Urban Griot Collaborative

A Word.Sound.Life Project

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Final Project Paper

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Motivation

griot |grēˈō; ˈgrēō|, noun ~

a member of a class of travelling poets, musicians, and storytellers who maintain a tradition of oral history

Youth today are becoming co-creators and producers of digital media, making documentaries that explore community issues; producing soundtracks using the latest digital music software; performing, recording and distributing original media in digital environments like MySpace, Imeem and YouTube. Yet, despite efforts by city government, private sector firms, schools and community-based organizations invested in literacy amongst youth, there remains a lack in our ability to productively share and build on the experiences of young people across multiple learning environments, due to cultural, geographic and language boundaries. In most such efforts, the emphasis once placed on delivery of technology and access, is seeing a shift towards sustainable models of cultural production. Oral histories, as embodied forms of knowledge, can be used to foster communication between communities where previously there was none. Accessing these stories can be difficult however, as personal histories are not normally communicated in any format other than oral transmission. In the international and urban context, wherein families tend to be more disconnected than in rural settings (due to their nuclear structure), a gap in the transmission of lineage histories can occur.

Our final project was motivated from a need to address this existing deficit in the research for technologies to support the social production of language by tapping into the wealth of oral histories in order to support the family and peer contexts of emergent literacy. Initially we place an emphasis on the spoken word (a representation of

knowledge most common throughout the world, including the tribes of the African diaspora).

The Urban Griot Collaborative is a tool that parses a corpus of audio recordings of various types in order to generate a geographical and onomastic (personal name) repository and social network illustrating relationships between individuals and groups. As a landscape where personal stories are swapped, the system follows after the African proverb that "it takes a village to raise a child," resulting in a potentially-global community for youth (and elders in their lives) to develop an important literacy skill: the ability to tell stories. The final propotype works with the catalog of oral histories written and recorded by students from Oasis High School in Oakland, CA and Rifle High School in Rifle, CO during the Fall 2008 Aspen Writers Foundation Story Swap, in collaboration with Voices of the New Millennium.

Method

Proposal

Our proposal was to create a web-based story listening system that serves as an effective source and context for authoring, browsing and swapping stories. Our initial needs assessment and usability studies focused on the experience of youth and mentors (teachers, artists, and performers) who worked in an existing blogging or social networking platform (http://wordsoundlife.ning.com) in order to publish stories or collaborate with others (young people in particular). The initial usability study focused on answering the question of how the literacy achievement gap could be closed through the integration of a community technology and storytelling process in low-to-moderate income schools and community-based organizations. A closely related sub-theme of the

initial study was to understand the challenges and opportunities of operationalizing a geo-mapping representational and asset-based approach to community storytelling.

Interactive Prototype (low-fi)

As we began this stage of our prototype development, we were faced with a set of needs that had to be met in order to progress any further. Firstly, we needed to design a web architecture for the utility. Secondly, we had to select a suitable representative sample data set in order to model and demonstrate the utility. Thirdly, we had to model the user interaction online. Our deliverables for the project are a prototype web utility for registered members of our social network to upload audio feeds in a two-way exchange. Third parties have to be able to annotate or verbalize feedback on each story exchange.

The core of our initial design was based on geographically representing the people, places, and projects involved in the Word.Sound.Life. social network as a navigational tool for visitors to the site. Spatial familiarity as well as socio-cultural resonance were important considerations in this decision. An important lesson that we learned from this iteration of the prototype was to focus our efforts on a much narrower set of tasks that our second iteration would enable. Our initial efforts were to incorporate various forms of media such as blogs, video and audio. This blurred the line between the Ning social platform and the utility that we were attempting to build. As a result, we decided to focus on one aspect of storytelling media: audio.

Our initial needs assessment was done in the Spring semester of 2008. This was mainly conducted in a classroom setting at Berkeley Technical School with a group of ten teachers and their classrooms. The resulting prototype was the first iteration of the utility. In the summer of 2008, further interactions were observed in Chicago, IL. with a group of three mentors and fifteen paid apprentices. The mentor-apprentice interaction helped us model user interactions in a non-classroom community setting. In the Fall of 2008, the last set of user testing was conducted in the Oasis/Rifle Story Swap project. In

this experiment, eleven students from Oasis High School in Oakland were paired up with eleven students from Rifle High School in Colorado. Each student recorded individual stories and exchanged them with their counterpart on the other side. All the stories were posted on the Word.Sound.Life social network and were open to feedback via the Story Swap forum.

Experiment Design

Participant Recruitment

Our users were recruited from a pool of Word.Sound.Life. participants in California, Colorado and Illinois. The main user personae for whom we have designed this UI are: the student, the teacher, and the mentor. By virtue of the demographics of the communities that we anticipate working with, the student minorities group is largely African-American and Latino, between the ages of 13 and 18.

