

# Peering into the Future of Cultural Heritage in the Digital Age

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# How Does One Predict the Future in an Age of Rapid Technological Change

- Historians Look to the Past
- Understanding the Gutenberg Revolution:
  - Moveable type transformed information and knowledge
  - “The Book” was reproducible and immutable
  - Primacy of text
  - Basis of modern educational and cultural systems

# Understanding Technology in an Economic Context

- The wood pulp industry, the economics of publishing, and the democratization of education
- Vast inequalities characterized the twentieth-century print world

# The Digital Revolution

- Changing economics of publishing
- Proliferation of publishing outlets and forms
- Unlocks the potential of multi-media
- Democratization of access
- Speed of communication
- Mutability of information
- Fundamental changes to the meaning of intellectual property

# The Internet and Cultural Heritage

## Putting collections on line

- Increased access to resources
- Multimedia: text, image, sound, video
- Value-added presentations
- Potential for interactivity and collaboration

# Phase One: Digitizing Collections and Building Project Websites

- Reproducing the original: The online card catalogue and the page-view webpage
- HTML web projects: collections, exhibits, educational materials, interpretations

# The Project Model of Digital Cultural Heritage

- Project-by-project development
  - Responding to individualized vision
  - Building complex objects that combine resources
  - Elegant websites and snazzy cd-roms
- HTML coding/commercial software/custom scripting
- Limitations
  - Too expensive
  - Stand-alone, not interoperable
  - Unable to maintain and preserve

# Time to Move Beyond the Project

## Approach: Designing Digital Repositories

- To meet the preservation and access responsibilities of libraries, museums, and archives
- To meet the complex pedagogical and publishing needs of cultural heritage and educational institutions
- To take full advantage of networked digital media

# Building Digital Repositories

- Need to plan for long-term preservation and access from the start
- Must design interoperable, distributive systems
- Design for multimedia from the outset
- Use and develop international best practices
- Minimize labor costs

# A Conceptual Framework: Open Archive Information System Reference Model

- OAIS: A three-part model and a shared vocabulary
  - Submission (SIP)
  - Administering (AIP)
  - Dissemination (DIP)
- Allows OAIS compliant partners to exchange metadata and digital objects in predetermined fashion
- Allows for integrated searching across multiple repositories
- ISO Archiving Standard

