

PROJECT 1: WEB-BASED SERVICES

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SCROBBLING 2.0

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INTRODUCTION

The site of interest for our group was Last.fm, a music streaming website that keeps track of songs that you've listened to via "scrobbling". Scrobbling is the process by which the title of the music track that you've listened to is uploaded to a database on the internet, shared with others, and used to find new music recommendations for you as a listener.

Last.fm has been around for several years, yet the UI, as evidenced by one of our earliest interviews, has largely stayed the same, despite a clear need for revision in some areas. As a result our search for ways to improve this system revolved around improving the UI rather than attempting to improve under-the-hood components such as the algorithms by which music is recommended to users.

Our decision to improve Last.fm is rooted in the criticisms of one of the researchers and designers on the team. The chief complaint was that music recommendations, one of the primary site features, should be offered on a by-track basis in addition to the by-artist basis. From here, we went on to conduct contextual inquiry interviews with three interviewees. We created models, affinity diagrams, and settled on features that felt were most appropriate to implement and then went ahead and implemented those in a prototype. We then conducted usability testing on three more users on that prototype. This entire process was our research process.

Throughout our research process, it was found that many users use other apps or websites such as Pandora, Spotify, 8tracks, or iTunes, all music managing platforms, either in tandem or instead of Last.fm for various reasons. Some platforms manage music better. Some platforms, like Pandora, offer a greater diversity of genres to obtain new music, such as by-mood. Some platforms, like Spotify, offer more obscure indie songs that are otherwise not brought to the surface on platforms like Last.fm due to the limited recommendation system. One goal when redesigning Last.fm was to give the user an incentive to use Last.fm over these other music managing platforms; we tried to base our improvements most importantly off of the feedback of users during contextual inquiries, but we also used our own ideas, as well as borrowed some popular ideas from these other platforms. We will now go into further detail on the contextual inquiry process to elucidate how we came to the point we are now at in the design process.

In this section, describe your CI process in detail, focusing on your understanding of the design space and the problems you identified. Include snapshots from your interviews, your models, and your findings.

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UNDERSTANDING

Our CI process consisted of three semi-structured interviews in which we had users of last.fm perform regular site tasks while in the presence of three researchers. The goal was to simulate an environment that was as natural as possible, so the locations were chosen in low-stress, everyday environments where the user felt most comfortable; a coffee shop, a quiet study area, and an empty computer lab room. We greeted the interviewee, gave them a consent form, set up recording and note-taking equipment, and gave the interviewee a means of accessing a web browser so they could browse Last.fm. Once everything was set up, the interviewee began to use Last.fm as they normally would. During that time, one or two interviewers closely monitored their actions while posing both structured and contextual questions. By this we mean some questions were prepared beforehand to be asked about specific features of the site, and other questions were based contextually on what the user was doing at the present time on Last.fm.

The interviewees went over various site functions, such as searching for music, selecting music or playlists to be played and subsequently be scrobbled, reviewing their personal data and statistics, browsing the profiles of other users for stats and music recommendations, and using third party plugins to visualize their data better. Questions asked during these tasks ranged from inquiring as to what the user was doing or trying to do, to asking why they chose one path to get to a feature as opposed to another path. Their answers give insight to our major findings, but more importantly to major breakdowns in the flow of site use that we are especially interested in remedying in our improved website design.

Our major breakdowns and findings were insufficient freedom in data management, especially data backup, a low usage of some of the site's primary social features such as Events due to low usage by other users, lack of knowledge about certain site features such as plugin access due to poor UI design with hidden and obscure links, a low degree of control over the granularity of privacy options, and recommendations that were limited by how they were presented to the user.

To solve these issues, we endeavored to implement better data management options, encourage social activities on the site more openly, redesign key components of the layout of the website for increased usability and less redundancy, and improve the granularity of privacy options. Below are the models that were developed for this project, as well as snapshots of the three interviews that were conducted for contextual inquiry. (Due to the size of the models, they have been included at the end of this report.)

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UNDERSTANDING

INTERVIEW #1

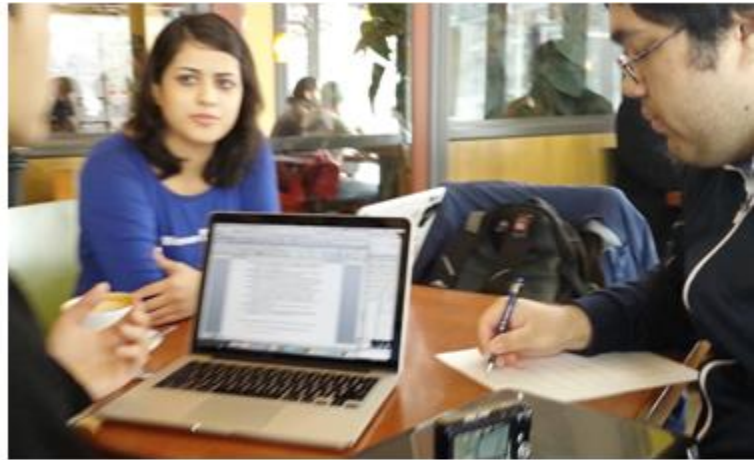


Photo 1. CI interview with our first interviewee at Collectivo coffee shop

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INTERVIEW #2

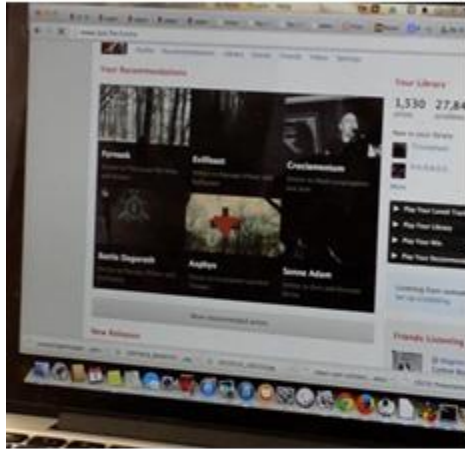


Figure 2. CI interview with our second interviewee in the 2nd floor lobby of CS department

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INTERVIEW #3

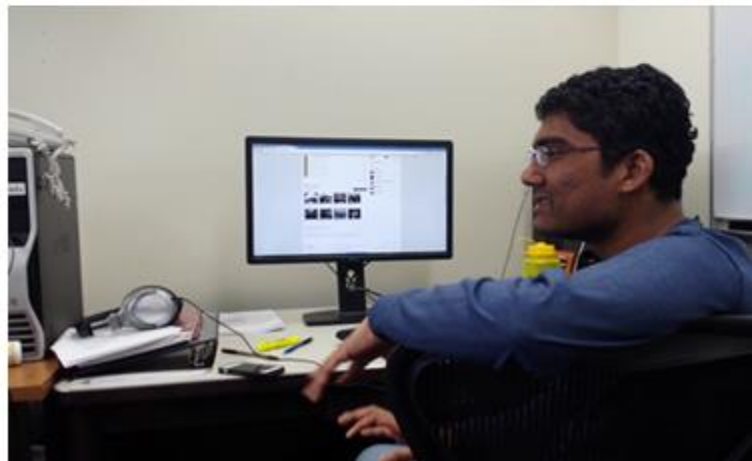


Figure 3. CI interview with our 3rd interviewee in his office in CS department

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IDEATING

After our CI interviews and creating the transcripts for each interview like the one shown in figure 4, we created the affinity diagram which formed our ideations using the breakdowns in the transcript as well as users' expectations and suggestions.

A	B	C	D
Line #	Speaker	Transcript	Annotations
1	Participant	I'm going to tag one of my artists that I just listened to so that finding by genra would be a little easier next time	user is interested in finding music by genre later much easier so he tags the
2	Participant	also grab the location because I like to know where the bands are from	user tags the location for each of the songs/bands
3	Participant	this one is from New Zeland	
4	Participant	artists are tagged by default so they are user added	user is so excited about his experience with tagging the music
5	Participant	and then it shows you top tags	
6	Participant	and I usually select from the most used tags	
7	Participant	and there are similar artists I gonna check those out	
8	Participant	that's how I usually find new artists on last.fm	
9	Participant	i don't use the recommended stuff for you	user is not that satisfied with "recommended stuff for you" and used his own
10	Participant	I just find an artist that I've been recently listening to and scroll through	
11	Interviewer	so your recommendation on the home page, you can't scrolled down that?	
12	Participant	I ignore that for the most part	
13	Interviewer	if you could change it in someway, how would you do so?	