Needs Assessment

We then conducted a needs assessment with professional adults (young scholars and academic researchers) working in the Humanities to get an informed perspective on the capabilities of the tool when doing social network visualizations and mapping name transactions (prosopography). The most important feature request is to visualize networks between people and stories, highlighting anything with regard to a particular person (location, community, gender, age etc). There is also the need of a multi-names view showing how people are interacting across different areas, or to be able to distinguish multiple instances of the same person.

Story Swap

As part of the Aspen Writers Foundation Story Swap program, Oasis High participants created and swapped audio stories with peers from Rifle High in Colorado. The 'online exchange' took place over the course of a week during the Fall of the 2008 academic year. The swap provided us with immediate feedback to observe from, as well

as sample stories to evaluate the architecture and design of the Word Sound Life prototype. We plan to test the UI with the teacher persona in a professional development environment in other settings during Summer 2009.

Findings

1. Data Elements

Authors

The basic unit is an individual author. Authors may belong to more than one community, indicated in the database. Authors can be mentioned in more than one story (document), providing evidence of individuals' participation in many swap conversations. Thus, the broader context around authors is useful to view when working with a recording (i.e., surrounding metadata - see User Interface Low-Fi Prototype). This highlights the role(s) people play in different stories. The data elements for an author stored in an average corpus are: name, role, city, state, gender, date joined, image url, language, and affiliation. Affiliations are community memberships, thus allowing the same author to be known under a different pseudonym in different communities.

Recordings

Recordings contain the date (which includes the year/month/day as well as the time stamp), the type (monologue, dialogue, forum) as well as the location or place of origin of the recording (note: this is not the same as the user's community location; each recording contains its own location information for possible geocoding processing at a later time). These data identify the constitution of story recordings.

Logos

Individuals and communities own and use logos, which have a motif. Some of the data elements kept on logos include: owner's name, logo url, type of logo, language. Seals are displayed on the map view.

2. Navigation Process

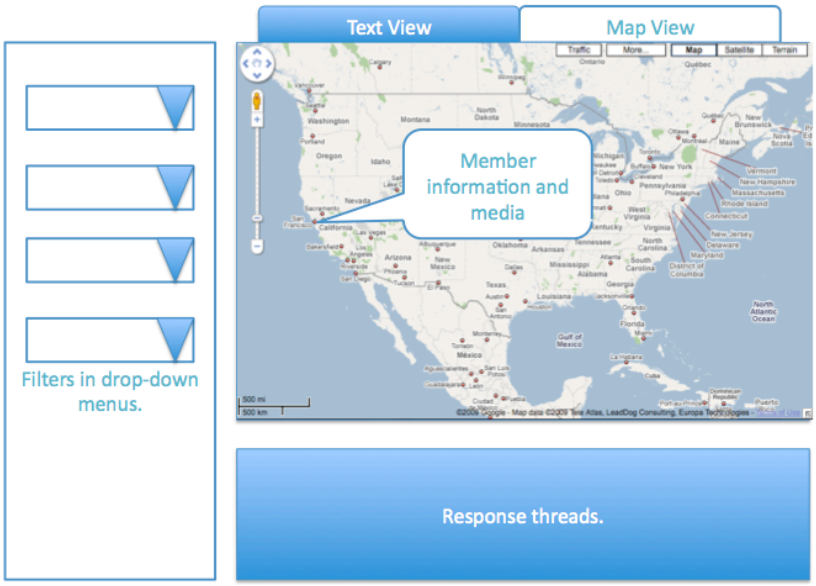
The primary navigation need is for a more dynamic exploration of the data, on the fly, and in context. One navigation mode of the Urban Griot Collaboration application should be to start with a name, check recording title and community origin, and if it appears in multiple communities, display these on a map with a picture of the group seal (when available) as a mouse-over or on-click event layer. There is also a need to combine/compare the multiple titles under which a recording might appear, by checking the date or looking at the locations/places associated with this recording. From there, one should be able to explore references to other authors in the same recording and the history connected to them.