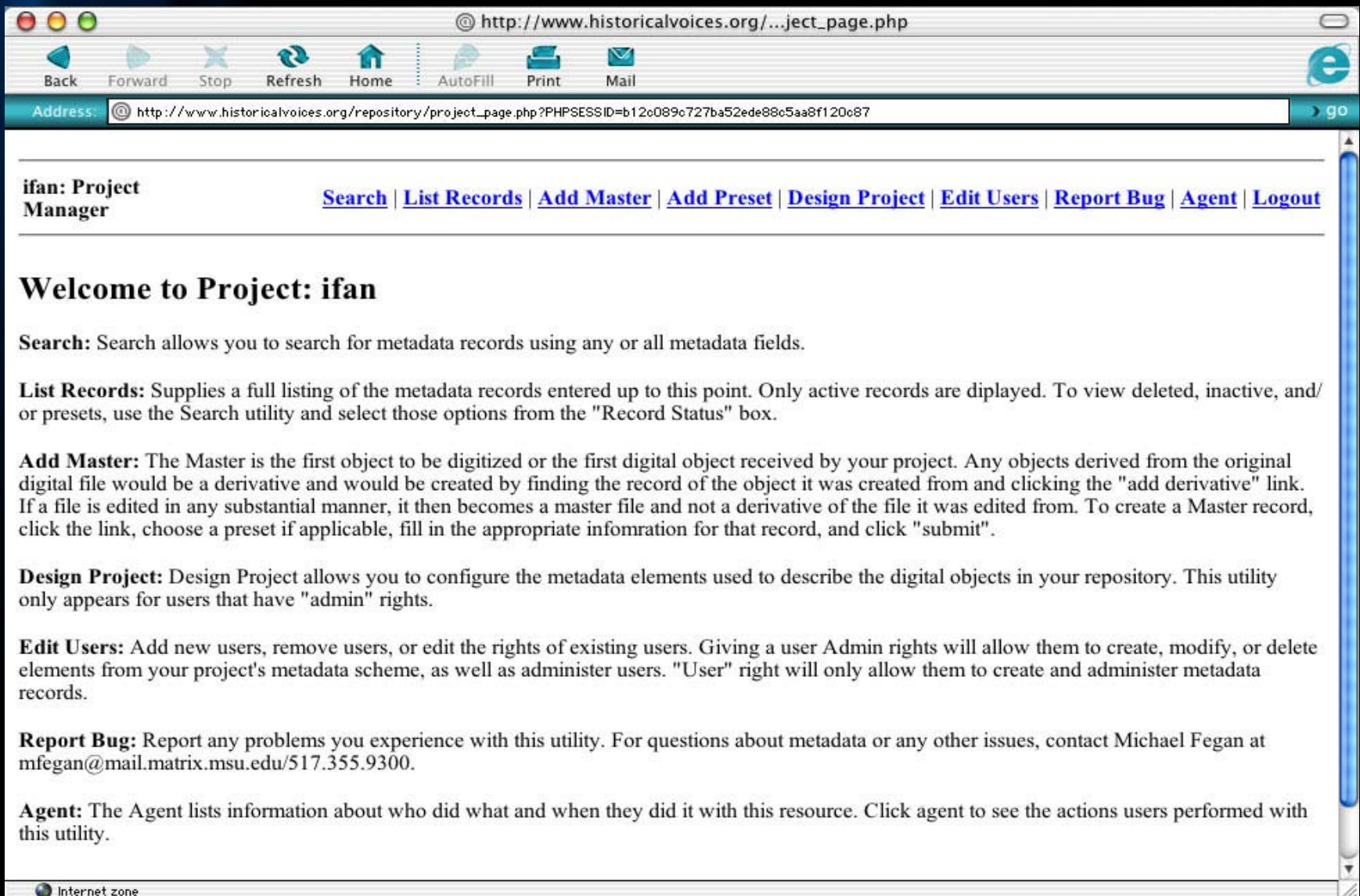
# Metadata Encoding and Transmission Standard (METS)

- Standardized by extremely flexible metadata schema for incorporating different metadata into a single document
- “Bucket” approach to structural, descriptive, and administrative metadata
- Designed to encompass full range of repository needs
- Positioned to be a tool for exchange of metadata and digital objects

# The Program Approach to Submission/Ingestion:

- Need for flexibility for different objects, types, and purposes
- But also a need for standardization of structure to permit searching, repurposing, development of complex digital objects
- Moving ingestion upstream: Automating collection of metadata
- The modular approach

# MATRIX Modular Project Design



The screenshot shows a web browser window with the address bar containing the URL: [http://www.historicalvoices.org/repository/project\\_page.php?PHPSESSID=b12c089c727ba52ede88c5aa8f120c87](http://www.historicalvoices.org/repository/project_page.php?PHPSESSID=b12c089c727ba52ede88c5aa8f120c87). The browser's navigation bar includes buttons for Back, Forward, Stop, Refresh, Home, AutoFill, Print, and Mail. The page content is titled "ifan: Project Manager" and features a navigation menu with links for Search, List Records, Add Master, Add Preset, Design Project, Edit Users, Report Bug, Agent, and Logout. The main content area provides detailed instructions for each of these functions.

**ifan: Project Manager**      [Search](#) | [List Records](#) | [Add Master](#) | [Add Preset](#) | [Design Project](#) | [Edit Users](#) | [Report Bug](#) | [Agent](#) | [Logout](#)

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## Welcome to Project: ifan

**Search:** Search allows you to search for metadata records using any or all metadata fields.

**List Records:** Supplies a full listing of the metadata records entered up to this point. Only active records are displayed. To view deleted, inactive, and/or presets, use the Search utility and select those options from the "Record Status" box.

**Add Master:** The Master is the first object to be digitized or the first digital object received by your project. Any objects derived from the original digital file would be a derivative and would be created by finding the record of the object it was created from and clicking the "add derivative" link. If a file is edited in any substantial manner, it then becomes a master file and not a derivative of the file it was edited from. To create a Master record, click the link, choose a preset if applicable, fill in the appropriate information for that record, and click "submit".

