (or 1954?)
- 110,000 recordings
- 1890s to present
- Field 30%
- World music traditions
- Endangered/extinct world languages

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Digital Preservation and Access for Global Audio Heritage

- Collaboration between Harvard University and Indiana University
- Phase 1 an R&D project funded by NEH
- Focus on preservation

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Digital Preservation and Access for Global Audio Heritage

Project Partners

- Archives of Traditional Music, Indiana University
- Archive of World Music, Harvard University
- Harvard College Library Audio Preservation Services
- Digital Library Program, Indiana University
- Office for Information Systems, Harvard University

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Digital Preservation and Access for Global Audio Heritage

Objectives

- Research best practices in areas without standards or best practices
- Develop best practices to meet existing and emerging standards
- Test existing and emerging standards/best practices with a real world project

Sound Directions Advisory Board

Peter Alyea
Digital Conversion Specialist, MBRS, Library of Congress

Adrian Cosentini
Audio/Preservation Manager, New York Philharmonic

Carl Fleischhauer
Project Coordinator, Office of Strategic Initiatives, Library of Congress

Chris Lacinak
President, AudioVisual Preservation Solutions

Clifford Lynch
Executive Director, Coalition for Networked Information

George Massenburg
President, GML, LLC

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Digital Preservation and Access for Global Audio Heritage

Results

- Publication—

Sound Directions: Best Practices for Audio Preservation

- Software tools
- Development of audio preservation systems
- Preservation of field collections

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Best Practices for Audio Preservation

Standards and Best Practices

- Ensure Quality
- Provide Philosophical/Ethical Foundation
- Encourage Sustainability
- Foster Interoperability
- Provide a Migration Path

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Best Practices for Audio Preservation

Standards and Best Practices

- IASA-TC 03 and TC 04
- Broadcast Wave Format
- AES31-3
- AES-X98-B and C
- METS

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Best Practices for Audio Preservation

Selected Topics

- Digital File Types/Uses for Preservation
- Personnel for Preservation Transfer Work
- Signal Chain/Equipment for Preservation Studios
- Quality Control and Quality Assurance
- Technical and Structural Metadata

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Best Practices for Audio Preservation

Selected Topics

- Selection for Preservation
- Construction/Interchange of Preservation Packages
- Local, Interim Storage
- File Data Integrity
- Local FileNames
- Audio Preservation System Components/Functions

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Best Practices for Audio Preservation

Format

- Preservation Overview section
- Recommended Technical Practices section
- Best Practices
- Rationale
- Background
- Implementation at Harvard and Indiana
- Appendices

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Best Practices for Audio Preservation

Format

- Downloadable PDF
- Sound Directions website

www.dlib.indiana.edu/projects/sounddirections/

Digital File Types and Uses

Best Practice Documents

Preservation (Archival) Master Files:

- Unmodified
- No subjective alterations or improvements
- Preserve history, not re-write it
- As true to the original source as possible

Digital File Types and Uses

Preservation (Archival) Master Files at the ATM:

- Complete, unaltered stream from playback machine
- Carrier of raw material from transfer
- No editing, signal processing, data reduction, gain manipulation, announcements (slates)

Digital File Types and Uses

Best Practices

- Define purpose of every digital file
- Written guidelines on characteristics of files
- Written guidelines on “technical” and content edits
- Maintain common reference timeline