Figure 4 . CI interview 2 transcript

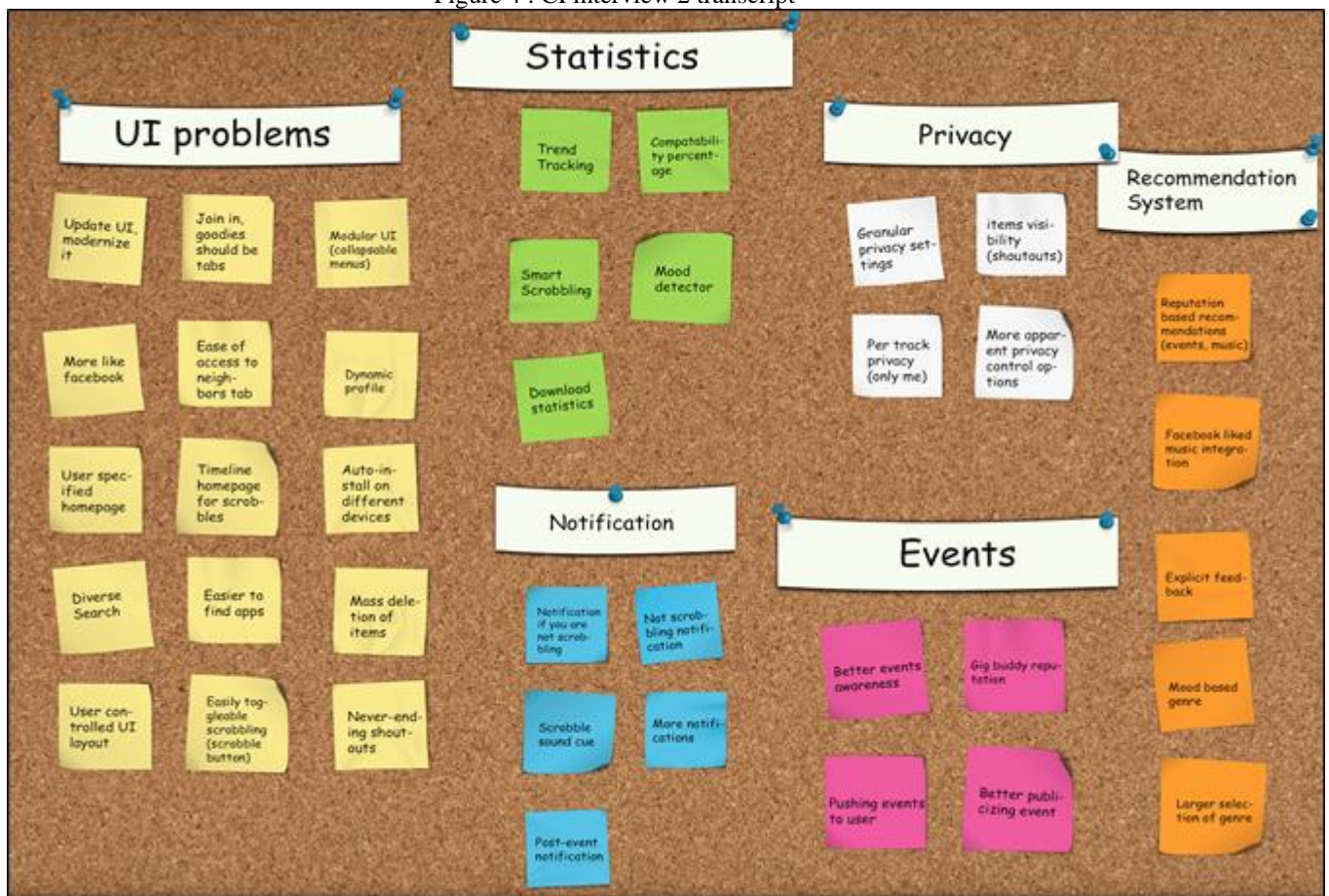


Figure 5 . Affinity diagram created based on our CI interview transcript

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IDEATING

Based on the affinity diagram we had in mind to add the following features to the last.fm system for better usability:

- community-based track suggestion rather than just singer/band recommendation
- never-ending shoutouts rather than browsing to new pages for for viewing the rest of shoutouts
- enabling granular privacy setting for items in last.fm similar to Facebook privacy setting, rather than setting the privacy setting for a whole group of items
- enabling the search for UI items as well users' names rather than just for searching the artists/bands names
- giving the user easier access to plugins and tools
- enabling the users to download the statistics much easier
- notifying users in case their music is/isn't being scrobbled using specific sound cue
- creating a reputation system for the users so that we can create a trust-based system wherein "gig buddies" to go to concerts with are most trusted and highly reputed users
- creating a Timeline as in Facebook in the last.fm Homepage so that users can see in real time what each of their friends is currently listening (rather than browsing to their profile pages one at a time) as well as enabling the social interactions between the users like commenting on the scrobbles
- explicit feedback so that users can vote up/down the recommended events/artists or bands

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PROTOTYPING

In the following you will see sketches of some of the features we have added to our prototype including easier access to privacy settings for each track, easier access to plugins as well as access to data management in the profile page. Upon hovering the mouse over each thumbnail in the recommended plugin panel, a preview of the item is shown so that the user would have a better sense of what the next page would contain before browsing to it.

Below: Design sketches for data management, plugin recommendations, and privacy

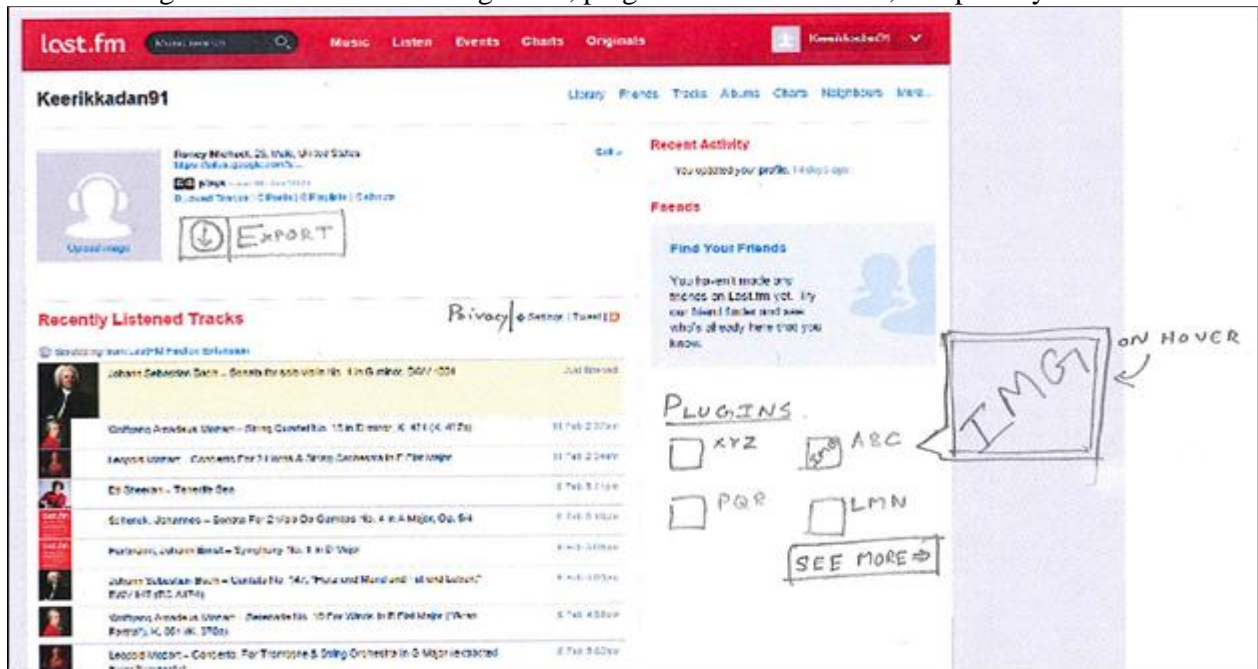


Figure 6. Sketch of the plugin and privacy features for our prototype

In the next couple of screenshots, our design idea to implement never ending shoutouts and links to the granular privacy options are illustrated via sketches.

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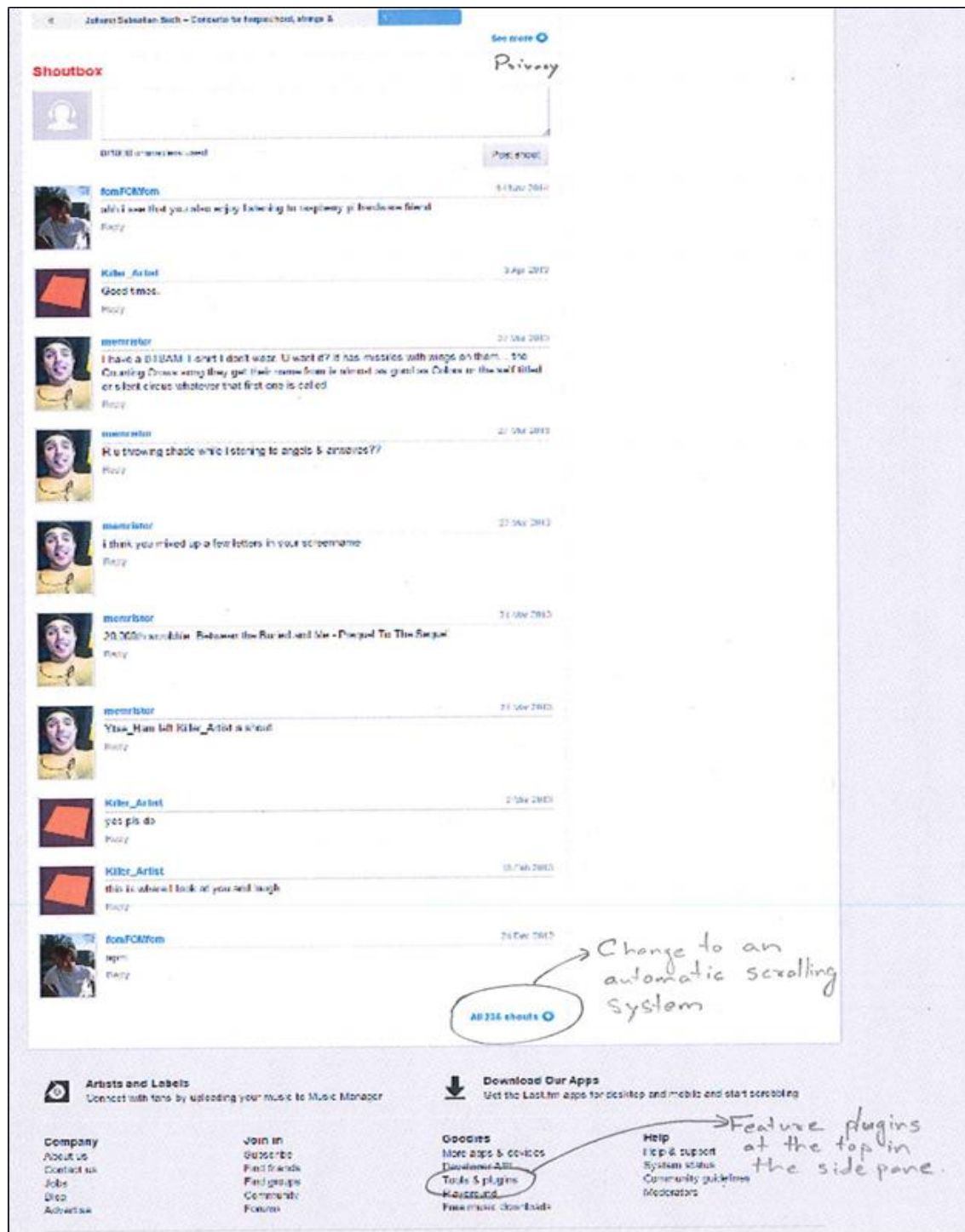