**Design Project:** Design Project allows you to configure the metadata elements used to describe the digital objects in your repository. This utility only appears for users that have "admin" rights.

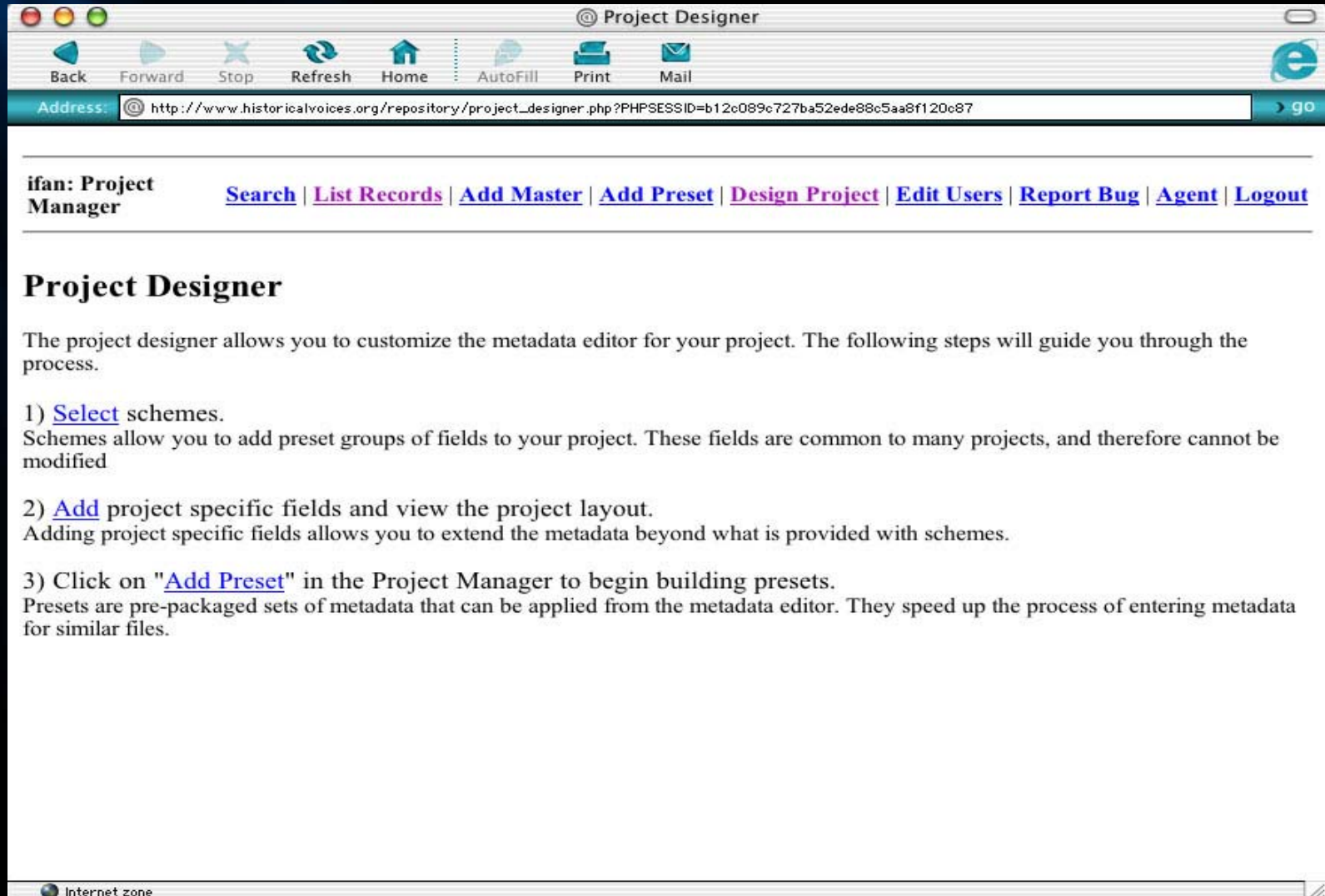
**Edit Users:** Add new users, remove users, or edit the rights of existing users. Giving a user Admin rights will allow them to create, modify, or delete elements from your project's metadata scheme, as well as administer users. "User" right will only allow them to create and administer metadata records.

