

***OUR STORY TREE:
Armenian Diaspora Digital Storytelling Project***

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"...a confection is an assembly of many visual events, selected ... from various Streams of Story, then brought together and juxtaposed... By means of a multiplicity of image-events, confections illustrate an argument, present and enforce visual comparisons, combine the real and the imagined, and tell us yet another story."

--- Edward Tufte, *Envisioning Information* 1997

Abstract

The *Our Story Tree* project seeks to create an on-line media sharing community by allowing the creation, viewing, and sharing of personal, historically motivated rich-media narratives. Within its overarching environment, the project introduces a montage approach, “the media confection,” which invites users to incorporate the spoken word, music, video, text, pictures and maps to form engaging stories and explorable documentary artifacts.

This paper presents the overall system architecture, the different modules that comprise the application and their specifics, focusing largely on the data models and the database architecture behind the application’s interface. The database architecture mainly consists of a relational database, indexed to provide efficient query times.

The Storytelling Forum: Our Story Tree

Our Story Tree is a collaborative on-line storytelling environment. It is directly concerned with the need to tell, as well as the right to know. The project focuses on the desires of ordinary people to tell their own personal stories using rich media -- photographs, voice, video, and text. This project is a joint effort of Aisling Kelliher as the supervising lead, Jorge Zuniga, who is largely responsible for the interface design and implementation, and myself as the data management and back-end developer.

Our Story Tree explores the idea that collective and shared history can build trust when each and every story is respected and appreciated. People relating their own stories may choose to reconstruct family history, thus leaving a legacy for their own descendants

and for all the generations that come after them, communicating across time so their experiences will not be forgotten. People hearing the stories of others can witness and acknowledge the other's need to be remembered and for their stories to be known. This approach is particularly relevant to communities that have suffered from the ravages of war, genocide or natural disaster.

Digital media story-telling and story-listening can be daunting and difficult. People wish to tell their stories and to have their stories resonate with others. However, there are some common psychological barriers to their success. More often than not, people using video or even text embark upon stories that are too large, complicated, or vague to be readily told. The problem of where to begin and where to end is particularly difficult in the recounting of historical events. The desire for completeness and perfection often frustrates the efforts of novice storytellers attempting to express something deeply important to them.

Our Story Tree addresses these issues using the metaphors of "*story confection*" and "*active presence*." The "*story confection*" model suggests that story-makers can begin by assembling small but inspirational pieces of media -- pictures, home movies, voice, sound, text. These elements can then be juxtaposed and arranged in a spatio-temporal interface that reveals aspects of a life lived and its storied representation. At a later stage, makers can build larger expressions -- story paths -- by threading together several discrete confections of their own making, or by joining their confections with those contributed by others.

The "*active presence*" model connects the story-maker with a broad, supportive community of other makers, listeners, and experts to help them in their task. People are

able to tell better stories when they become better listeners: listening reveals to storytellers not only tales that will excite them but also examples of aesthetic forms and techniques that will inspire them. We imagine that many stories published to *Our Story Tree* will include family histories. By listening to these stories, story makers are likely to discover background material, ways of telling, and relevant links to the new story that they are creating.

Project Architecture

The design of *Our Story Tree* draws on the visual and media arts, learning sciences, history, psychology and journalism as well as on digital media technologies. The design addresses several important functional issues such as sustainability, support to creators, support for reflection, intellectual property attribution and rights, and privacy. Currently the system provides the following services to the users:

1. Joining and becoming a member of the community.

Our Story Tree is designed to support several levels of personal involvement and modes of use including browsing, creating, reflecting, and use of secure on-line personal spaces, buddy systems and social networks. The website currently allows users to sign up, share their personal information, join various communities and create their personal buddy lists.

First-time visitors to the website will be able to explore and comment upon stories in the publicly-accessible section of the site. To build their own stories, participants will create an on-line personal profile. In their profile settings, the participants can designate friends, family, and community groups which will then be able to access the participant's

different stories. Participants can thus create their own personal communities within the larger designated communities, allowing for personalizing the story telling process.