Figure 7. Sketch of never-ending shoutouts for our prototype

In our last sketch for the prototype which is about redesigning the homepage, we have tried to depict how we want to get rid of the redundant “Event” tabs in both of the available menus in Homepage, how we are planning to add track-based recommendations beside the conventional

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artist/band recommendations, as well as recommending way more events in the right sidebar panel of the Homepage and making the future location-based events more accessible to the user.

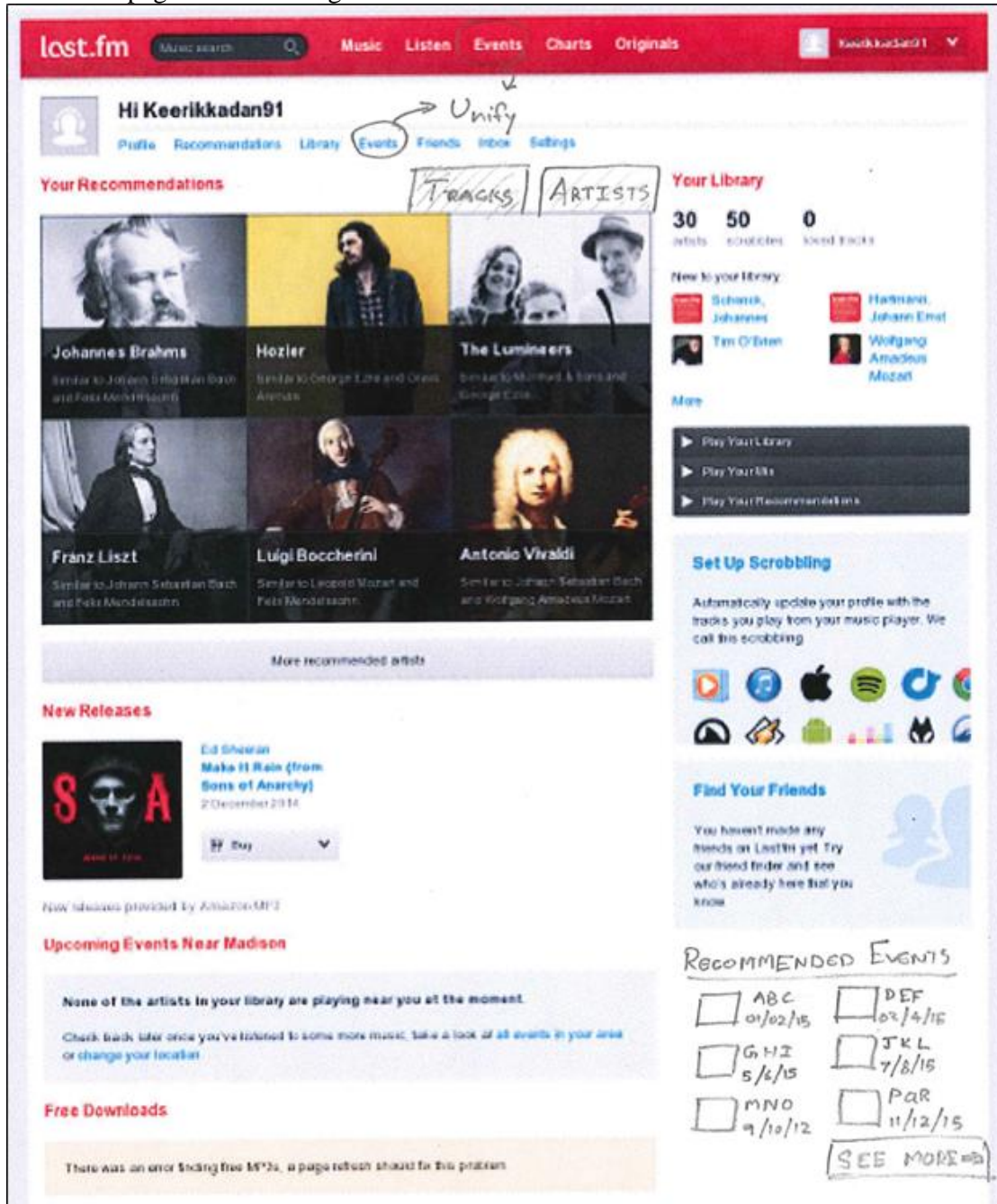


Figure 8. Design sketch for improved event tab, by-track and by-artist recs., and rec. events panel

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EVALUATION

We conducted usability testing interviews with three different users with varying levels of last.fm usage history. We organized seven tasks for them to do that would thoroughly evaluate the usability of the features that we decided to implement in our hi-fi prototype. They were as follows, in this order:

1. View all the posts in the user's shoutbox.
2. Try to export user's last.fm data.
3. Change privacy setting for shoutbox.
4. Explore plugins.
5. Find a recommended artist and a recommended track.
6. Explore a recommended event.
7. View your events and recommended events and festivals.

Upon completion of our tasks using our prototype site, we evaluated the same tasks while using the old site design. It was interesting to see that our most experienced Last.fm user (User 2), upon usability testing, had task failures and poor performance in our newly built prototype but no failures and good performance in the traditional Last.fm. That particular user has been using last.fm since 2007 and has most likely created custom workarounds for the breakdowns we discovered in the systems. Modifying or changing the UI to be more efficient, therefore, might not always bring the intended result of increased performance by users. Indeed, it might be that users who are long time users may feel encumbered by the new user interface of the site, due to becoming skilled at navigating the flawed interface over their experience with the site. On the other hand it could be that the prototype design is itself flawed. It could be difficult to differentiate between these two explanations; more usability testing is required to elucidate this issue. For non-expert users (users 1 and 3), the new site functionality yielded better performance and lesser task failure rates.

The following images are captures of user's facial reactions during the usability testing period of our prototype, as well as the table containing the information about task failure rates and performance.

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EVALUATION



Figure 9. Our first usability test interview conducted in Helen C White coffee shop. Here our first user (middle) is being instructed about how the usability tasks flow would look like.



Figure 10. Our second interview was conducted at Der Rathskeller in Memorial Union. Our third user was an expert last.fm user who frequently uses the website.

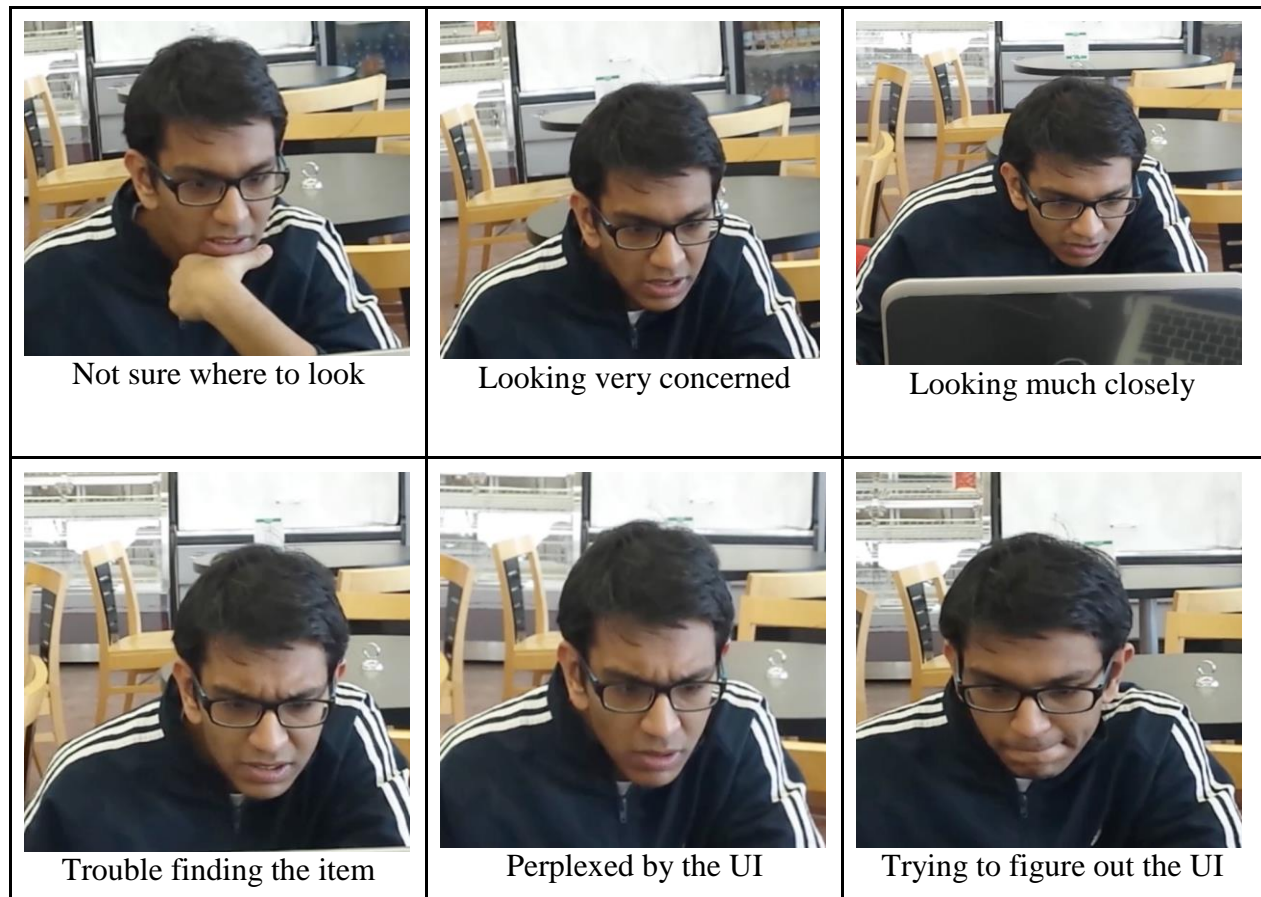
In figure 10 our second user is shown performing the usability test tasks. This interview was also conducted at Der Rathskeller in Memorial Union.