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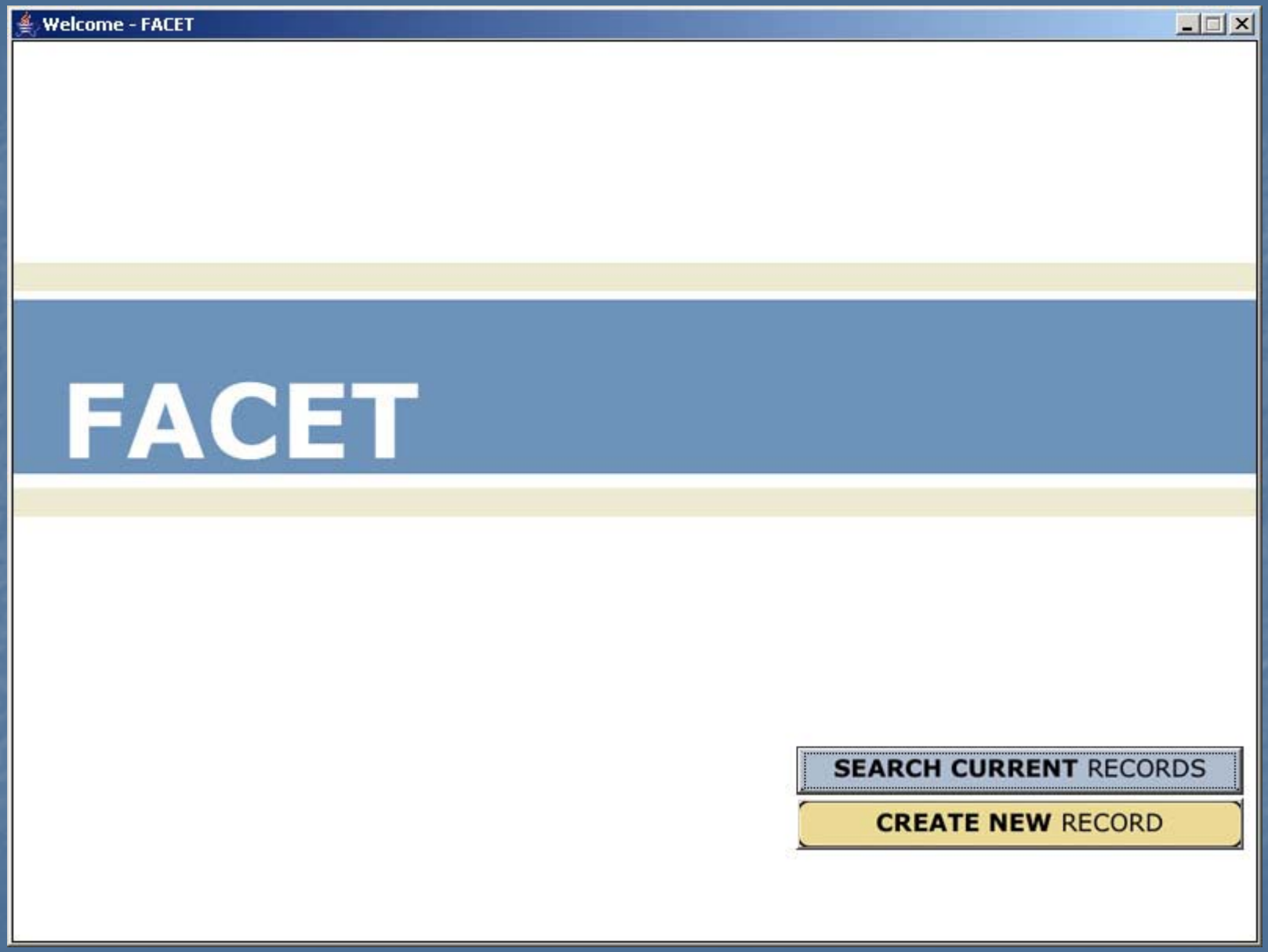
Software Tools—Indiana

Field Audio Collection Evaluation Tool (FACET)

- Point-based, collection level
- Analyzes data on condition of field formats
- Returns a risk assessment score
- Formats document
- Procedures document
- Appendices