3. Content Reuse

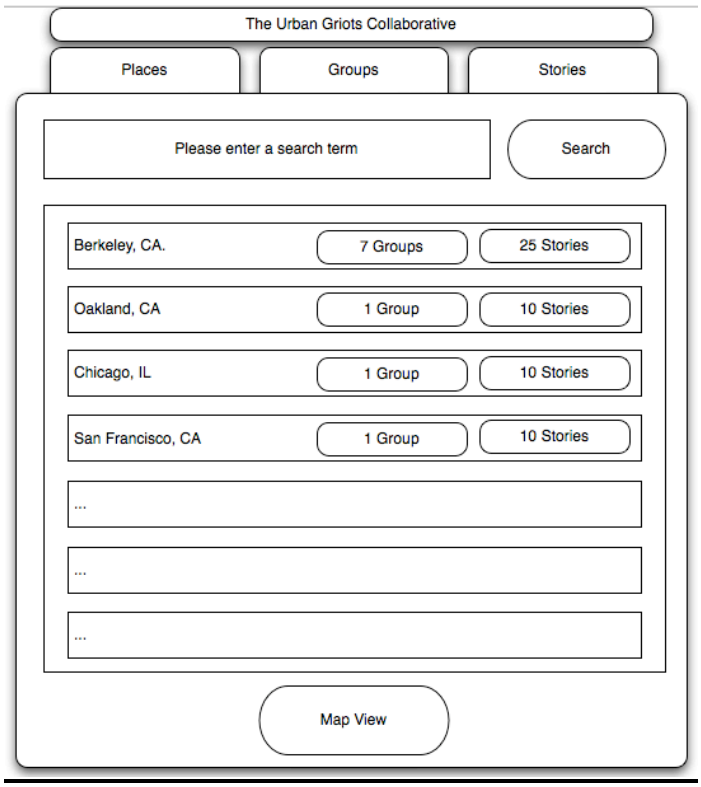
The tool keeps track of names in an organized fashion (type, community, date) and currently supports a single corpus (Aspen Writers Foundation Story Swap). Additional corpora would need to be normalized into a single shared format (UGC-XML). In looking at several graph packages, there were a plethora of possibilities for representing this data in various graphical formats.

Interactive Prototype (hi-fi)

Our current iteration is the result of lessons learned from the implementation of the first prototype and from subsequent experiments. Also, with the second iteration, the stories were classified according to people, places and groups. We re-imagined the user interface through various low fidelity prototypes using PowerPoint and Omnigraffle illustrations. These got more detailed as we incorporated additional functionality into the diagrams.



User Interface Hi-fi prototype in PowerPoint



User Interface Hi-fi iteration done in Omnigraffle

During the initial stages of the current iteration of the prototype, our method involved brainstorming on the types of data that would be required to model the user interaction. From this process, we drew some sketches to model the data flow and interactions. (Appendix Fig. 1)

From these diagrams, we also examined various use cases that our utility could potentially be used in. Initially, we thought of the prototype being used in a learning, home and roaming context. However, this did not seem to suit our purposes as the first context is one of an action, while the latter two are location based. We decided upon the story type as the most appropriate context to classify the stories in our utility. This context could hold true regardless of location, group, action or project. Basically, the classification of stories would be based on the type of conversation that was in the recording. In the case of a single individual recording a story, it would be a monologue. If the recorded conversation was between two people, it would be coded as a dialogue. If the story featured a group of more than two, then it would be a forum discussion.

Once we had decided on a classification system for our stories, we began building a simple user interface with some sample placeholder data. We needed to develop a user interface that would be fairly intuitive to use. We also needed to design our utility so that it would be accessible over a web browser as well as a mobile device. The level of mobile phone penetration in our key demographics is often much higher than web accessible computers. Our interface had to be fairly intuitive to use as well. We opted to build on the iPhone UI because we believe that this UI met all of our requirements. It also allowed us the freedom to explore other interactions and representations of our sample data through the implementation of the map interface.

Tasks

These are the user tasks supported in the final working prototype:

Registration

The registration task includes the creation of a Ning profile and an email verification step prior to the creation of the profile. The profile creation stage includes a questionnaire that can be used to categorize the member into the various groups, channels of interest, and roles that are available on the network. This information is used later on in the search and networking task to find like-minded people on the network.

Authoring

The authoring task facilitates the addition of content to the system and allows the exchange of ideas and views. There is a recording utility that allows members to record podcasts directly from their phone or upload a pre-produced recording directly from their local machine. The recordings are stored as an RSS feed on the audio server (currently a single user account on Tumblr).

Browsing

The browse functionality is broken up by people, places or communities. This allows members to drill for an author's story or find recordings by using the geographic map interface, but also allows for the typing of a search term (not implemented in this version). The people tab lists individual authors by name, classifying them alphabetically (eventually, the role they have undertaken in the network will be used as an additional browsing features). The communities tab shows the various groups and schools that are currently in the network. The places tab shows a list of the cities that currently have Urban Griot sites.

We experimented with some user interaction flow sketches to model how a sample user interaction would flow. (Appendix Fig 2.)

User Experience

Based on this flow diagram, we began writing our HTML document to render our sample data in a format that would be viewable on browsers and mobile devices. Our HTML document was then styled using the IUI stylesheet. As the final node in the user

flow tree, we had to have a media player that had some sample content that could be played directly in the utility instead of a) downloading a file to the local computer or b) playing in whatever default media player the user has installed in their browser. We used Tumblr to record some voice samples and embedded that utility's native shockwave player into our HTML document to show and play the actual files at the last node.