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EVALUATION



Figure 11. Our third users testing our protocol at Memorial Union



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Figure 12. User 1's facial reactions



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Concentrating on the task	Raising her right eyebrow	Understanding the next task
 A young woman with long dark hair and glasses, resting her chin on her hand, looking down with a focused expression.	 The same woman, smiling and raising her right eyebrow while looking at the camera.	 The same woman, wearing glasses and smiling, looking towards the camera.
Finding the item	Happily exploring the item	Very satisfied with task completion

Figure 13. User 2's facial reactions

In figure 14 you can see user 3's facial expression. It is notable that not all of users can express their feelings quite differently and because many of our keyframes were quite similar for this user, we just show 3 of this in this report.




 A young man with short blonde hair and glasses, looking down with a slightly confused or focused expression.	 The same man, looking down and smiling slightly, wearing a black jacket with a Columbia logo.	 The same man, looking down and smiling, wearing the same black jacket with a Columbia logo.
Trying to understand the task	Finding the item on task	Found the item quite fast

Figure 14. User 3's facial expression

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EVALUATION

	Task 1	Task 2	Task 3	Task 4	Task 5	Task 6	Task 7
User 1(New)	30	62	16	5	failed	35	8
User 1(Old)	20	30	60	50	10	32	14
User 2(New)	12	6	35	failed	5	7	6
User 2(Old)	15	3	failed	2	failed	20	17
User 3(New)	23	8	5	2	3	17	5
User3(Old)	10	21	28	27	failed	9	4

Table 1. Task performance table for all the usability test interviewees of the new last.fm protocol

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From the large list of improvement suggestions, we narrowed it down to a selection of improvements that would make the most sense to improve based on range of impact, ease of implementation, and maximization of site usability. Adobe Photoshop was used in tandem with the prototyping website InVision.com in order to build a prototype website for this project. Screenshots of the actual last.fm website were edited with Photoshop to reflect the changes we desired to make, and this was subsequently linked together with InVision to simulate an actual website.

- **Never-ending Shoutbox**

The user will be able to see all the posts in a shoutbox without having to navigate away from the target user's profile page. Additional posts will be demanded on scrolling, with the fetch being triggered as the user attempts to scroll past the posts at the bottom.

- **Export/Import Data**

The pre-existing option to export the user's personal data (downloading statistics as an example) was unknown even to the experienced users we had interviewed, though all three of them had indicated that they would like an option to do so. This has now been more prominently featured on the user's profile page by using up some previously wasted space without any reduction in visual clarity.

- **Facebook import**

Additionally, an option to import favorite artists from a user's Facebook "like" information is provided. This feature is targeted at new users of the web-service as this allows them to easily start receiving relevant recommendations based on their pre-existing data on another social network from day one.

- **Granular Privacy Settings**

Last.fm previously only allowed users to set one overarching privacy settings for a host of different data. This is undesirable because it is too general; for example, a user might prefer to keep their scrobbled information public while keeping their shoutbox private, but the existing privacy system, being all or nothing, did not allow for this level of specification. As a result, granularity has been added to our new prototype. Buttons were also added alongside the affected elements (such as the shoutbox) because due to previous experience on other social networks, users are likely to instinctively expect the option to be available there.

- **Explore Plugins**

Tools and plugins were previously relegated to the footer of the webpage due to which the interviewed users found it difficult to locate the option, even those who had previously made use of it. Since a lot of space seemed wasted in the sidebar panel, we thought it would be best to feature some popular plugins there. Thumbnail hovers have

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been provided for each plugin in addition to enabling navigation to the sister site which hosts them (build.last.fm).

- **Recommended Artist/Track**

Last.fm currently only provided recommendations on a per artist basis. This is often a false positive as artists often try to diversify across many genres and styles. To overcome this issue, support has been added for a tabbed view of the recommendation granularity. We have currently supported per-track granularity since that seemed to be what our interviewed users most desired. One may also imagine how other options (e.g. per-album granularity) may be similarly desirable. This is a potential direction to explore in the future, but then the question becomes how many tabs to categorize recommendations by on the front page.

- **Recommended Events**

Many users that we interviewed in the beginning of this project expressed discontent with the lack of use of the Events functionality on last.fm; not many users were using Events, so this diminished incentive and usefulness of this site function designed to connect users of last.fm with other users who were going to the same event in the area. Users also seemed to find it difficult to locate where exactly event recommendations were provided since there was a plethora of redundant usage of the term on the portal. In order to remedy these flaws and encourage greater usage of the Event system, recommended events are provided in the sidepanel of the home tab of the user in our prototype, with accurate titling of the element to avoid ambiguity. As in the case of plugins, a hover view is provided for each top recommended event in addition to linking off for more events to the original parent page.

- **"All Events" / "My Events" / "Festivals"**

As mentioned for the previous feature, there were multiple instances of inconsistent usage of the term "event" on Last.fm. In our prototype, we have eliminated that redundancy instead choosing to link that related option as an additional tab ("My Events") on the main Events page. Our usability tests showed considerable improvement in the ease with which users were able to locate the option accurately when using our prototype as opposed to when they made use of the native platform.

The following screenshots will demonstrate the various features that we have implemented in our prototype design of Last.fm. The first screenshot is an image of the improved recommendation panel, which has tabs to switch between by-track and by-artist. The second screenshot is an image of the current Last.fm recommendation panel, so offer a comparison.

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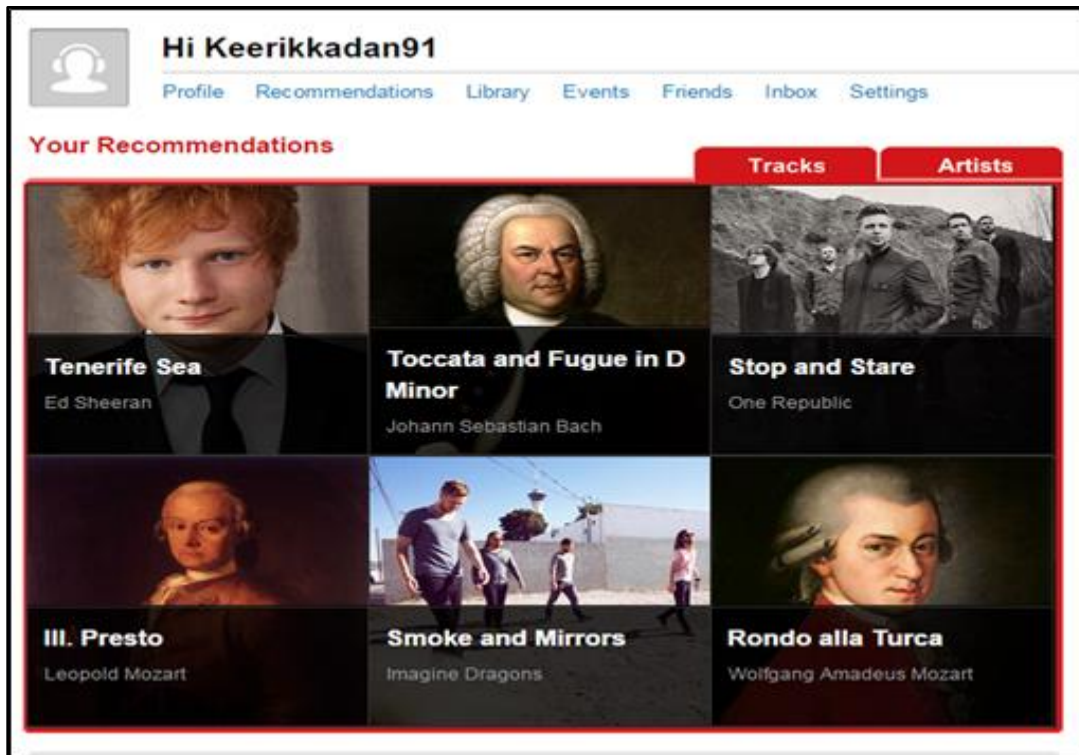


Figure 15. Hi-fi prototype of by-track and by-artist recommendation tab on home page