The backend implementation of this section of the system is fairly straightforward. The overall setup encompasses Set up with a relational database backend and php/flash front end, this section of the system is straightforward yet very significant to allow for the efficient use of the online community. Figure 1 shows the data model that supports this module of the application.

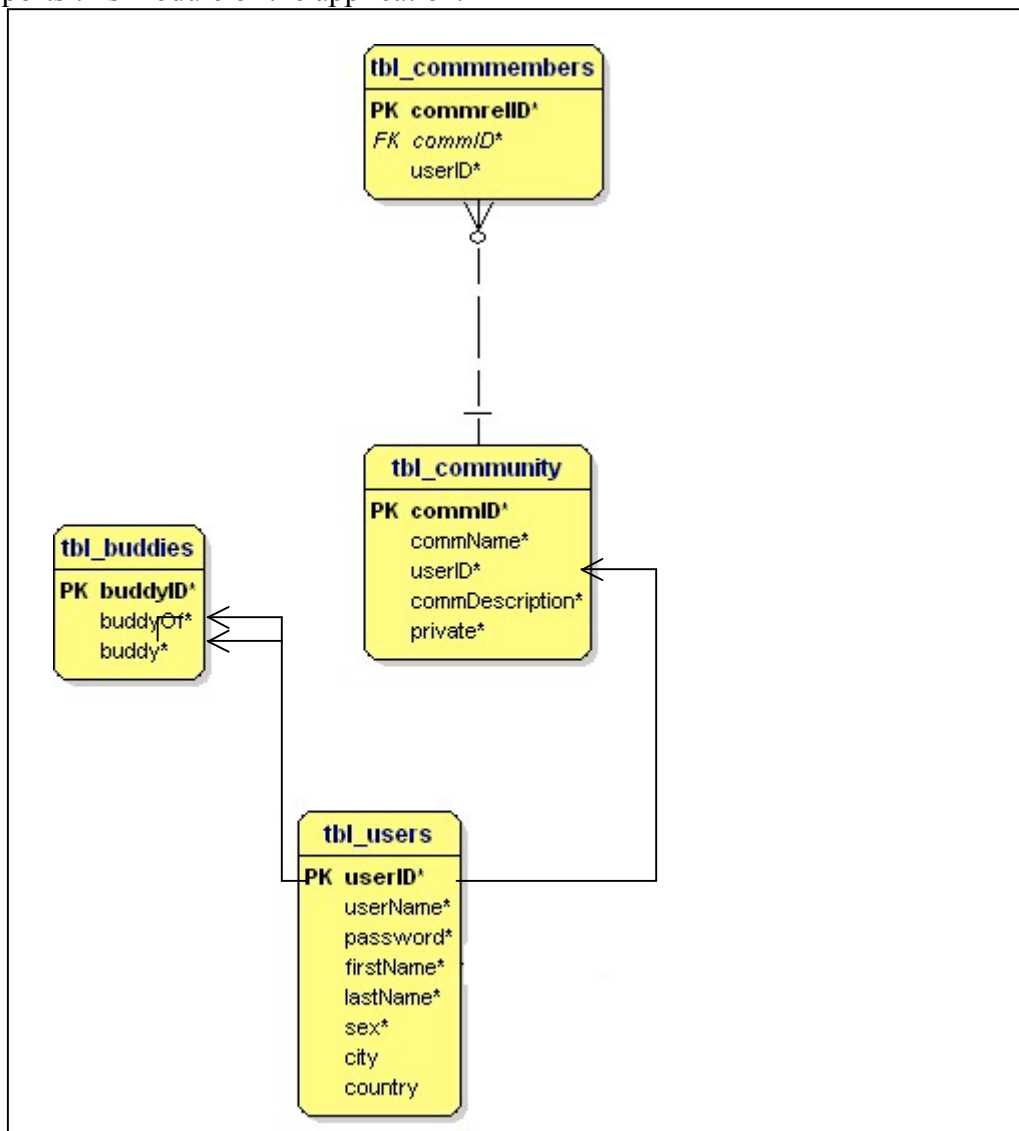


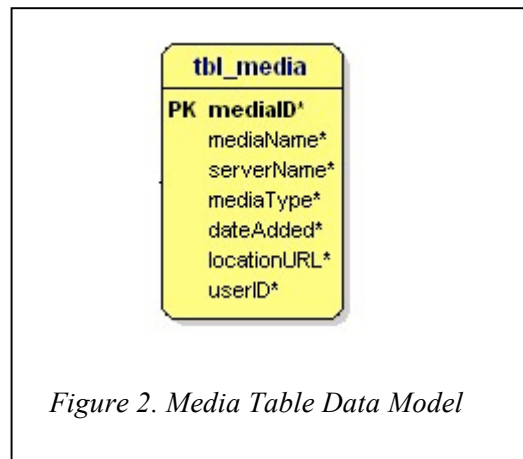
Figure 1. Data model for the user management and community management system..

The complete database fields are not shown here due to space constraints, but tables like the “tbl_users” are designed to capture more information on the user, like their personal descriptions and URL etc. Though the actual theory behind it was not very complicated, the more challenging part of this section of the system was to make the front-end as simple as could be at all possible given the nature of the community that would be using it. The front-end of this system is fairly uncomplicated to make use of and enhances the community building experience.

As a future improvement to this section of the system, we aim to provide a users with their network of friends, based on the degrees of separation. Though the focus of this system is annotated media sharing and not one of community building, like Orkut and others, we still feel that if the user could be provided with a way to see the people he/she is connected with, they may be more willing to share their media and easily view others’.

2. Media Library

As can be imagined, this system draws heavily from an efficient and secure media management system. Users have the ability to upload their own media (audio and video) into the system and add on rights protection to it. Validating media for its size and MIME type are necessary to make sure that the database does not get corrupted with potentially harmful data. This media, that a user uploads, is available to them to go on and make stories with. The media table model is shown below. Its relations and use will be described in greater detail in the next section.



3. Story Do-it-yourself tool kit.

Our Story Tree strives to make it straight-forward for people to begin a story "confection" using images and artifacts from their own media library. These artifacts trigger memories and can help create provocative stories. The site provides story-construction interfaces where participants can organize and lay out their audio, text, image and video media in flexible, customizable spatial templates. These interfaces additionally provide a timing component so that audio/video playback can be coordinated with text highlighting, photographic slideshows, etc.

The system allows users to be creative about how they present their media. There are different layout templates, which can make the story telling more effective, and media and stories can both be annotated by text and in the with audio attachments. This is the key difference between this system and the more common media sharing tools available. The rich set of features this system provides the user allow for a unique and innovative way to share media.

Given that the set of features are so diverse and their needs to be a secure and efficient back-end to this system, creating the backend system for this section was the

most interesting part of the application. Media can be reused in different stories by owner, and if the permissions allow it, reused by different people within a community, so managing the story-media relations and keeping track of the precise attributes of every piece of media within a story is extremely important. I will begin by showing the data model used for this system and go on to explain how all the features are implemented.