Once the stories were encoded and rendered in the IUI stylesheet format, we proceeded to the next stage of generating this user interface from the database. At this stage, we incorporated a fullscreen Google map into our UI. This served to emphasize the context of places and also to geolocate the authors set. From a user standpoint, the purpose of the map is to provide a sense of where authors and located in relation to the user/listener. It also allows users to identify with and respond to audio recordings with their own recordings. This would result in a new marker being added to the map and being associated with the original author's entry. For the purposes of our demonstration, we used an existing data set of eleven students from Oasis High School in Oakland, CA. and eleven students from Rifle High School in Rifle, CO. In our data set, each story was already matched up with its counterpart. This pairing could be demonstrated in the Google map as for all intents and purposes, we only showed two markers. This is because all the markers on Oakland were exactly on the same point, and likewise with Rifle. Each marker also had an accompanying infoWindow that would pop up on clicking the marker. The infoWindow contained the author's name, image and recording (in the shockwave player).

Lastly, we incorporated a 'Network' button on the IUI interface to allow users to login or sign up to the Word.Sound.Life social network. This gives our users a sense of continuity between our social network and the Urban Griot Collaborative utility.

At the current stage of development, our prototype is functional yet minimalistic. We are currently testing the utility on various platforms such as Firefox, Safari, and

Opera browsers. We are also testing on iPhone emulators such as iPhoney and on mobile devices. The navigability using the menu options has held up well so far, however there are still some issues to be resolved with rendering the Google Map in fullscreen mode on various devices as well as optimizing the transfer time of audio files from the servers. Once these issues are resolved, we plan to test the interface with a sample group of users and refine it according to their feedback. The eventual goal is to attain scalability, maintaining the user experience and navigability and add features for other media types.

System Features

Social Network

The Word. Sound. Life. Social Network for Media Learning is at the core of our prototype. The network consists of approximately 320 members (youth, artists, media-makers and educators) as well as 25 groups/learning arenas. We have organized the network on the basis of the roles played by each member. There is a peer review system that is in place to provide feedback on various media projects. The network fosters and sponsors various media formats and projects. The membership is geographically dispersed, groups on the site are interest based, and are mentor moderated. The membership of Word.Sound.Life is an important resource in the development of the Urban Griot Collaborative and future projects. We often test our prototypes with our members and appreciate their feedback in the development process.

iPhone User Interface

The IUI library worked well for us because it has become ubiquitous through the proliferation of iPhones and iPods. We therefore felt that our core audience would be able to use it intuitively and easily. We also found the IUI to be flexible enough and simple enough to change because it was primarily written in HTML and CSS. The default page upon loading is the Stories page. This is classified into people, places and groups.

The people option will take the user to another page that lists all the members on the utility alphabetically. Choosing one member will take the user to that member's stories page. This is further divided into monologues, dialogues, or forum discussions. Choosing one of these options will show individual stories of the type that was chosen and classified according to date. The user can then directly play the story by clicking on the play button in the shockwave player displayed. At any time, the user can go back to the main menu by simply clicking on the top center button on the toolbar (which always displays the title of the current page).

From the main menu, the user can click on the 'Map' button. This will load the fullscreen Google Map and display the markers for each individual story. Clicking on each of the markers will display a pop-up information window. This information window displays the author's image (author's user profile picture on the Word.Sound.Life network), the author's name, and a shockwave player to play the story. There is also a link to the corresponding response story in the same window.

The user can also click on the 'Network' button on the toolbar to take them to the user login page for the Word.Sound.Life network. This allows for seamless integration and interaction with the greater social network.

In order to provide access to non-members (visitors) to some of the content authored on the social network (licensed under an Open Creative Commons License), we employ a mixed mash-up design that combines a scraping process, RSS and the Google Maps API using PHP/MySQL/XML.