Welcome - FACET
FACET
SEARCH CURRENT RECORDS
CREATE NEW RECORD

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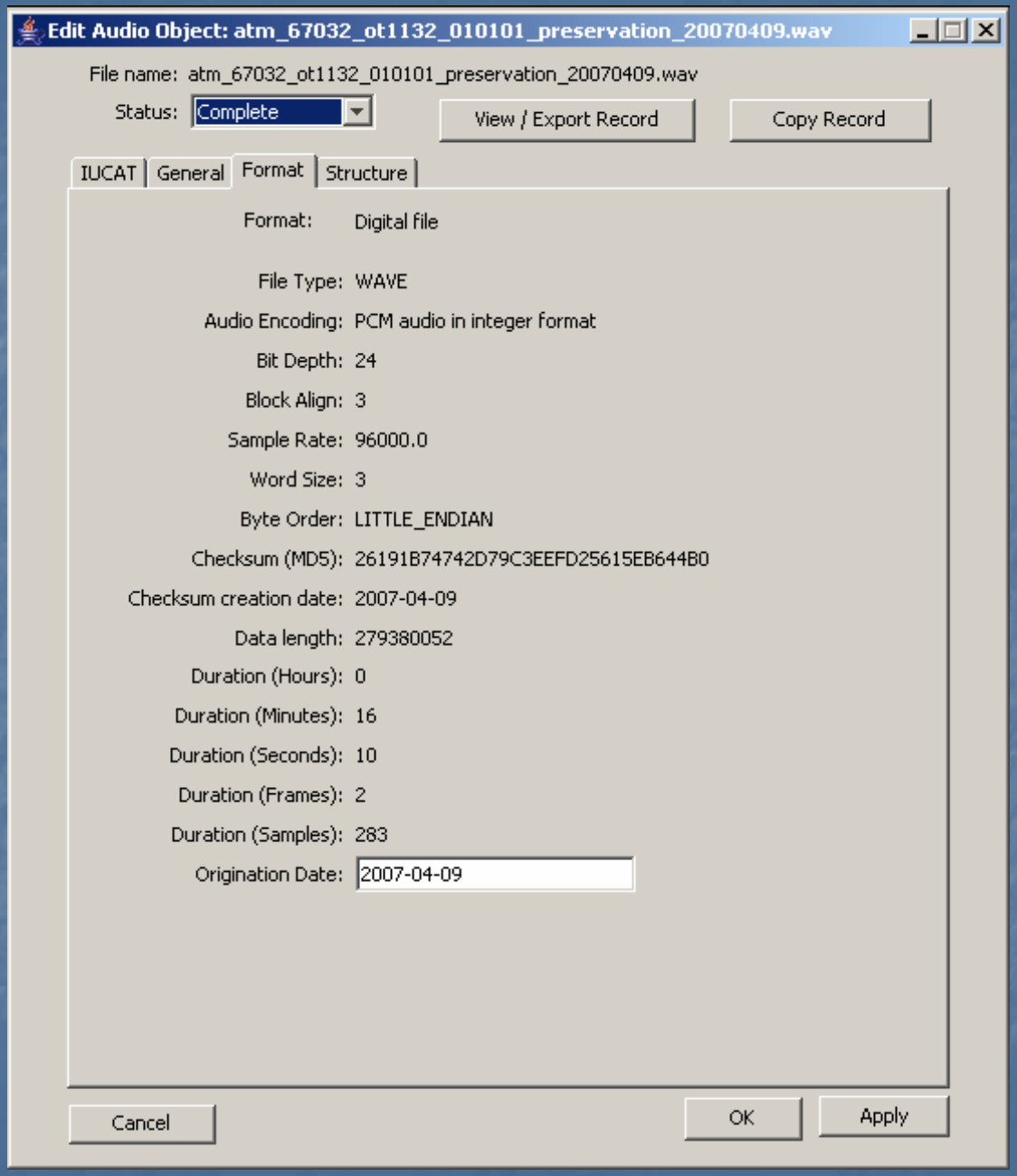
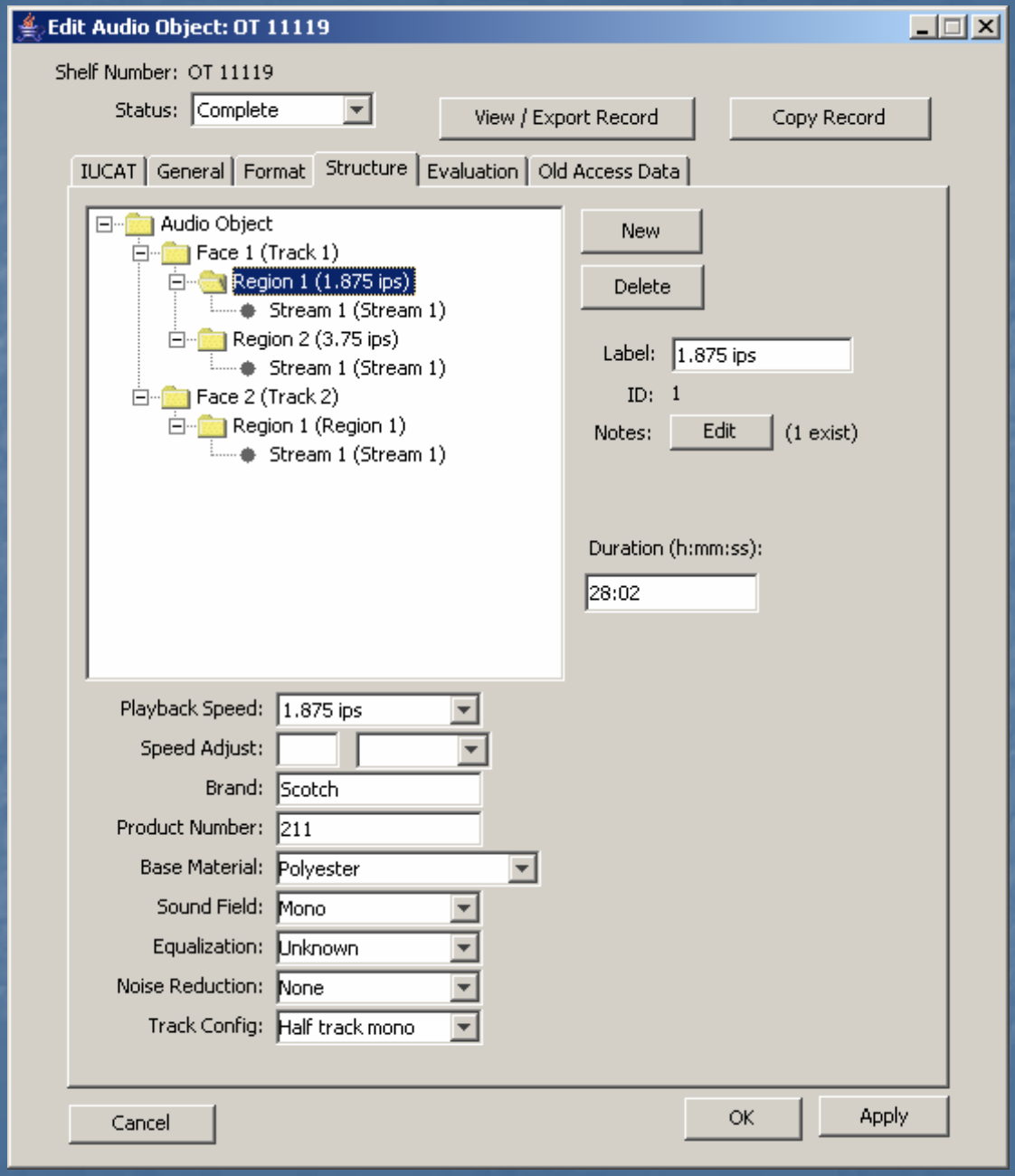
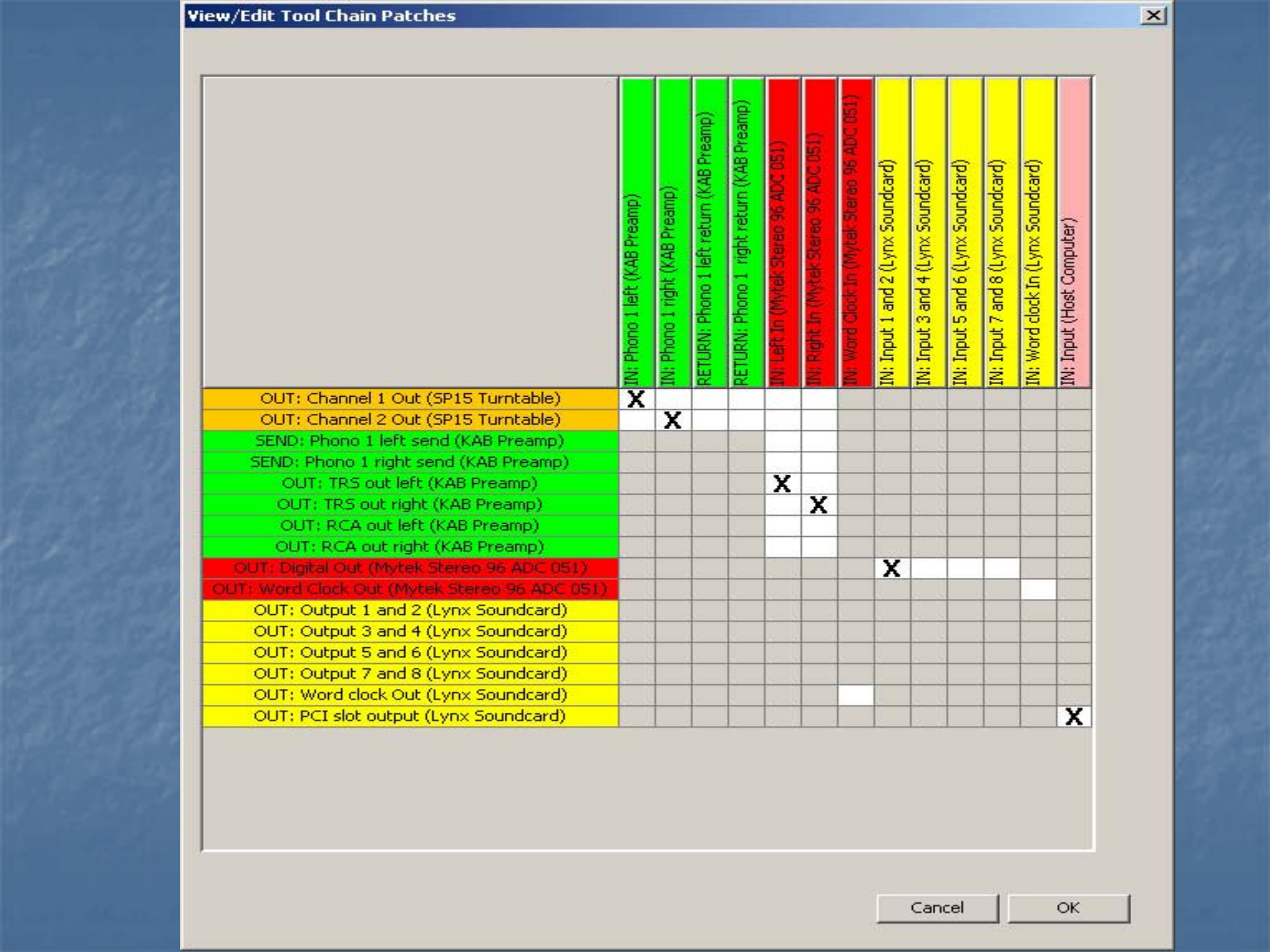
Software Tools—Indiana