**Report Bug:** Report any problems you experience with this utility. For questions about metadata or any other issues, contact Michael Fegan at [mfegan@mail.matrix.msu.edu](mailto:mfegan@mail.matrix.msu.edu)/517.355.9300.

**Agent:** The Agent lists information about who did what and when they did it with this resource. Click agent to see the actions users performed with this utility.

Internet zone

# MATRIX Modular Project Design



The screenshot shows a web browser window with the title "Project Designer". The address bar contains the URL: [http://www.historicalvoices.org/repository/project\\_designer.php?PHPSESSID=b12c089c727ba52ede88c5aa8f120c87](http://www.historicalvoices.org/repository/project_designer.php?PHPSESSID=b12c089c727ba52ede88c5aa8f120c87). The browser's navigation bar includes buttons for Back, Forward, Stop, Refresh, Home, AutoFill, Print, and Mail. Below the address bar, there is a navigation menu with the following links: [Search](#), [List Records](#), [Add Master](#), [Add Preset](#), [Design Project](#), [Edit Users](#), [Report Bug](#), [Agent](#), and [Logout](#). The main content area features a heading "Project Designer" followed by a paragraph: "The project designer allows you to customize the metadata editor for your project. The following steps will guide you through the process." Below this, there are three numbered steps: 1) [Select](#) schemes. Schemes allow you to add preset groups of fields to your project. These fields are common to many projects, and therefore cannot be modified. 2) [Add](#) project specific fields and view the project layout. Adding project specific fields allows you to extend the metadata beyond what is provided with schemes. 3) Click on "[Add Preset](#)" in the Project Manager to begin building presets. Presets are pre-packaged sets of metadata that can be applied from the metadata editor. They speed up the process of entering metadata for similar files. At the bottom left of the browser window, there is a small icon and the text "Internet zone".

ifan: Project Manager

[Search](#) | [List Records](#) | [Add Master](#) | [Add Preset](#) | [Design Project](#) | [Edit Users](#) | [Report Bug](#) | [Agent](#) | [Logout](#)

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## Project Designer

The project designer allows you to customize the metadata editor for your project. The following steps will guide you through the process.

- 1) [Select](#) schemes.  
Schemes allow you to add preset groups of fields to your project. These fields are common to many projects, and therefore cannot be modified
- 2) [Add](#) project specific fields and view the project layout.  
Adding project specific fields allows you to extend the metadata beyond what is provided with schemes.
- 3) Click on "[Add Preset](#)" in the Project Manager to begin building presets.  
Presets are pre-packaged sets of metadata that can be applied from the metadata editor. They speed up the process of entering metadata for similar files.

Internet zone

# MATRIX Modular Project Design

ifan: Project Manager

[Search](#) | [List Records](#) | [Add Master](#) | [Add Preset](#) | [Design Project](#) | [Edit Users](#) | [Report Bug](#) | [Agent](#) | [Logout](#)

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## Scheme Selection

Schemes are metadata sets that can be added to your project. These fields are common to many projects, and therefore cannot be modified. Although the fields for a scheme can't be modified, you can add fields to the core set of metadata that only will appear for your projects. If you think the metadata schemes need to be altered in some way, please contact MATRIX.

These are the schemes that are currently being used:

These are the schemes that you can add to the project:

Internet zone

# MATRIX Modular Project Design

**Field Editor**

The field editor allows you to create or modify the information about a particular field that will describe an object for your project. Fill in the appropriate information for the metadata field and press the submit button. Click [here](#) for definitions of each of the forum fields in the field editor.

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Group:  or if other:

Name:

Required

Sequence:

Description:

Caption:

Type:

Note:

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# MATRIX Modular Project Design

METADATA EDITOR: ifan-a0a0a7-a

Back Forward Stop Refresh Home AutoFill Print Mail

Address: http://www.historicalvoices.org/repository/metadata\_editor\_form.php?pbd=ifan-a0a0a7-a&PHPSESSID=b12c089c727ba52ede88c5aa8f120c87

## METADATA EDITOR: ifan-a0a0a7-a

To create a record, fill in the appropriate information for that record and the option to update the record by clicking edit for that particular record on the right.