Basic Model

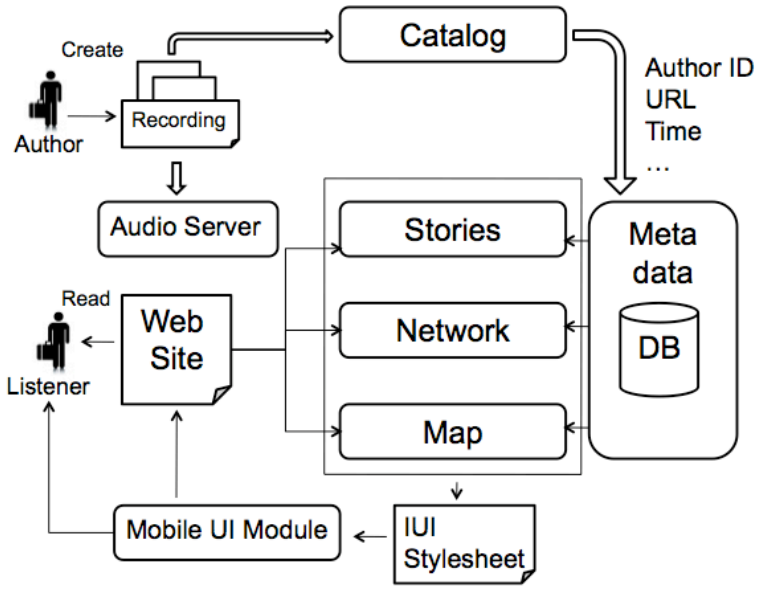
The system is designed to operate as a story exchange platform and live repository for oral histories. Our intention is to model the user behavior in the following manner: an author creates a recording, a listener browses and listens to the recording

(they can choose to respond to the recording), a third party (or the listener) can annotate the original recording with their text feedback.

The stakeholder parties are involved in a two-way oral history transmission. Third party participants who are listeners, and not directly involved in the exchange can add their annotations to each exchange to complete the story or to add their opinions. This structure can be applied to a number of different case instances in a variety of settings. The system could potentially be used to store medical notes, to codify tacit knowledge in a corporate setting, or to get an accurate family history from different sources in one's family.

Data Flow

Built using a RESTful Model-View-Controller design pattern, the application uses a standard way of processing requests. Resources are identified by a unique URI, which is parsed before being passed to the layout engine. The layout engine handles all of the backend database calls through a class library and generates the tabs that will contain the different sections of the system (Stories, Network and Map). The Stories page is generated dynamically using the IUI engine and displayed to the browser within an iFrame. The distributed data flow diagram below illustrates the flow of information in the system.



Initially, authors can create recordings either via phone, or by uploading a file to our tumblr account, the temporary Audio Server for the prototype. Any metadata associated with the individual file is stored in the Catalog table:

- Author ID
- Recording ID
- Time and Date
- Recording Type
- Community ID

A relational database (mySQL) stores the authors, communities, recordings, responses and story types. This information can then be called as needed through the API into the Stories, Network, and Map tabs, which are PHP controller scripts that fetch resource sets from the backend and generate HTML displays of the request (GET /resources/bianca/3, for example). The Stories table classifies each member's information into the IUI stylesheet format, representing the stories according to the author's group affiliation, the recording's story type, date and geographic origin. The data

is made interactive through the built-in features contained in the stylesheet (named anchors and DIV classes).

An audio server (Tumblr) stores the actual data for media links. Currently, this information is simply copied over into the recordings table and used by the layout engine to embed the player into the display. Eventually, this content will be syndicated via RSS and piped in real-time from Tumblr into Urban Griot. This functionality will allow for the dynamic update of the catalog with new recordings, without requiring a copy to be made.

Technologies used

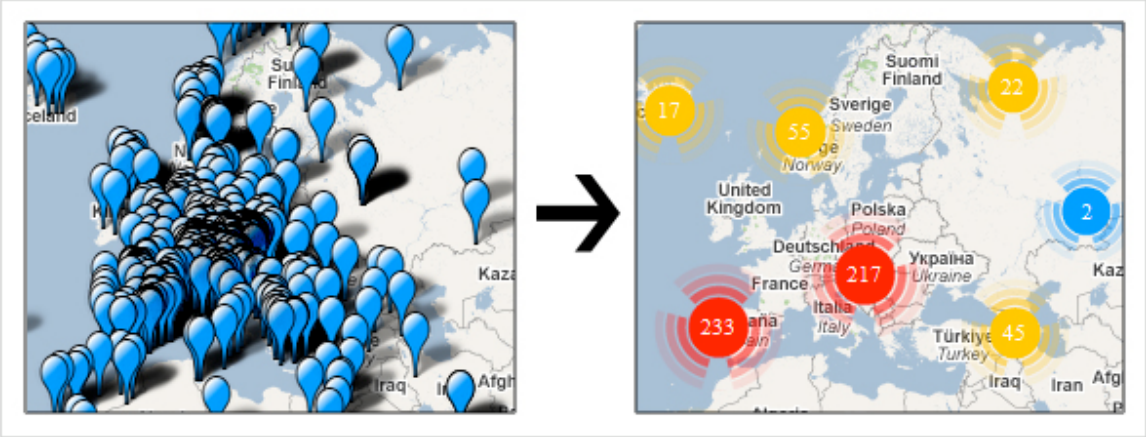
Cascading Stylesheets

The user facing portion of the prototype is primarily written using HTML. The source code is from the open source IUI library that is designed to emulate the interface of an iPhone or iPod. We believe that this is appropriate for our purposes as it is heirarchical and menu based. We were able to encode our navigational menus and render them in a browser using the IUI stylesheet.

