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Abstract

In 2011, a group of librarians, faculty, programmers and documentarians began developing an open-source HTML5 infrastructure built on public APIs that enables faculty, students, staff and the general public to view, annotate, and remix Harvard-owned digital multimedia collections and to interconnect them with other high-quality digital repositories across the web. This paper tells the story of this project from the librarians' perspective, describing the work and what was learned.

Author Bio & Acknowledgements

Alix Reiskind is the Visual Resources Librarian of the Harvard Graduate School of Design's Frances Loeb Library. During her 15 years at the Loeb Library she has worked to increase student and faculty use of images, transitioning from analog to digital images. Alix works closely with colleagues across Harvard repositories on Harvard University's union catalog of visual materials, VIA (Visual Information Access). Alix earned her Masters in Library Science at Simmons College and her Bachelor's degree from Colgate University in English and Religion. Alix is a member of the Visual Resources Association and the Art Libraries Society of North America, she is currently a Director on the Board of the Visual Resources Association Foundation.

extraMUROS and the 21st century image library

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extraMUROS, a new media collection tool, is being developed by the Harvard metaLAB, with partners from the Harvard Graduate School of Design's Loeb Library, and funding from Harvard's Library Lab. This paper tells the story, thus far, of two librarians' experience with extraMUROS and how this project has started to change the way we see visual, audio and media collections and our related roles. This project has inspired us to think about image collection and curation differently. It has also challenged some of the existing thinking and norms and inspired new, creative ways of approaching collecting and, eventually telling stories. We are taking a snapshot of where the project is now as it is still in its nascent stages, though we see much future growth and potential.

Setting the scene

The Library Lab is a Harvard Library initiative developed to support innovative projects for the Harvard Libraries, <http://osc.hul.harvard.edu/liblab>. Work through the Lab fosters relationships between the Harvard Library and the community at Harvard and beyond. The extraMUROS project is one of many that have benefitted from this program in its first year. Library Lab's support has reached beyond financial support to helping build a community and sharing information about innovation in the libraries with colleagues across the University. This support has been crucial to the current and continued development of extraMUROS.

metaLAB, <http://metalab.harvard.edu/research/>, is a forward thinking group of scholars, technologists, and documentarians who develop, build and implement a variety of systems to enrich Harvard and help move the University into the 21st and 22nd centuries. From their website, "metaLAB (at) Harvard is a research unit dedicated to innovation and experimentation in the arts, media and humanities hosted at the Berkman Center for Internet and Society. The lab is founded on the belief that some of the key research challenges and opportunities of the new millennium, not to mention fundamental questions about experience in a connected world, about the boundaries between nature and culture, about democracy and social justice, transcend divisions between the arts, humanities and sciences; between the academy, industry, and the public sphere; between theoretical and applied knowledge."

First encounter

Ann Whiteside, Director of the Loeb Design Library at the Harvard Graduate School of Design, was on a panel discussion sponsored by two PhD students on 'Place' talking about her work with the Kepes Lynch project at MIT. It was here that Jesse Shapins, metaLAB founder, faculty member and doctoral student, met Ann for the first time and, I believe, the glimmer of extraMUROS was born. This first meeting inspired a second meeting between the three of us to talk about what Jesse had been working on, a project called Zeega, <http://www.zeega.org/>, and what could be developed to help build and gather collections – extraMUROS: a collection gathering, building and sorting tool for the 21st century.

Application and acceptance

We decided to apply to the Library Lab for funding to build a system that would enable the gathering of content from Harvard collections and content from the web using open APIs to

bring them into extraMUROS. The collections can be intermixed and moved about within Zeega and gathered into narratives to be used for presenting or teaching.

We were awarded funding in the fall of 2010. People in our library, in other libraries, and in the Library Lab were excited at the prospect of the project because it offers ways to fill gaps in the Harvard Library systems; gaps in how to easily get content from one place to another.

First development meeting

Our first encounter with the metaLAB team was at the Berkman Center at the Harvard Law School. We were welcomed into their meeting space and met a warm and enthusiastic cast of characters. This meeting was used to spark initial thoughts on the project and gave us a chance to begin formulating questions:

What are we trying to achieve?

How?

Who for?

Using what?

Our team was made up of two librarians, two faculty members, two programmers and a documentarian to start. It shot off at times to include more programmers and user interface people as needed.