Audio Technical Metadata Collector (ATMC)

- Enter/edit technical and structural metadata
- Audio object and process history metadata
- Enter/edit audio object evaluations
- Parse files to collect metadata
- Generate MD5
- Relationships diagrams
- AES-compliant XML export
- Java Swing application


Edit Audio Object: atm_67032_ot1132_010101_preservation_20070409.wav
File name: atm_67032_ot1132_010101_preservation_20070409.wav
Status: Complete
View / Export Record
Copy Record
IUCAT
General
Format
Structure
Format: Digital file
File Type: WAVE
Audio Encoding: PCM audio in integer format
Bit Depth: 24
Block Align: 3
Sample Rate: 96000.0
Word Size: 3
Byte Order: LITTLE_ENDIAN
Checksum (MD5): 26191B74742D79C3EEFD25615EB644B0
Checksum creation date: 2007-04-09
Data length: 279380052
Duration (Hours): 0
Duration (Minutes): 16
Duration (Seconds): 10
Duration (Frames): 2
Duration (Samples): 283
Origination Date: 2007-04-09
Cancel
OK
Apply


Edit Audio Object: OT 11119
Shelf Number: OT 11119
Status: Complete
View / Export Record
Copy Record
IUCAT
General
Format
Structure
Evaluation
Old Access Data
Audio Object
Face 1 (Track 1)
Region 1 (1.875 ips)
Stream 1 (Stream 1)
Region 2 (3.75 ips)
Stream 1 (Stream 1)
Face 2 (Track 2)
Region 1 (Region 1)
Stream 1 (Stream 1)
New
Delete
Label: 1.875 ips
ID: 1
Notes: Edit (1 exist)
Duration (h:mm:ss):
28:02
Playback Speed: 1.875 ips
Speed Adjust:
Brand: Scotch
Product Number: 211
Base Material: Polyester
Sound Field: Mono
Equalization: Unknown
Noise Reduction: None
Track Config: Half track mono
Cancel
OK
Apply