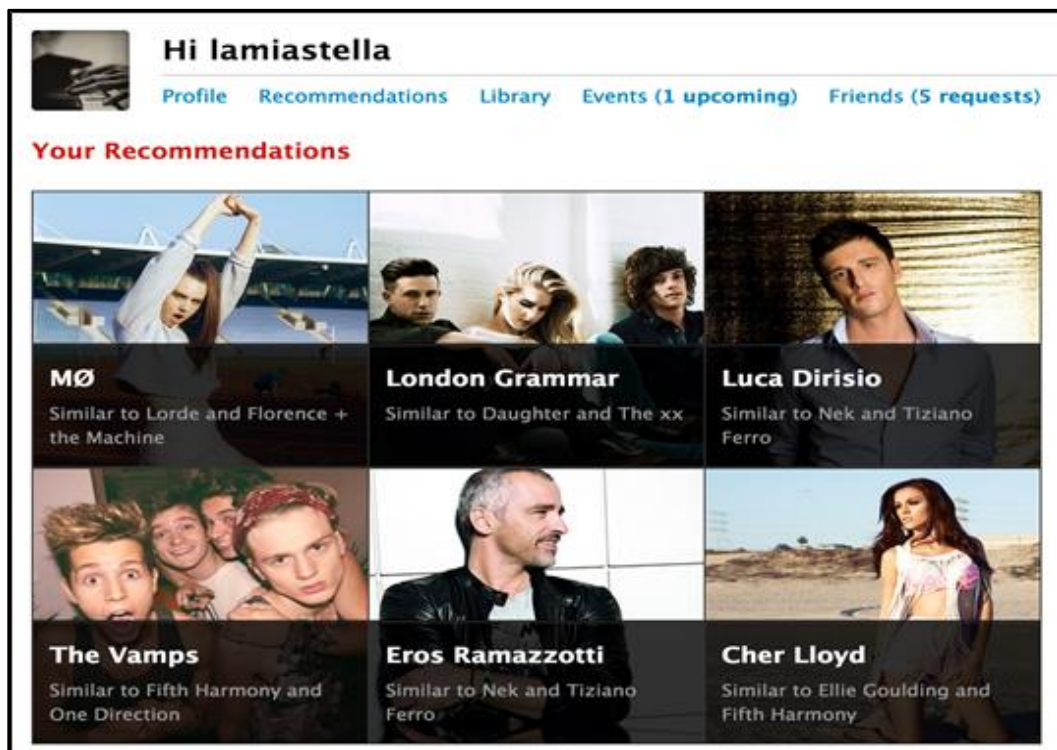


Figure 16. Current implementation of recommendations on Last.fm

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As you can see in our new system, not only do we have the conventional artist-based recommendation, we also have the track-based music recommendation system wherein you can get to know some of the most scrobbled tracks by the users who are your friends or your neighbors that have “super-compatibility” with you. This feature is necessary because users tend to prefer to be given single tracks rather than being given an artist or a band and having to search through multiple tracks to find something you truly enjoy. Our interviewees’ feedback reveals that they like this feature.

The never ending shoutout feature is similar to “load more” feature in Facebook’s newsfeed wherein you don’t have to browse to a new page to load previous items, and all you must do is hover to load the previous items. In UI/UX design we should try to have the most efficient solution for the users and we found that this method of accessing previous shoutouts was most efficient for users. As you can see below, this is our current prototype for never ending shoutouts. Upon reaching the last shoutout on the page, a red loading indicator will pop-up and the rest of shoutouts will load on the same page as shown in the next screenshot below this one.

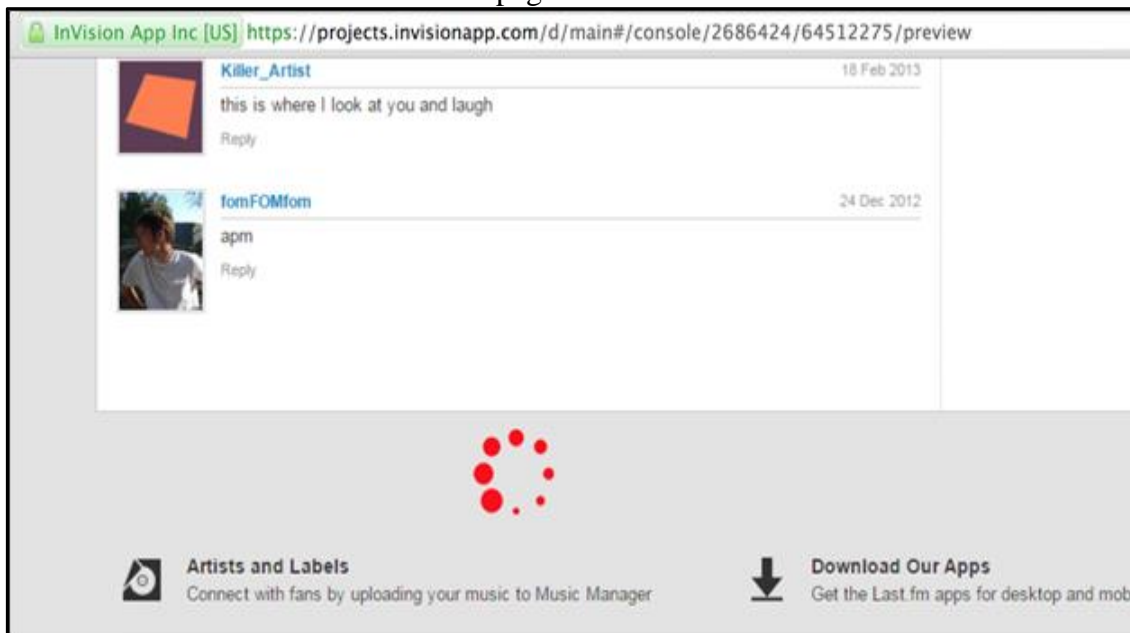


Figure 17. Hi-fi prototype of never-ending shoutouts. User has scrolled to bottom of screen, and it is loading next page of shoutouts seamlessly.

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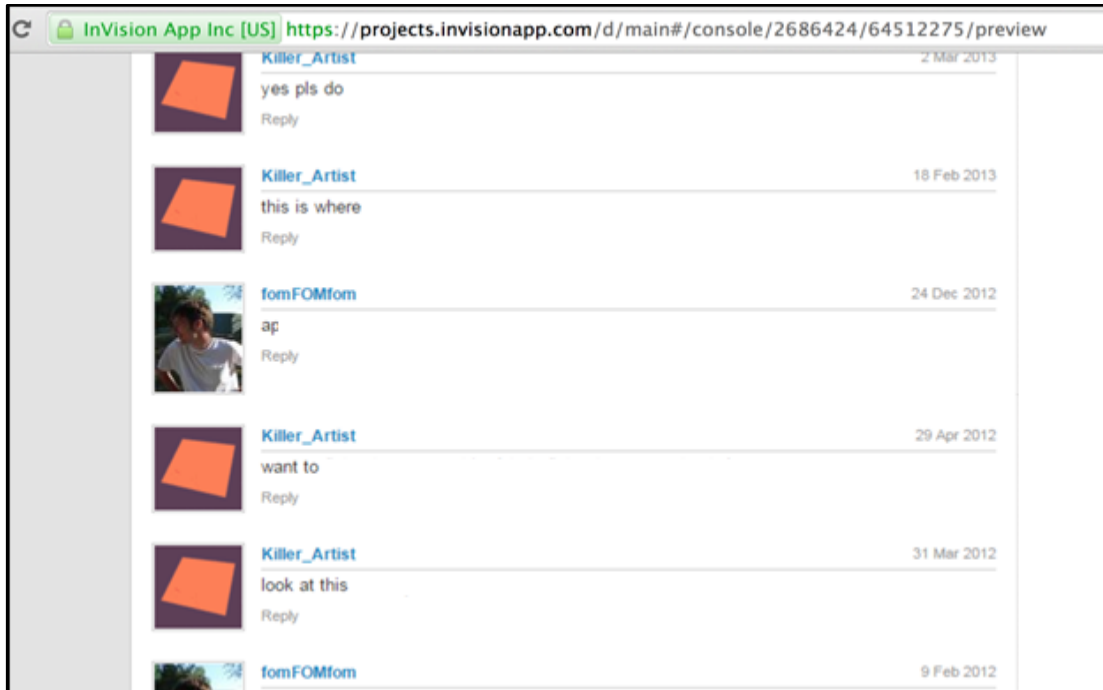


Figure 18. Loading the next page of shoutouts on the profile page rather than browsing to a new page



Figure 19. Current Last.fm shoutout navigation. Notice the numbered page tabs.

Below is our new “Recommended Events” panel in the right sidebar panel on the homepage. This is our proposed alternative to the easy to miss last.fm Events system. We believe this will be more eye-catching to the user, and result in greater use of the Events system. This has been demonstrated in our findings to be true. This list is also ranked by order of compatibility to the user’s taste.