We started coming up with answers to our questions and began defining and describing extraMUROS:

The mission of extraMUROS is to provide a new model for digital collection development, curation and dissemination. Our approach is based on a few core principles:

- an expansion of the traditional intramural concept of the library to an understanding of the library as an expanded, multinodal network of repositories, APIs and interfaces
- a commitment to supporting innovative cross-media platforms built around the triangulation of research, teaching and scholarly communication
- an intensified commitment to public access and public knowledge creation

The chief attributes of the extraMUROS toolkit include:

Shared Access = extraMUROS provides a model for the creation of “digital archives without walls” built on connections between intramural and extramural repositories and couplings between different media types, connecting digital collections from libraries, museums and archives across the country with one another, as well as with repositories like the Internet Archive, Flickr, YouTube, and others;

Visual Discovery = extraMUROS allows users to explore collections in completely new ways by offering innovative modes of visualization and geographic access;

Curation = extraMUROS allows scholars, students and the public to collaboratively curate and share archival subdomains, as well as online exhibitions, slideshows, and editions combining text, digital images, audio and video;

Multichanneling = extraMUROS creates a flexible pipeline that facilitates the experience of curated assets and multimedia scholarship not only online, but also by means of tablet devices (e.g. iPad)¹

We held a series of fascinating conversations with colleagues from across the university, and across the country. We discussed collections with the Arnold Arboretum, the Harvard Poetry Collection and the Harvard Library Head of Collections; we met with public broadcasting professionals to discuss collections and information access and storage; we met with technology groups exploring other ways of documenting the library; we met with faculty from Harvard and beyond to talk about their needs and views about our ideas for extraMUROS; and we talked about how extraMUROS could help the thinking around the development of the Digital Public Library of America. Each of these conversations contributed to the growth and direction of extraMUROS.

We started building a prototype project called “Curating the American Landscape.” This prototype used the Loeb Design Library’s collection of digitized lantern slides from a previous digitization project, “American Landscape and Architectural Design, 1850-1920,” to demonstrate the integration of Harvard material with images and video from other sites on the internet. While we were building our prototype collection, we wanted to publicize the project, and find ways to share our goals with others beyond Harvard. We created a demonstration video to show how we imagined the collation of Harvard material and material from the web to form a scholarly narrative.

Achievements at this point

The main milestones implemented in our product prototype are described below.

A unique feature of the extraMUROS project is the expanded team of collaborators that has been built over the past six months. This team includes senior faculty, junior faculty, library leadership and staff, graduate students, fellows and independent designers and developers. The core group comes from within Harvard, but we have also begun integrating external partners so as to broaden the project’s impact and enhance its reach. This team has been integral to developing the prototype of extraMUROS. They are deeply committed to fostering its future design and growth by making use of it in their research, teaching and publishing. In our view, this unique mixture of backgrounds and skills is not just one of our major successes, but also provides a model for future library innovation.

- A major technical challenge within extraMUROS is the need to perform rapid queries of a database containing millions of objects and, at the very same time, to constantly write new edits to the database, storing these query paths and user interactions as new collections and objects. In this initial phase of the project, we have successfully designed a database strategy that succeeds in achieving these dual roles through a combined MySQL + Solr database architecture.
- A core contribution of extraMUROS to the library community is a series of lively and innovative user interfaces. In contrast to most library tools, these interfaces do not privilege keyword searches, but rather allow for a more intuitive, playful, associative and visually driven exploration of library content, intentionally limiting the initial amount of metadata presented, aiming to captivate users with the content itself. We’ve built three viewing modes for exploring the extraMUROS catalog:

¹ extraMUROS. *Proposal for renewed 2011-2012 Funding. Harvard Library Lab. Submitted September 1, 2011, p. 4.*

- Collections, Map and Time views. The Collections view is based on a matrix of icons; the Map view is a novel and scalable grid-based approach to geographic containers that is implemented in both 2D and 3D versions; the Time view allows for exploration via a sliding temporal scale. Incorporated within each of these views is a user workspace that allows for the fine-grained curation of user-created collections.
- True to our user-centered design and development philosophy, we have been building and testing extraMUROS in dialogue with a number of concrete research projects. We will be publishing a series of extraMUROS-based articles in the prestigious online journal Places (which is part of the Design Observer group) this fall on the topic of “Curating the American Landscape.”
 - We have made it possible to browse extraMUROS collections through a browser-based web application on tablet devices. This tablet browser includes inline audio and video playback, both of which were significant technical hurdles and illustrate the promise of HTML5.
 - We have successfully incorporated collections from the Harvard Library (select repositories from VIA); Macaulay Library of Sounds at Cornell; Library of Congress; Flickr; YouTube; and Archive.org.²