Google Maps API

One aspect of our user interface is the Google Map. This is used to give the users a geographical representation of where the story they are listening to originated. We used the Google Maps API and incorporated it into our UI through the use of a in our HTML. The Google Maps API is primarily in javascript. We rendered our sample data set on the Google Map as a series of markers, each marker corresponding to a 'marker' element in the XML file that contained all of our member data. Additional elements in the XML file gave longitude and latitude values of each marker. Because our sample data set was a story exchange between two locations, we ended up with our map looking like it only had two markers on it. This was because each site had eleven markers on the exact same set of co-ordinates. One potential solution for future implementation that would be appropriate with scalability, would be the use of marker

clusters that would group a large number of markers in one general area into a cluster marker.



Marker Clusterer

Each marker on our map has a corresponding information window. This window contains the name, image, and story of the author. This gives listeners an easy way to listen to the stories right away in a geographical context.

MySQL Database

For the purposes of our prototype, we created a mySQL database of our sample dataset. We created six tables to store the user data and interactions. These are authors, catalog, communities, formats, recordings and responses. These tables were queried using PHP scripts to generate the information that populated the user interface.

Tumblr RSS

One issue that we faced was that the content that is stored on the Word.Sound.Life social network is in the form of raw MP3 files. This relies on the assumption that these files will be playable through whatever native media player the listener has on his or her browser. In some cases, clicking on the story link started a download of the mp3 directly to the listener's computer. Our intention was to make sure

that these stories were available to be listened to at a single click. The Tumblr web utility enabled this process because it comes with a built-in shockwave player. We simply ported the URLs of our individual story files into Tumblr and had each of them accessible through the shockwave player. We were then able to take the URLs of each story from Tumblr (this included the shockwave player) and render them in the user interface.

Conclusion and Future Work

Open Licensing

Our May 2009 interviews on collaboration and innovation with 7 staff members at Creative Commons has helped to inform our strategic vision for the road ahead. As the purpose of Urban Griot Collaborative is to be a non-commercial utility to facilitate and support the creation of oral histories in an environment of privacy and trust, the application will need a more robust implementation scheme, as well as a clearly defined open licensing policy to protect the user-generated content on the site. Taking this initial legal step could help ensure that the system gets adopted and used more widely (education and science arena).

Strategic Vision

Hiring fellows or interns from different universities who know a lot about technical or legal/policy directions for porting our project in new settings will also help. Urban Griot being a virtual community with a nimble structure gives an advantage, as it allows for an easy-to-use web interface to drive a potentially large network of contributing users rapidly authoring and exchanging local/personal stories, getting members of their immediate network to provide feedback and responses in a distributed and asynchronous mode. Part of our strategy will include partnering with other social network platforms besides Ning (Facebook, Myspace, Youtube) to allow for third party audio information to be syndicated and displayed from within the Urban Griot Collaborative. In other words, the system should be server-agnostic in terms of where the recordings are

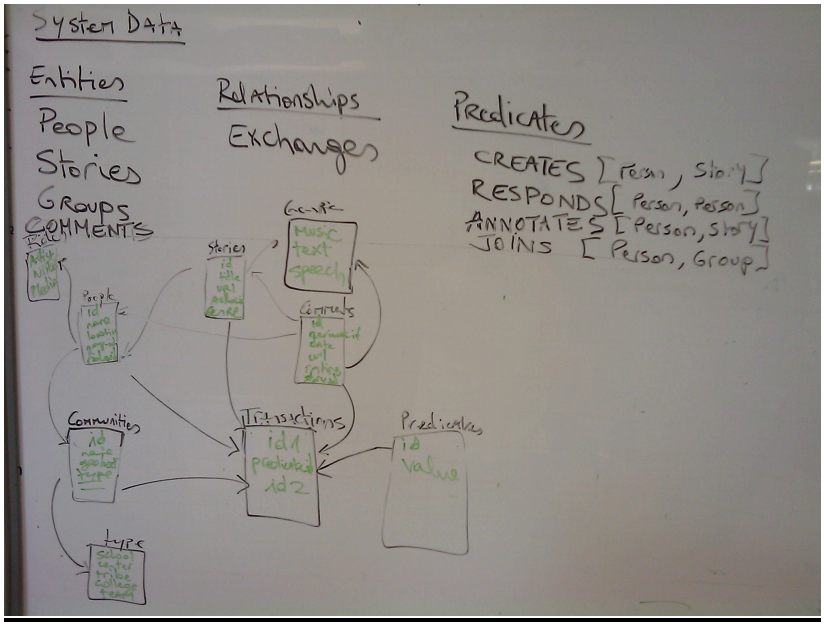
actually stored. Keeping a light backend by not overloading the database with information other than users' metadata will help keep the scope of the project under relative control.