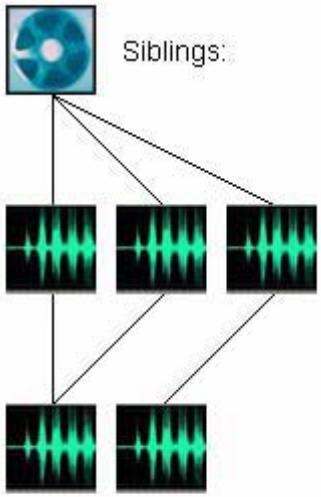

View/Edit Tool Chain Patches
IN: Phono 1 left (KAB Preamp)
IN: Phono 1 right (KAB Preamp)
RETURN: Phono 1 left return (KAB Preamp)
RETURN: Phono 1 right return (KAB Preamp)
IN: Left In (Mytek Stereo 96 ADC 051)
IN: Right In (Mytek Stereo 96 ADC 051)
IN: Word Clock In (Mytek Stereo 96 ADC 051)
IN: Input 1 and 2 (Lynx Soundcard)
IN: Input 3 and 4 (Lynx Soundcard)
IN: Input 5 and 6 (Lynx Soundcard)
IN: Input 7 and 8 (Lynx Soundcard)
IN: Word clock In (Lynx Soundcard)
IN: Input (Host Computer)
OUT: Channel 1 Out (SP15 Turntable)
OUT: Channel 2 Out (SP15 Turntable)
SEND: Phono 1 left send (KAB Preamp)
SEND: Phono 1 right send (KAB Preamp)
OUT: TRS out left (KAB Preamp)
OUT: TRS out right (KAB Preamp)
OUT: RCA out left (KAB Preamp)
OUT: RCA out right (KAB Preamp)
OUT: Digital Out (Mytek Stereo 96 ADC 051)
OUT: Word Clock Out (Mytek Stereo 96 ADC 051)
OUT: Output 1 and 2 (Lynx Soundcard)
OUT: Output 3 and 4 (Lynx Soundcard)
OUT: Output 5 and 6 (Lynx Soundcard)
OUT: Output 7 and 8 (Lynx Soundcard)
OUT: Word clock Out (Lynx Soundcard)
OUT: PCI slot output (Lynx Soundcard)
Cancel
OK

Relationship Graph For OT 11119

Grandparents:

Parents:

Current Object: Siblings:



Children:

Grandchildren:

Item ID#: OT 11119
Format: Open reel tape
Parent of: atm_99003_ot11119_010101_preservation_20060515.wa
Parent of: atm_99003_ot11119_010201_preservation_20060515.wa
Parent of: atm_99003_ot11119_020101_preservation_20060515.wa