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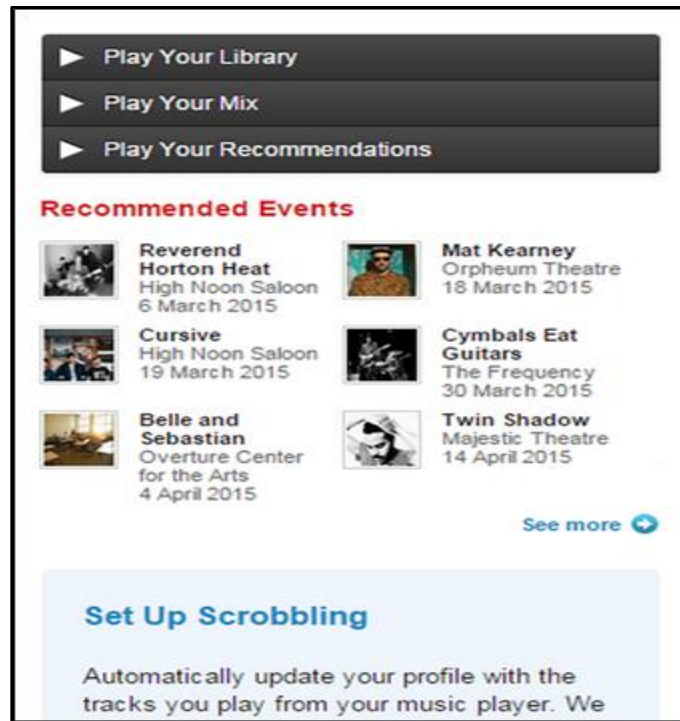


Figure 20. Recommended events panel

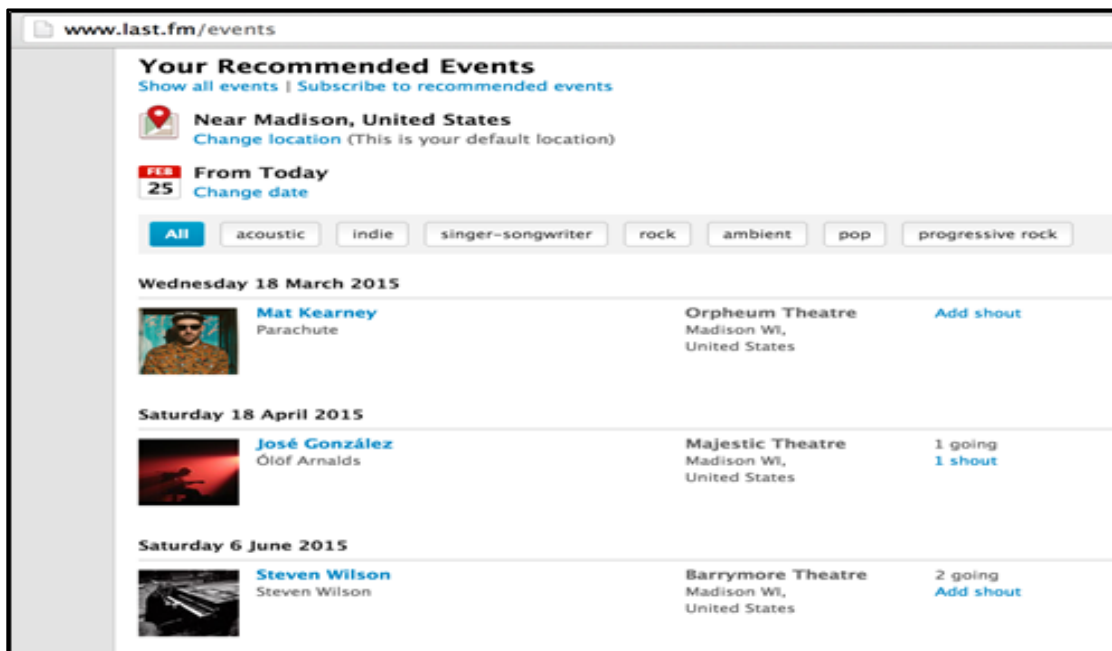


Figure 21. Recommended events on current Last.fm. As you see, the user must first navigate away from the homepage specifically to the events page to see them.

Below is our implementation of the popular plugins panel. This change was proposed because the original way to access plugins was an obscure, easy-to-miss link at the bottom of the page.

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Our concern was that users of last.fm were not getting adequate notice of the ability to enhance their last.fm experience with plugins. It is of note that user 2 believed that our panel was not in a good location on the page. It is in the panel in which user-centric data is meant to be shown, and the user stressed that plugins were not one of the main functions of last.fm and that this implementation was misplaced. This could potentially be improved upon in future tests.

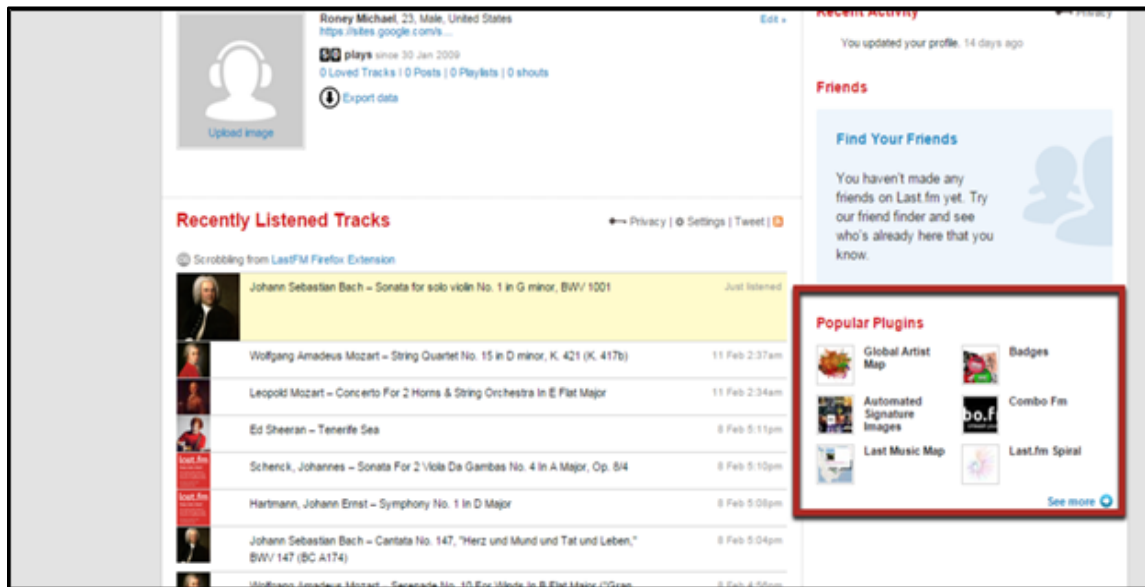


Figure 22. Hi-fi prototype of popular plugins panel

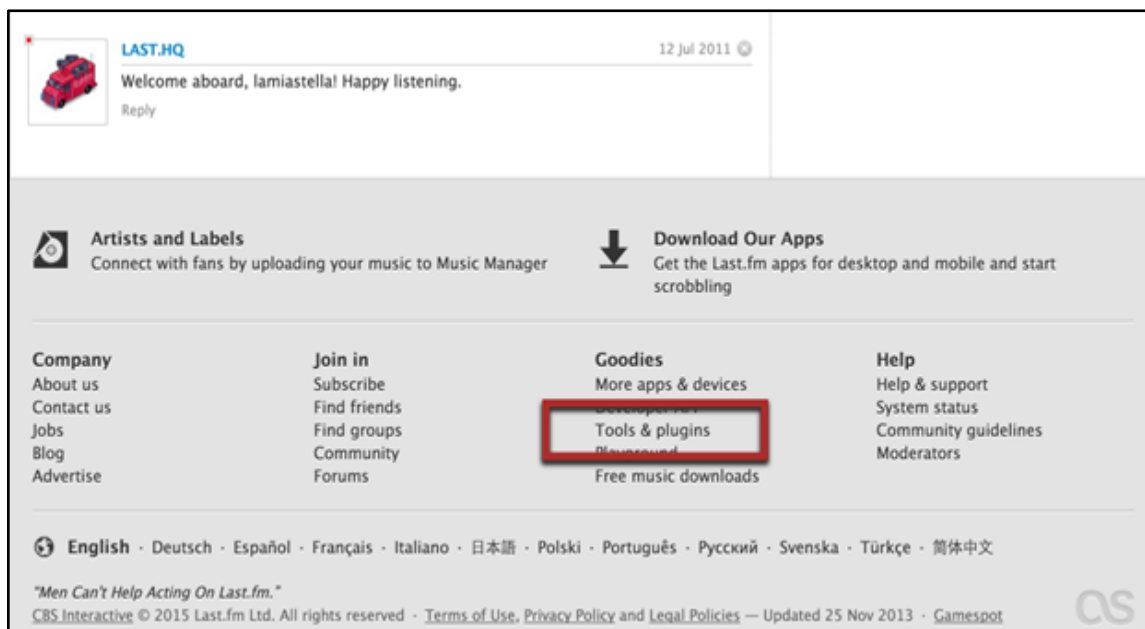


Figure 23. The current implementation of plugins on last.fm

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In what follows screenshots of our hi-fi prototype is shown. In this screenshot, the green rectangle depicts our “Export Data” button, the yellow rectangles show the granular “Privacy” buttons for each item on the profile page and the red rectangle is for “Popular Plugins” item shown in right sidebar panel.