**Internet Explorer Script Alert**

! Improper format. Please enter a name in the format: lastname, firstname

OK

**descriptive**

**Title:**

**Author/Interviewee:**

**Interviewer:**

**Keywords:**

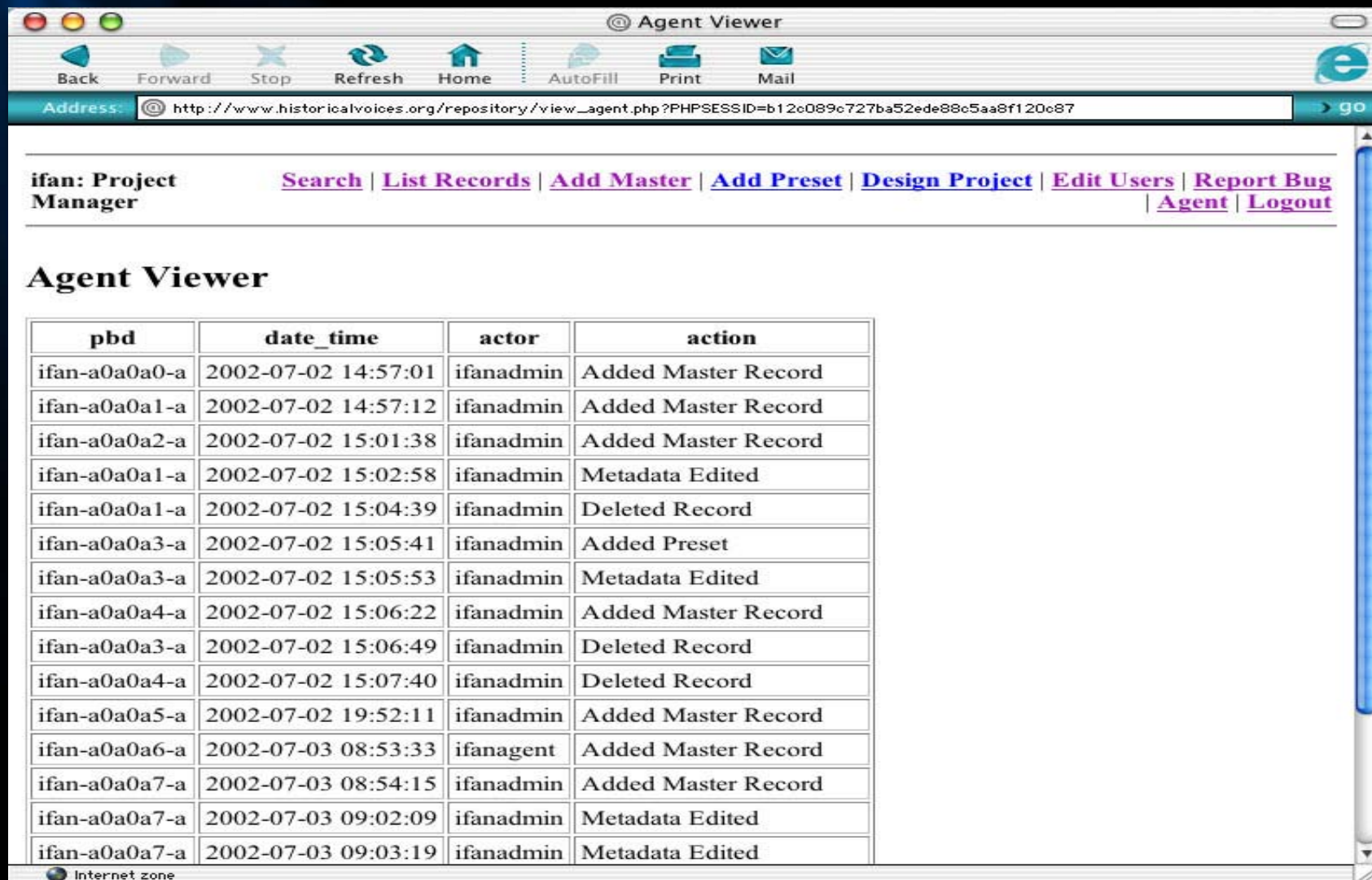
**Description:**

**Publication Date:**

**Language:**   
french  
Wolof

Internet zone

# MATRIX Modular Project Design



ifan: Project Manager      [Search](#) | [List Records](#) | [Add Master](#) | [Add Preset](#) | [Design Project](#) | [Edit Users](#) | [Report Bug](#)  
| [Agent](#) | [Logout](#)