Show graph for selected | Edit selected | Close

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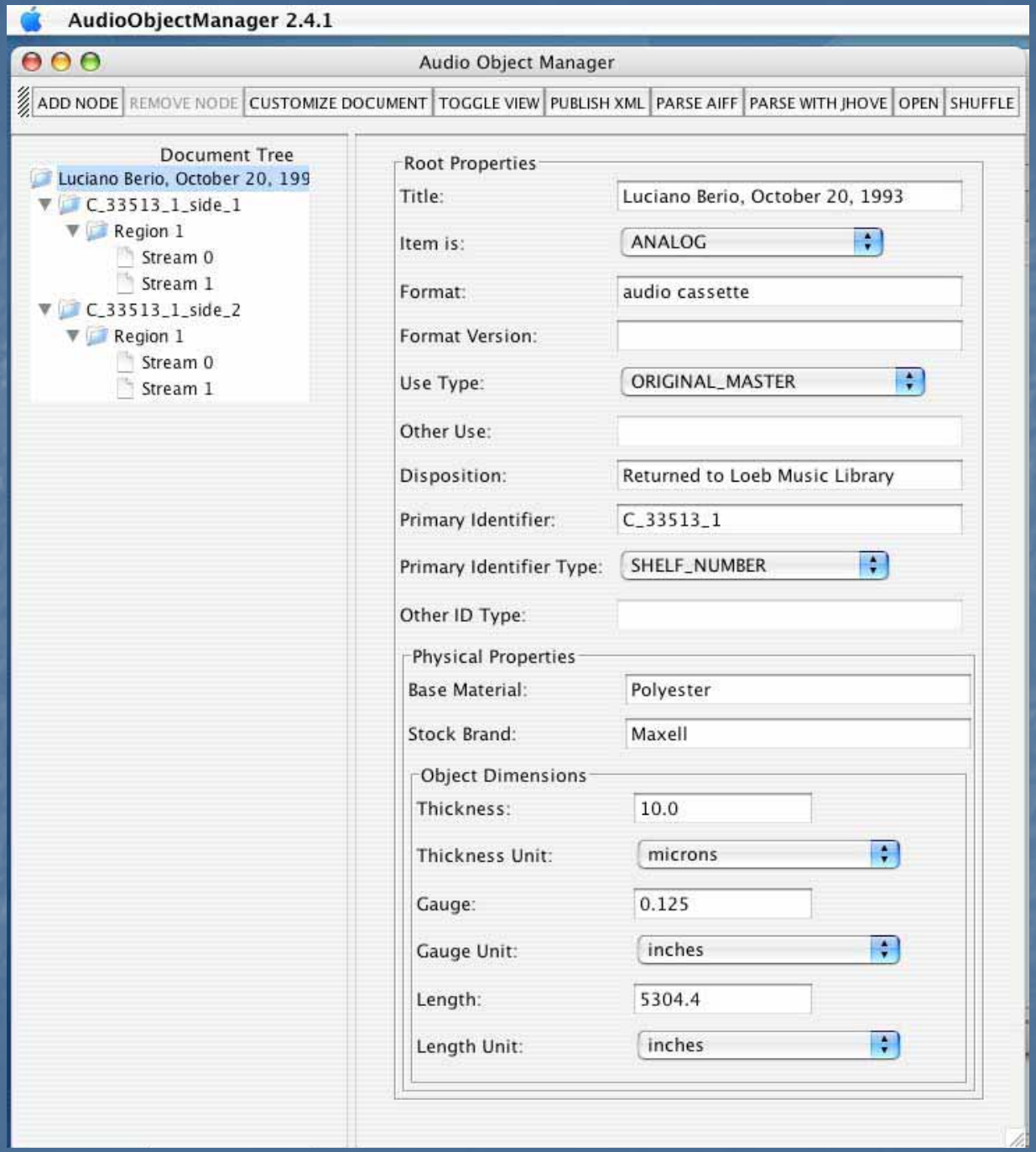
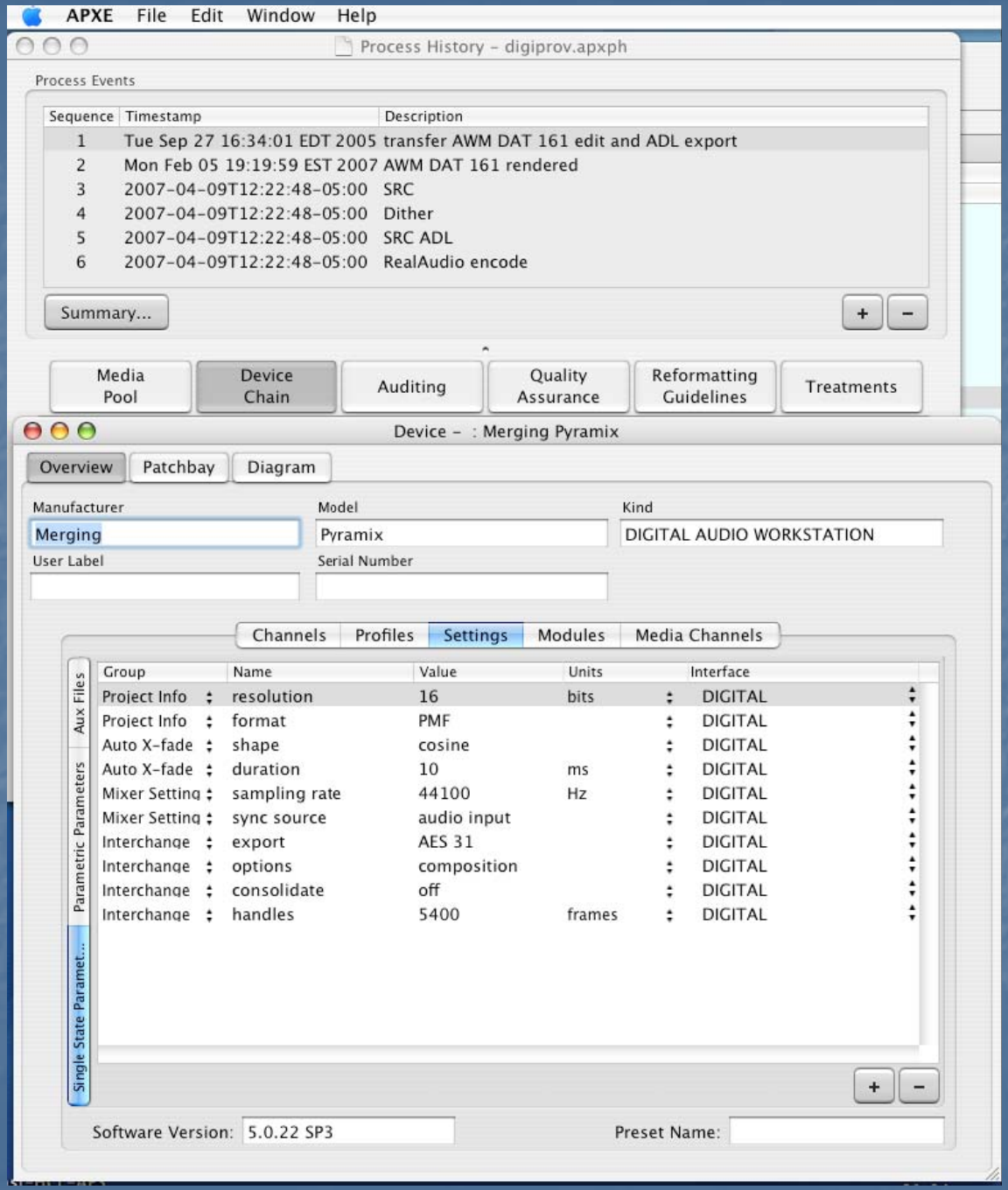
Software Tools—Harvard