Usage Contexts

When expanded to more contexts of use, the system will enable users to navigate and add contributions by localized affiliations (communities, neighborhoods, schools, families, tribes), providing various templates for authoring stories of varying types (like patient histories in the context of hospital records, for example). Once roaming capabilities are tested, recordings will be created entirely via the phone, tagged and displayed in the user interface. Decoupling the interaction between the mode of display of recordings and the context of use of the application will be a main challenge of this stage, when it comes.

Appendix

Fig 1. Various iterations of the Data Flow



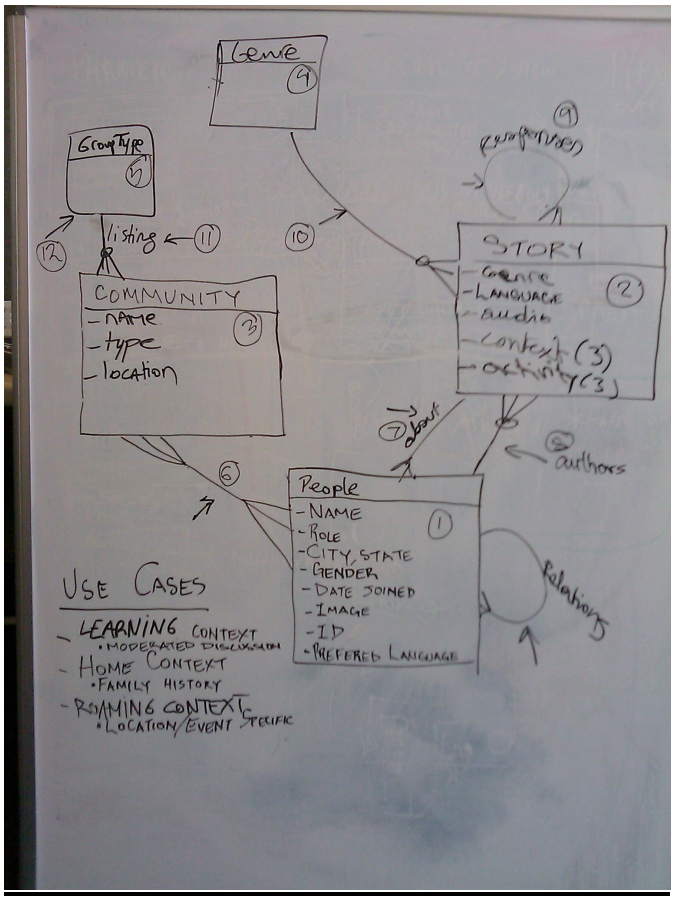


Fig 2. Sketch of Interaction Flow Diagram

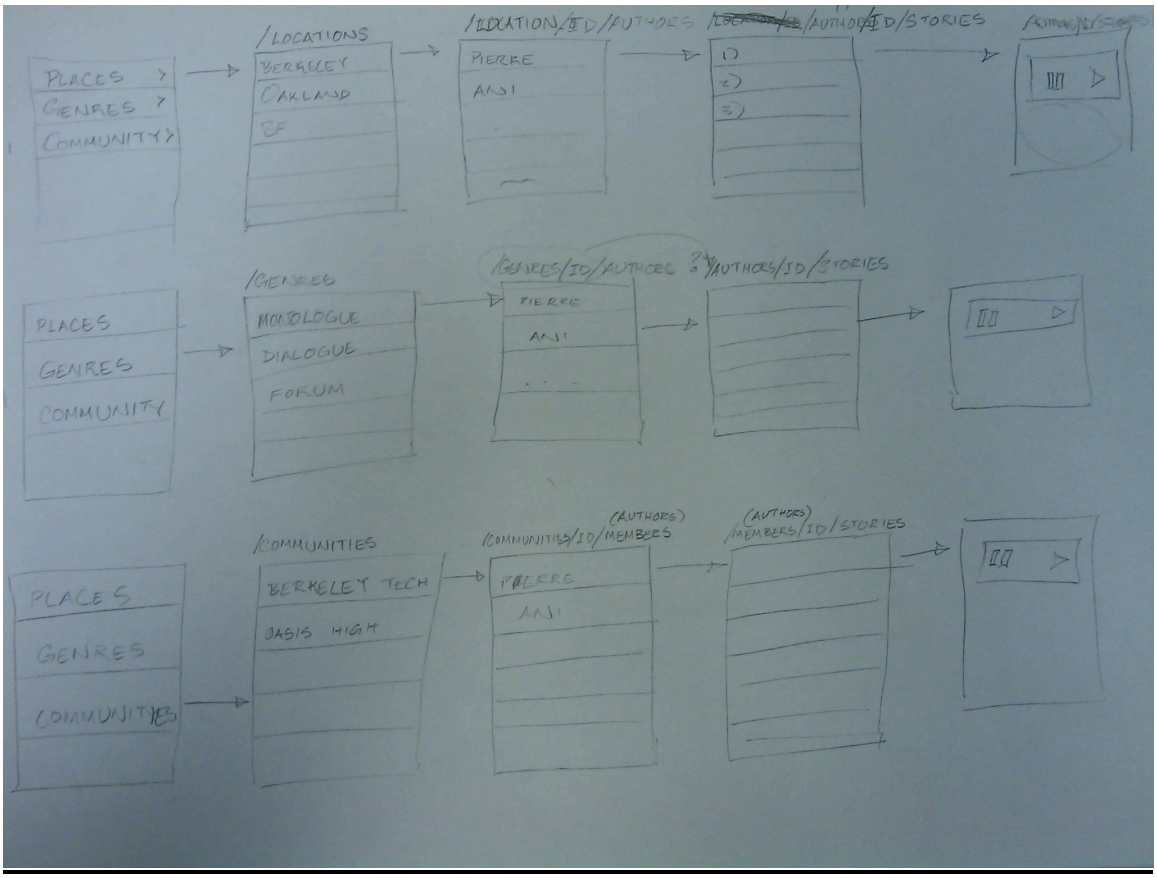
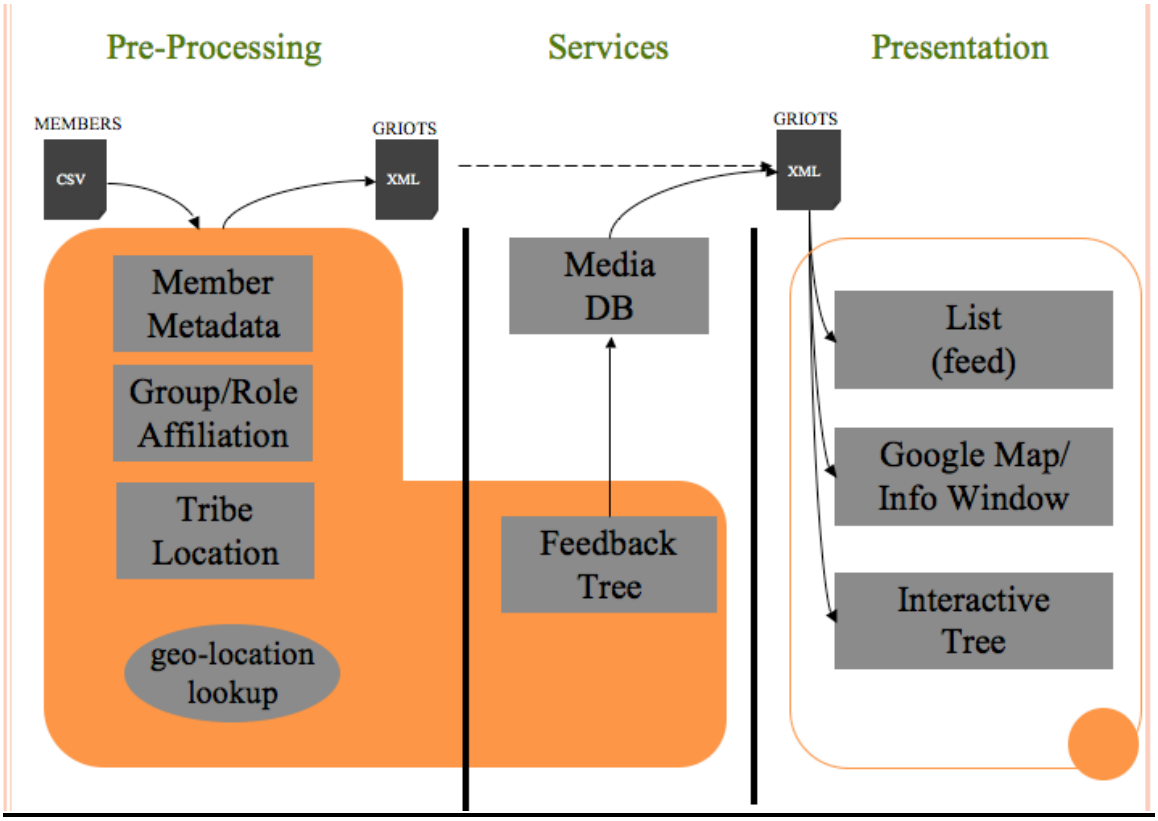


Fig. 3. Architecture Diagram



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