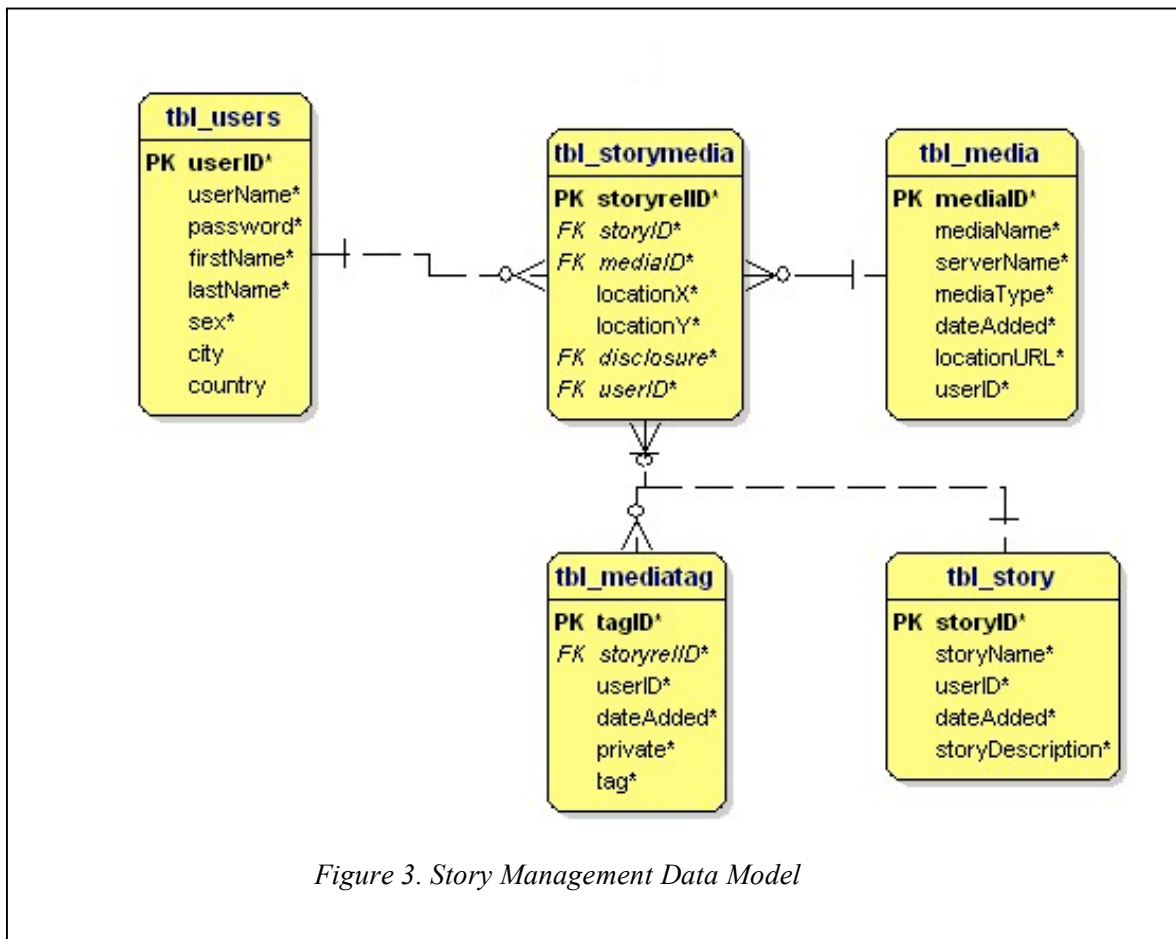


Figure 3. Story Management Data Model

When a user creates a story, using the media available to him/her, a record of the story is made within the story table, composed of information about the story itself including its author, creation date, etc. All the media associated with the story is recorded in the story-media table. This allows the user the freedom to use as much media within a

story as he/she pleases, and also allows for faster manipulation of the story at a later date. The user ID foreign key is appended to this information in case the media belongs to someone else but the story-media relation was created by another user within the community. Every piece of media within a story can be annotated with tags. These tags provide the user with the ability to explain contexts, or add comments to media that he/she feels could use further explanation within the confection.

When a story needs to be recreated, for example the next time a person logs in and wants to view their creation, all the associated media with the particular story is retrieved along with the tags associated with it. The location of the media that can be restored from the table tell the flash interface where to exactly place the media in the story in order to create the exact same confection the user had put together.

As can be imagined, fast retrieval and recreation are extremely important for this application to effective. We have implemented caching system which, based on user logs and viewing statistics, caches the two or three most viewed stories within a community to allow for quicker access. These stories vary continuously based on the logs that have been generated, but still present some more level of efficiency and faster access. As future enhancements to this system, more extensive caching and perhaps faster recreation algorithms would be necessary if this system is used in more large scale environment.