Audio Object Manager and APXE

- Enter/edit technical and structural metadata
- Audio object and process history metadata
- Parse files to collect metadata
- Generate MD5
- AES-compliant XML export
- Java-based applications


AudioObjectManager 2.4.1
Audio Object Manager
ADD NODE
REMOVE NODE
CUSTOMIZE DOCUMENT
TOGGLE VIEW
PUBLISH XML
PARSE AIFF
PARSE WITH JHOVE
OPEN
SHUFFLE
Document Tree
Luciano Berio, October 20, 199
C_33513_1_side_1
Region 1
Stream 0
Stream 1
C_33513_1_side_2
Region 1
Stream 0
Stream 1
Root Properties
Title:
Luciano Berio, October 20, 1993
Item is:
ANALOG
Format:
audio cassette
Format Version:
Use Type:
ORIGINAL_MASTER
Other Use:
Disposition:
Returned to Loeb Music Library
Primary Identifier:
C_33513_1
Primary Identifier Type:
SHELF_NUMBER
Other ID Type:
Physical Properties
Base Material:
Polyester
Stock Brand:
Maxell
Object Dimensions
Thickness:
10.0
Thickness Unit:
microns
Gauge:
0.125
Gauge Unit:
inches
Length:
5304.4
Length Unit:
inches


APXE File Edit Window Help
Process History – digiprov.apxph
Process Events
Sequence Timestamp Description
1 Tue Sep 27 16:34:01 EDT 2005 transfer AWM DAT 161 edit and ADL export
2 Mon Feb 05 19:19:59 EST 2007 AWM DAT 161 rendered
3 2007-04-09T12:22:48-05:00 SRC
4 2007-04-09T12:22:48-05:00 Dither
5 2007-04-09T12:22:48-05:00 SRC ADL
6 2007-04-09T12:22:48-05:00 RealAudio encode
Summary...
Media Pool
Device Chain
Auditing
Quality Assurance
Reformatting Guidelines
Treatments
Device – : Merging Pyramix
Overview
Patchbay
Diagram
Manufacturer
Merging
Model
Pyramix
Kind
DIGITAL AUDIO WORKSTATION
User Label
Serial Number
Channels
Profiles
Settings
Modules
Media Channels
Aux Files
Parametric Parameters
Single State Paramet...
Group Name Value Units Interface
Project Info resolution 16 bits DIGITAL
Project Info format PMF DIGITAL
Auto X-fade shape cosine DIGITAL
Auto X-fade duration 10 ms DIGITAL
Mixer Setting sampling rate 44100 Hz DIGITAL
Mixer Setting sync source audio input DIGITAL
Interchange export AES 31 DIGITAL
Interchange options composition DIGITAL
Interchange consolidate off DIGITAL
Interchange handles 5400 frames DIGITAL
Software Version: 5.0.22 SP3
Preset Name:

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Software Tools—Harvard

Harvard Sound Directions Toolkit

- 40+ open source tools
- Scriptable
- Command line

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Digital Preservation and Access for Global Audio Heritage

Project Future

- "Preservation" Phase funded by NEH
- Increase throughput
- Simultaneous transfer
- Indiana automation
- Release ATMC, Audio Object Manager, APXE
- Develop access system for field collections

Sound Directions

Digital Preservation and Access for Global Audio Heritage

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Harvard University

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www.dlib.indiana.edu/projects/sounddirections