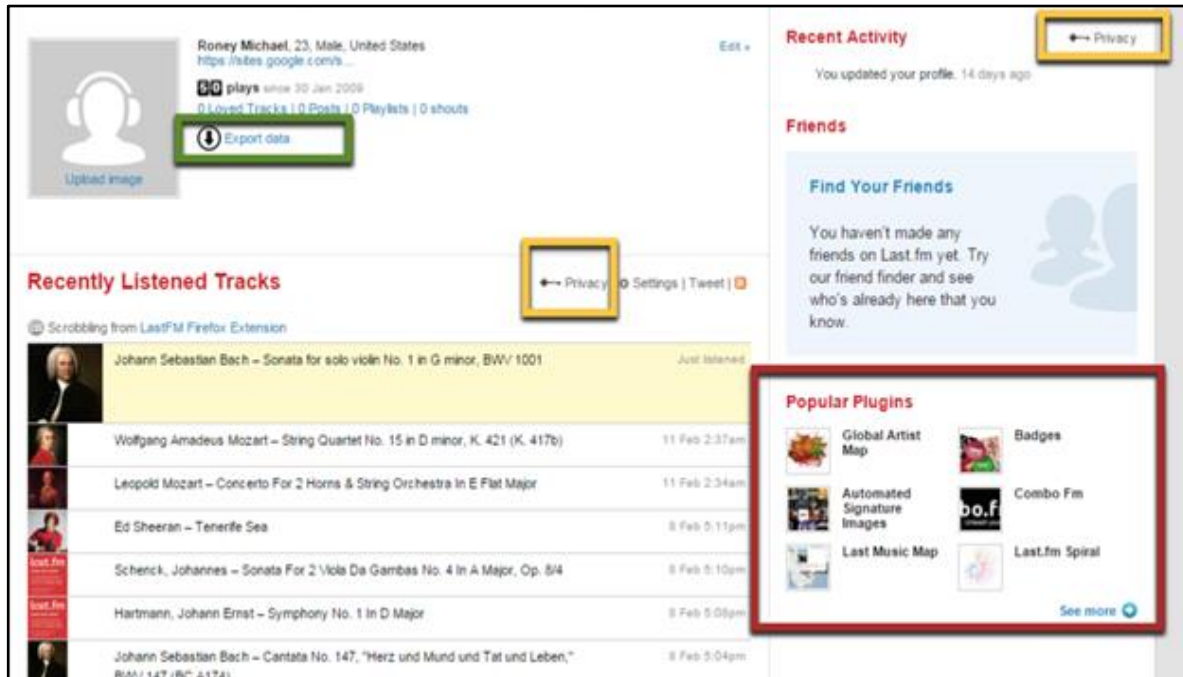


Figure 24. Screenshot of hi-fi prototype of improved data management, privacy settings, and plugins

In the “User’s Library” section we have added two buttons, one for importing music bands/singers from the user’s Facebook likes and the other one is the granular privacy setting for the music library visibility to other users as shown in figure 25.

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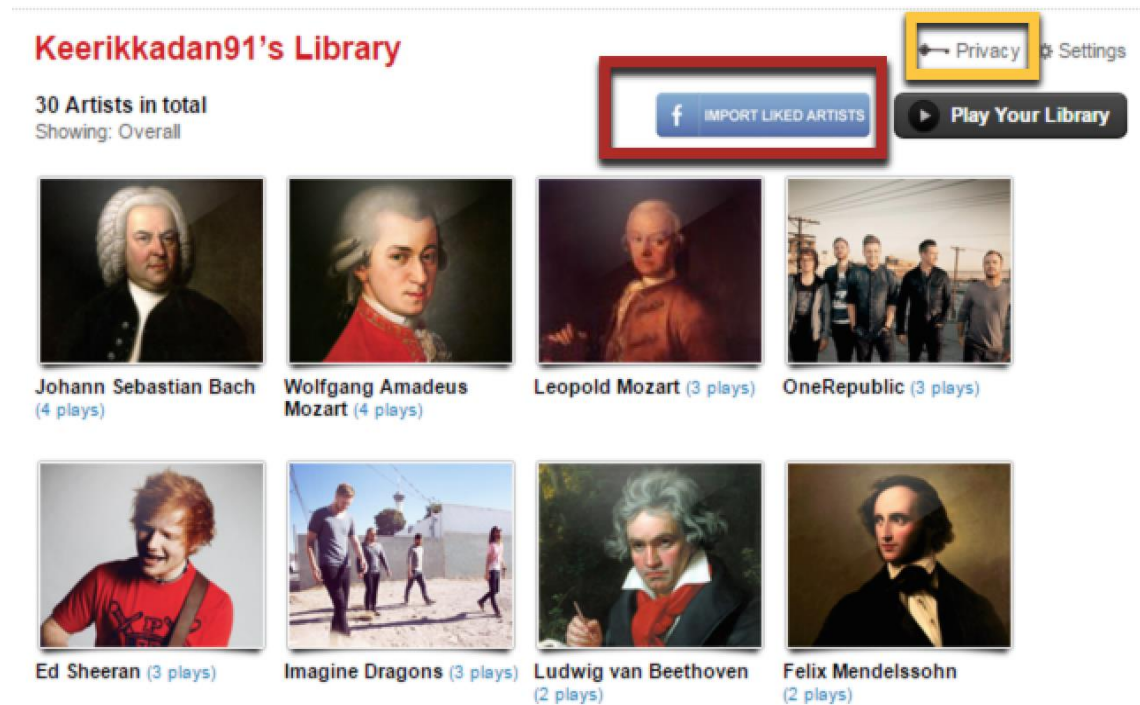
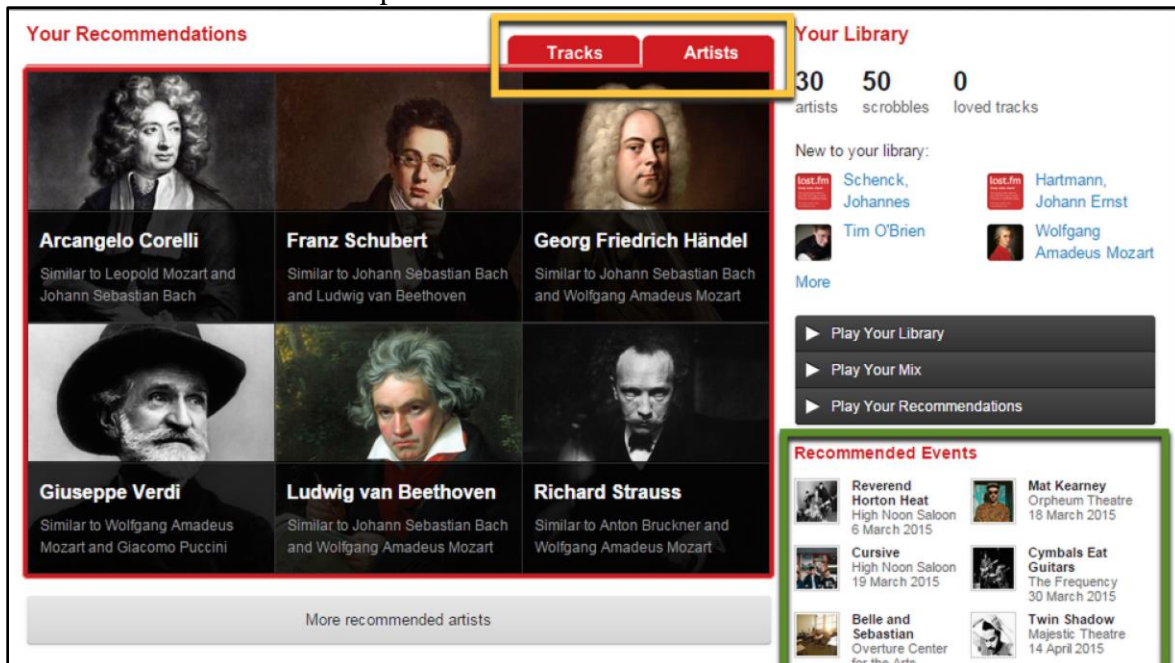


Figure 25. Hi-fi music library prototype

We have changed last.fm Homepage in our protocol so that it has easier access to upcoming recommended events (shown in green rectangle), as well as track-based recommendation (shown in the yellow rectangle) as shown in figure 26. We have revised our hi-fi protocol to contain the event date for each event in the preview so that it would save time of the user.



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Figure 26. Hi-fi last.fm Homepage prototype

Also we have integrated “My Events” (showing RSVP’d events) tab into the “Events” (showing recommended events) and “Festival” section so that user would have a more unified event access for both RSVP’s as well as recommended events and festivals rather than getting lost in the redundancy of tabs and menus created for “Event” in last.fm website.