Wireframes

The work we have done provided us with a proof of concept, but we also needed to work on the system itself: the user interface and backend database. We met weekly to discuss how the collections and items would look and interact. We want to allow people to see items individually and in collections. We want to be able to search by keyword; we want to sort by time; we want to geo-locate items and collections. This list of developments is in progress. We produced a mock-up of what an extraMUROS entrance screen could look like. As well as one showing the collection and item levels. We spent time thinking about what types of filters we want to offer for searching and organizing. Currently we are working with keywords (tagging), geo-locations and time periods. We have also spent time thinking about how to create and build personal collections and how to include a light box feature for more image functionality.

What we need to do/project needs

Despite these achievements, many features of extraMUROS still need to be added or built out if the project is to fulfill its promise for the library community at Harvard and beyond. We are now planning the development of the following additional features/initiatives over the coming academic year.

Because the goal of the project’s initial phase was to develop an experimental prototype, we haven’t, to date, pursued integration of extraMUROS within existing library systems. Over the coming year, we would like to dedicate ourselves to planning and implementing integration with Harvard Library IT resources and other on- campus systems. This might take the form of extraMUROS becoming a tab within the online catalog or some similar approach. In addition, this would include exploring grant opportunities for long-term funding from sources inside and outside Harvard and the library community, itemizing long-term staffing and infrastructure needs, and establishing organizational/governance models.

² extraMUROS. *Proposal for renewed 2011-2012 Funding. Harvard Library Lab. Submitted September 1, 2011, p. 5.*

Our October prototype included a basic API. However, further development is warranted in order to make the extraMUROS catalogue and interfaces far more easily accessible within other applications.

-extraMUROS was initially conceived as a “multimedia library without walls,” and thus privileged audiovisual materials. However, from the very outset of the project, we were acutely aware of the need to incorporate textual materials in order for scholars from multiple disciplines to use extraMUROS. Over the coming year, we propose to make the integration of textual corpora, whether in the form of digital documents or images of textual materials that can be annotated, a central priority. This commitment includes the development of custom text-centric viewing interfaces (e.g. list and tag-cloud), as well as the integration of Google Books API and the ability to view PDFs.

-A significant barrier to the growth and use of extraMUROS within the Harvard community is limited media uploading and hosting capabilities for short-term collections development. Currently, digital collections at Harvard must pass through the major barriers of the Digital Repository Service. We propose the creation of a lightweight, intermediary solution that allows Harvard faculty, researchers, students, and staff to upload media that can be included in extraMUROS. We have already received multiple requests for this service, ranging from faculty in Archaeology to the Graduate School of Design. Parallel to the development of extraMUROS, we have begun experimenting with an approach to this problem through building a custom WordPress theme that allows very simple uploading of media of all types and rich metadata annotation. We chose WordPress because it already has a very easy-to-use media uploading interface with which many users are familiar. We propose expanding this tool to automatically populate extraMUROS with uploaded media. In addition, we would like to expand our media storage capacity. We will advance these goals through a series of test cases over the next year.

-A unique attribute of the extraMUROS project is its proximate development with Zeega, an open-source HTML5 platform that provides an editing interface to create multilinear narratives and generate new forms of multiplatform scholarly publishing. Zeega was recently awarded a significant grant from the Knight Foundation to expand its development, in particular, for the journalism and publishing community. From the beginning, we have envisioned a rich integration of extraMUROS and Zeega. Adopting Lev Manovich’s famous spectrum of database and narrative, we’ve understood extraMUROS to be on the edge of the database and Zeega to be on the edge of narrative. We have developed wireframe designs for this intersection which will make it simple to bring extraMUROS collections into the Zeega editor as objects, and vice-versa, to bring Zeega narratives into extraMUROS as collections objects. Moreover, we would like to enable the incorporation of extraMUROS collections and attendant interfaces into Zeega narratives as nodes, as well as allow Zeega users to browse their database of items through extraMUROS. However, we will likely not be able to fully integrate the two systems in our October prototype. We propose achieving this full-scale integration over the coming year, thus enabling extraMUROS and Zeega users to profitably benefit from the richness of both platforms.