## Agent Viewer

pbd	date_time	actor	action
ifan-a0a0a0-a	2002-07-02 14:57:01	ifanadmin	Added Master Record
ifan-a0a0a1-a	2002-07-02 14:57:12	ifanadmin	Added Master Record
ifan-a0a0a2-a	2002-07-02 15:01:38	ifanadmin	Added Master Record
ifan-a0a0a1-a	2002-07-02 15:02:58	ifanadmin	Metadata Edited
ifan-a0a0a1-a	2002-07-02 15:04:39	ifanadmin	Deleted Record
ifan-a0a0a3-a	2002-07-02 15:05:41	ifanadmin	Added Preset
ifan-a0a0a3-a	2002-07-02 15:05:53	ifanadmin	Metadata Edited
ifan-a0a0a4-a	2002-07-02 15:06:22	ifanadmin	Added Master Record
ifan-a0a0a3-a	2002-07-02 15:06:49	ifanadmin	Deleted Record
ifan-a0a0a4-a	2002-07-02 15:07:40	ifanadmin	Deleted Record
ifan-a0a0a5-a	2002-07-02 19:52:11	ifanadmin	Added Master Record
ifan-a0a0a6-a	2002-07-03 08:53:33	ifanagent	Added Master Record
ifan-a0a0a7-a	2002-07-03 08:54:15	ifanadmin	Added Master Record
ifan-a0a0a7-a	2002-07-03 09:02:09	ifanadmin	Metadata Edited
ifan-a0a0a7-a	2002-07-03 09:03:19	ifanadmin	Metadata Edited

Internet zone

# The Program Approach to Dissemination/Delivery:

- Facilitating Alternative Delivery formats
  - Archival: Search, browse, sort
  - Galleries: Content based-groupings
  - Exhibits: Structured presentations
  - Educational classrooms

# The Program Approach to Dissemination/Delivery:

- Locating Related Content
  - [Creating complex digital objects](#)
- Use Generated Groups
  - [The Maine Memory Network](#)
- Diverse interfaces for diverse audiences
- SMIL and flash presentations of multimedia material
  - <http://www.michigan-writers.org>

# The Program Approach for Future Growth of Repository:

- Developing user-generated content over time to enhance repository
  - Commentary
  - Supporting content
  - Usage information
  - Collateral links

# Facilitating Enriched Access and Delivery:

- Resource location: Harvesting metadata
- Resource Manipulation
  - Creating complex digital objects
  - Segmentation and Annotation
- Moving Value-Added Access Downstream

# Media MATRIX: An Example of Online Tools for Manipulating Multimedia Objects

- Allows users to find, segment, annotate, organize, and publish streaming media on the World Wide Web
- Uses browser's bookmark feature to launch application
- Finds and loads media into editor
- Allows user to “isolate” portion of media and annotate
- Organize clips/annotations on personal portal page
- Create publications/presentations from clips and annotations
- Archive independent
- [Media Matrix](#)

# Technology

- Server-side

- Database driven - MYSQL

- php/javascript

- Xml based delivery/display

- No proliferation of digital files

- Pointer to media

# Applications

## ■ Digital Archive/Library

- Easy creation of derivatives
- Distributed creation of intellectual metadata
- Re-use of user generated information as metadata

## ■ Education

- Allow teachers and students to more easily use multimedia materials in the classroom
- Create multimedia presentations and reports
- Courseware manufacturers: could enhance courseware packages

# Looking Forward to Digital Repositories for Cultural Heritage

- Move from projects to program
- Modularity to support flexibility and growth
- Moving ingestion upstream and access downstream
- Realizing the digital revolution
  - Access and preservation
  - Depth and richness of multimedia
  - Multiple Voices
  - Interactivity

# The Big Challenges:

- IT programming and tool development
- International cooperation and agreement on flexible standards
- Rethinking intellectual property
- Overcoming economic inequalities, especially bandwidth

# Partnerships Needed to Build Cultural Heritage Digital Repositories:

- IT skills and participation in international community
- Museum, library and archival sensibilities and knowledge
- Scholarly insight
- Educational linkages and outreach