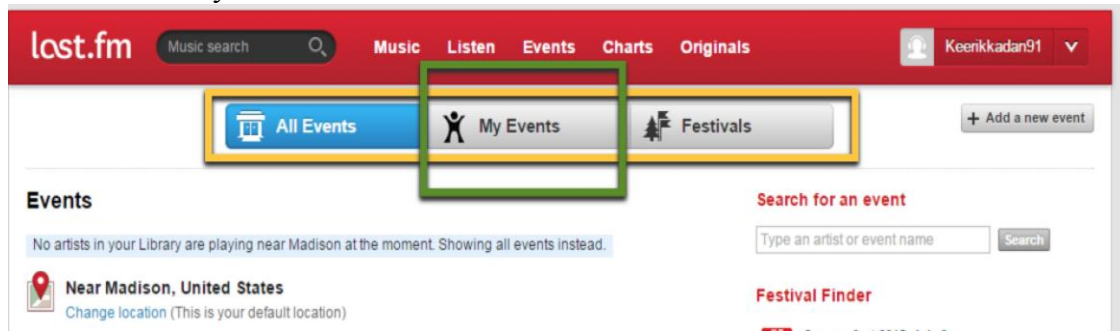


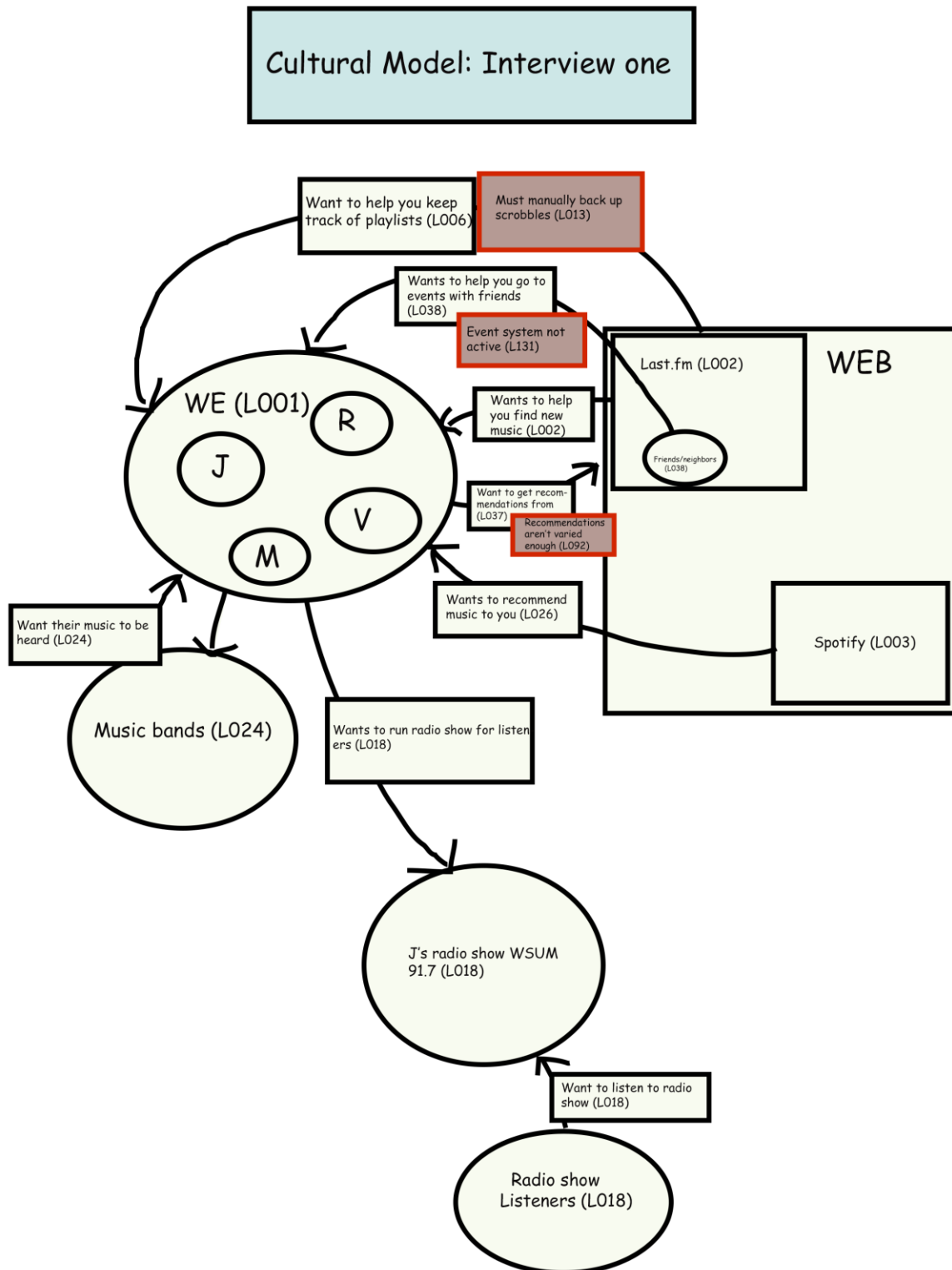
Figure 27. Hi-fi event page

Software/WebApps/Technologies used in this project are as follows:

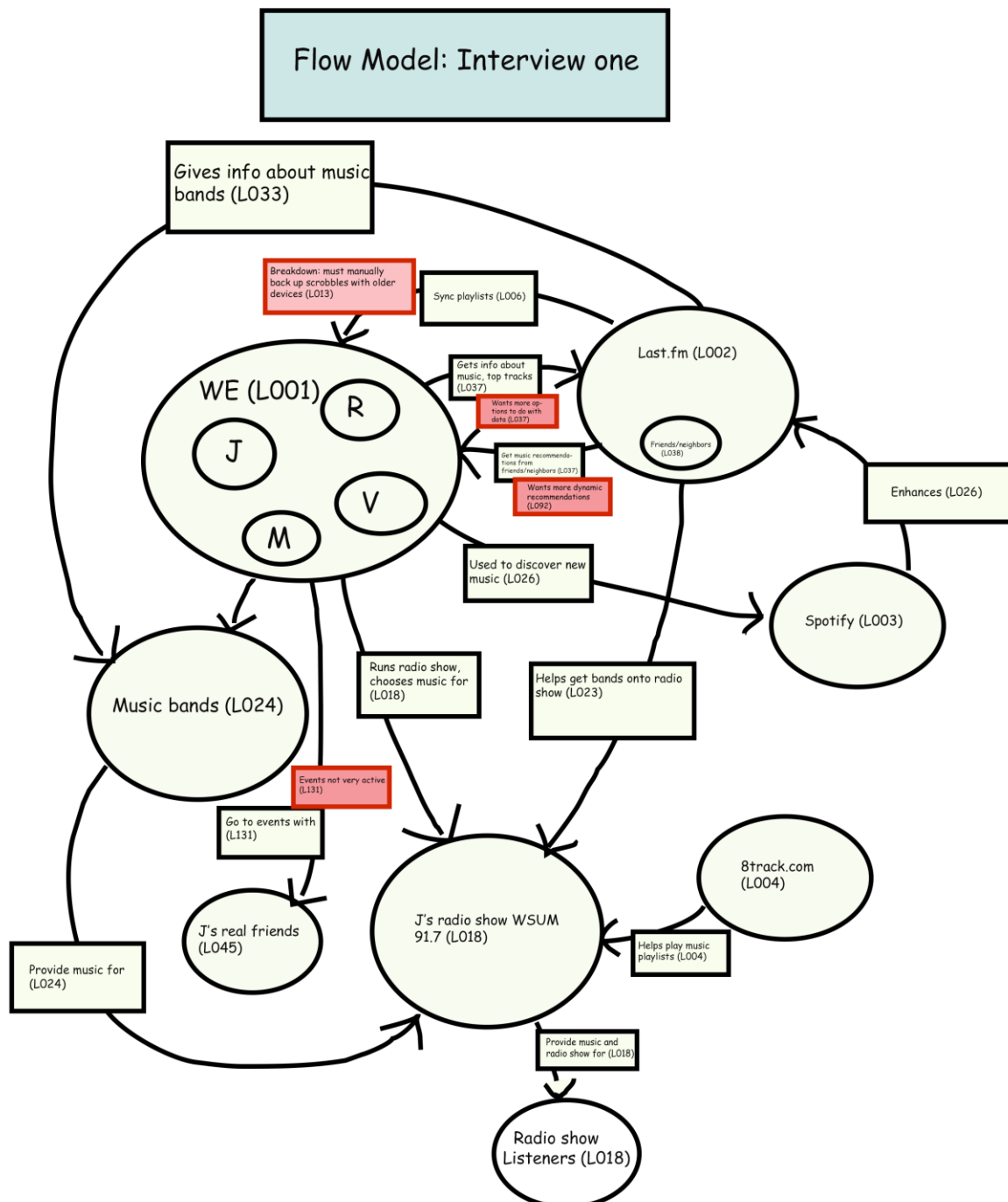
- InVisionApp.com
- Gliffy.com
- GNU Image Manipulation Program (GIMP)
- Adobe Photoshop
- TechSmith Snagit
- TechSmith Camtasia
- Samsung Galaxy S4 Phone Camera (13 Megapixels)
- Coolpix Video Camera (10 Megapixels)
- Google Drive
- DropBox.com

We used gliffy for some of our sketches as it's quick and useful for producing digital sketch models. We used InVision to create the prototype based on the images of the existing site that we have modified in the Photoshop. We recorded our usability test interviews with the Samsung Galaxy S4 camera, and we recorded screen capture footage using TechSmith Camtasia.

APPENDIX (MODELS)

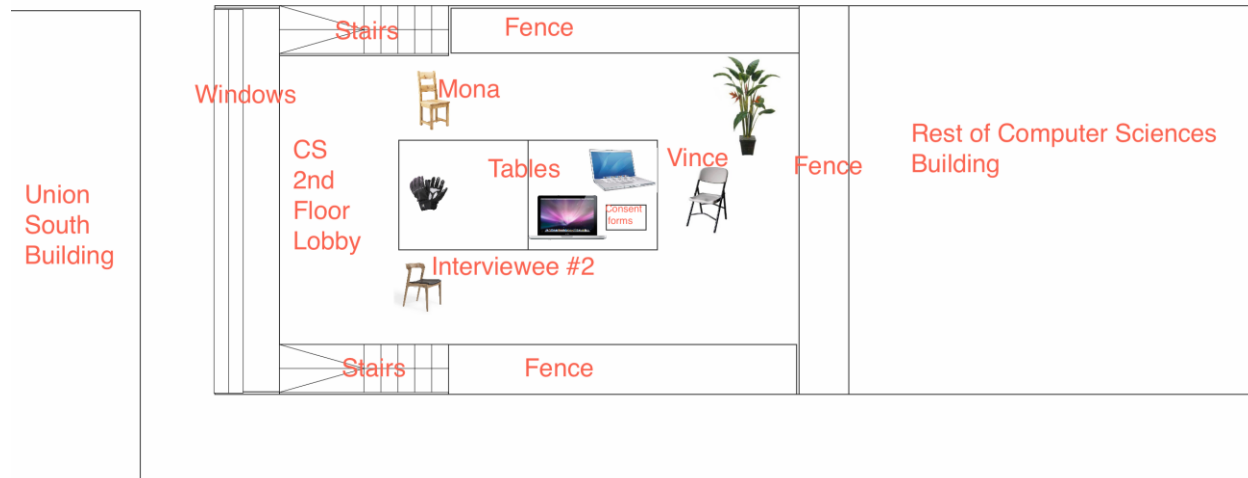


APPENDIX (MODELS)



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