-We have envisioned a key feature that allows users to easily embed collections they generate within extraMUROS on any website through a simple JavaScript-based

iFrame widget. While this is possible within Zeega, it is not currently possible within extraMUROS.

-While we have made it possible to browse extraMUROS collections on tablet devices, this interface is modest compared to the desktop version and the potential offered by the current generation of tablets. Over the next year, we propose evolving this tablet interface to more closely resemble the user experience of the desktop version.

While we have demonstrated the potential for integrating multiple collections from inside and outside Harvard, there remain many collections that would powerfully demonstrate the transformative potential of extraMUROS. Part of this further iteration of collections development will take the form of a streamlined interface and API for adding entire collections.³

As librarians working on this project we were able to give input and advice on collections, searching and metadata. Yet, we are on the eve of beginning one of our main tasks which is to get user feedback on the system. We are embarking on holding focus groups to look at beta versions of the system in the next couple of months. We hope this information will help us plot future growth of extraMUROS.

The extraMUROS project has, like its moniker, taken down walls for us, or at least has exposed us to new ways of thinking and ways of working with colleagues to produce new results. It has helped us step out of our library and see how images and data are viewed and used by others.

What we, the image library, has learned

1. The need to further broaden how we think about image collections and collecting. As we know, academic image collections are no longer the primary source for non-print material and this project has inspired a new approach to the task of collecting and using collections. The school's image collection is useful and important for pedagogy, but not on its own. It needs to be able to be integrated with other collections and items from all over the world to serve the current needs of our faculty, students and researchers.

2. Become active in building tools.

While there is still a need for attention to collection growth, this project presented an opportunity to work on the other side. Librarians have the experience and knowledge to be expert at developing new tools for using our collections and integrating them with other collections.

3. Pedagogy is changing and we can be part of it.

Faculty and students are building lectures and presentations using a myriad of resources. Not just the library's or their personal image collections, but a wide range of resources – images, texts, film, audio – and presenting these using a variety of methods. One lecture or presentation can contain all of these formats along with multiple speakers or off-site visits. We can help with these changes, showing our communities how to use different materials and assist in developing new ways to teach using these materials.

4. Who we are working with is changing.

Instead of solely working with other librarians, we are now working with a wider community. We have seen this over the last ten to fifteen years as we work more actively with technology staff and the teaching community, but this project showed the utility of

³ extraMUROS. *Proposal for renewed 2011-2012 Funding. Harvard Library Lab. Submitted September 1, 2011, p. 6-7.*

working with an even broader community, both for and not-for profit agencies. We learned from our colleagues in the local public broadcasting community and have been inspired to look at more commercially driven organizations learning how they interact with people and provide resources.

5. Librarians involvement is changing.

This project is one of many in which librarians are taking a more active role in working with faculty and others from the early stages of planning projects or classes. We have had the opportunity to brainstorm with faculty when developing a course or project on both how to use collections and methods to teach with them. Through this there is greater exposure and learning on both sides.

As of January 2012

When I gave this paper in November 2011, we were proceeding with extraMUROS at a rapid pace and, while we are still following the tenets of the project, we have made some recent changes. As with any project, with implementation comes learning. We realized that it didn't make sense to try to build a massive API driven collection tool, Google does that. It would have been unwieldy and difficult to support. Rather, we decided to focus on strengthening and broadening those APIs and concentrate on improving the narrative tool, Zeega. Zeega enables collection and item gathering and project building using tools that cover a broad range of media – images, video, audio and maps.

Zeega is an open-source HTML5 platform for creating interactive documentaries, open archives and inventing new forms of storytelling.

Zeega makes it easy to collaboratively produce, curate and publish participatory multimedia projects online, on mobile devices and in physical spaces.⁴

This recent change is indicative of our work with this group – in a positive way. One thing we have learned in this project is the importance of being flexible, of trying new paths and of growing together. This has been exciting for us, coming from a library world where change and new projects often take years. In what turned out to be work time that was less than six months we were able to explore one tool, decide which elements worked and which did not and to shift our thinking using the momentum built during the first iteration to propel us into the second. We are looking forward to exploring Zeega and seeing where it takes us or we take it.

⁴www.zeega.org