4. Story culture showcase – viewing alternatives.

"Most recent; most viewed; most commented; most like mine" provide different windows into a database of stories. *Our Story Tree* provides a variety of organizational and structural metaphors to allow visitors to enter and engage with stories in the database. The front page of the website contains links to the most and least viewed stories, along

with a daily assigned editor's pick. Links also directs visitors to the most commented or tagged stories, stories that are in the process of being constructed and have been made public, as well as most recently added personal or community stories. Structural and annotation similarities are be used to draw the participant's attention to other stories that are most like theirs as well as stories and paths that make use of their media.

5). Rights Management and User Protection.

This section discusses the plans for user and data privacy that will be implemented in this system. A section of the privacy module has been completed but more work still needs to be done to bring it to the envisioned level. I will still go on to discuss the privacy model that we have devised for this system as the backend of the system (the database and retrieval scripts) are set up for this module and a simple interface is in the process of development.

There is a critical need in on-line environments to respect the rights of story creators. Our Story Tree will support the use of a Creative Commons license, ensuring that participant's original work will be correctly attributed and reused or referenced according to conditions specified by the creator. This attribution will apply to individual pieces of media, story structures, exploratory paths, etc. Both the protection of the media and stories that go into this system and the protection of the user's information are very important because we are trying to allow people to feel safe and comfortable sharing media that is personal to them. If the users do not feel safe within an environment they will be very reluctant to open up their media to others, defeating the goal of the system altogether.

The Confectionary application provides the storyteller with a 5-tiered privacy gradient for targeting desired readers. The 5-tiers are private, individual, group, semi-public and public. The storyteller can assign media entities or story presentations as belonging to particular privacy tiers during media upload, media browsing, story authoring and publication. Entities in the private tier are accessible by the storyteller only. Within the individual tier, the storyteller can grant or deny access to particular named participants including those from their own buddy lists. Similarly in the group tier, named groups are afforded or denied access to the storytellers media or stories. The semi-public tier permits access under certain conditions and within particular contexts specified by the storyteller.

For example, access can be granted to ‘friends of friends’ within the storyteller’s social network, or to individuals who have specifically asked the storyteller for access to a story and explained the reason why. Another example of a conditional constraint is if the storyteller declares a particular ordering for a group of stories, so that a particular story can only be viewed if a certain previous story has already been seen by the audience member. Media entities within a story presentation can also be assigned to the semi-public tier. For example, a user can specify that a particular piece of media will only be revealed to members of her family if they have first listened to her audio description that sets up the story. Finally, the public tier contains stories and media entities that are accessible to all participants.

These extensive levels of security encompass exhaustively what the types of security the user would like to attach to his/her work. The complication arises when providing a straightforward interface to the user so that these security levels can be easily

associated with specific pieces of media and stories. The interface to this system is currently being built and with some rigorous testing will provide the user a safe media sharing environment.

Future Work

Throughout the paper I have discussed possible future enhancements to the specific sections of the system. More generally, before deployment, this system needs the following added features:

1. An advanced logging system: Currently the log statistics only are based on the stories accessed, but this can be sufficiently improved not only to provide every user with data as to how their particular story or piece of media was received by the rest of the community, but also as a system performance and enhancement measure.
2. Completion of rights protection: This section of the system, currently under development, needs to be completed and tested heavily to ensure that the system works up to par with the expectations of the user.
3. Load testing: Currently, in the development stage, the system is robust in terms of retrieving and saving data. However significant load testing should be done before deployment to ensure that database related requests like media and story retrieval can be handled with some level of efficiency.

Conclusion

In this day, where digital cameras, cell phones, mini-video recorders have completely changed the way we capture media, a creative application is needed to allow us to share those memories instead of letting them disappear into oblivion. This system is designed to allow users to share media with people who are affected by the stories the

media portrays. The key features of *Our Story Tree* that separate it from existing tools are its robust privacy standards and ability to allow users to creatively personalize media using different story templates or annotating tags. The architecture of this system is designed to be extensible and enhancements can be easily made to customize the application to suit different communities.