

67-475 Information Systems Applications
Carnegie Mellon University
MIWatch

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1. Executive Summary

MIWatch is an online news source with links to original sources for persons affected by mental illness(es) including, but not limited to patients, family members, service recipients, clinicians, advocates, and members of the press. Site features enable users an easy to navigate interface that allows searches to be conducted by date, author, and a unique search engine of the archives. The end-goal of MIWatch is to be an information hub about mental health issues.

Site improvement will occur in two areas: site redesign and mapping of physical locations site users can go for mental illness resources. Site redesign will be done for easier navigation, in addition to encouraging user interaction and participation. The purpose of the site is to create a feel of a give and take between the MIWatch and the user, as well as among users of the site. To increase user participation in the site content, more polls and blogs will be implemented to provide an area where users can suggest stories to post as well as their own experiences. There is also a need for more timely updates of information, keeping resources as up-to-date as possible. The team is looking to upgrade to Web 2.0 features for Flash, video, audio, web television and photos to enhance the sharing of information.

With regards to the mapping portion of MIWatch, Google maps will be used, but with custom data points specified by the client. In the few meeting discussions held with the clients, it was made a point that location searches (for now limited to searching by zip code) will not return private practices and/or institutions. Data parameters thus far is basic information for each location, ie. name of institution, what they treat, address, phone number, insurance, etc.

Possible competition for MIWatch include sites such as Network of Care, which covers mental health help locations by region similar to the mapping functionality MIWatch is looking to offer. Another site, mentalhelp.net offers the informational articles that MIWatch offers. The team will be researching these sites as well as additional other mental help sites as comparison and ideas for MIWatch.

2. MIWatch Project Vision

Introduction:

The purpose of this document is to collect, analyze, and define high-level needs and features for MIWatch. It focuses on the capabilities needed by the stakeholders and the target users, and why these needs exist. The details of how MIWatch fulfills these needs are detailed in the supplementary specifications.

References:

- | | |
|------------------|---|
| Phyllis Vine | - Executive Editor of MIWatch |
| Kenneth Thompson | - Medical Director, Center for Mental Health Services |

Problem Statement:

The problem of	identifying where mental health centers are while showing the easiest route to get there
affects	mental illness persons
the impact of which is	mental illness persons not knowing how to get to mental health facilities to get help with problems
a successful solution would be	a web based mapping system that shows where mental health facilities are based on zip codes with directions available along with public transportation options listed.

Product Position Statement:

For	mental health persons
who	wish to find mental health institutions in a certain zip code
the MIWatch System	is a web application that grabs information from a database to populate a mapping system to show where mental health institutions are and how to get there
that	will help mental health persons become more knowledgeable of where mental health institutions are
unlike	Google maps
our product	will provide a customized repository of only mental health institutes based on certain search criteria

Stakeholder and User Descriptions:

Stakeholder Summary

Name	Description	Responsibilities
MI Watch	Company that provides mental health information.	Provide information and host site.
Data Collectors	Individuals who collect information about mental health institutions,	Put information into database form for use of plotting maps.

User Summary

Name	Description	Responsibilities
System Administrator	Person who manages the technical aspects of the system.	Keep site running properly and remove any profane comments.
Mental Health Persons	Target group of the system that information is being provided for.	Make sure that MI Watch knows what would be helpful for them and suggest improvements to be made.
Journalists	Persons who write articles on the site	Keep writing new, informative articles to the site.

User Environment:

Number of people involved in completing the task? Is this changing?

The number of individuals it would take to complete a task is two to three. A journalist must post a new article in order for the mental health person to read the article. The system administrator should make sure that any comments posted by users on the articles are not profane. The mental health persons should also only need to look up the locations of mental health institutes without other users needing to interact.

How long is a task cycle? Amount of time spent in each activity? Is this changing?

A task cycle is very variable. Writing an article can take much time. Posting the article after it is written should take no longer than one minute 95% of the time. For users to browse articles or look up mental health locations, this should be as quick as the user can enter in the information. Redirecting to the new pages or viewing the maps should be quick to refresh, no longer than ten seconds on a DSL connections 95% of the time.

Any unique environmental constraints: mobile, outdoors, in - flight, and so on?

The only environmental constraints would be the user would have to have a computer and internet access ready in order to use the system. The system is not developed for the iPhone or other mobile devices, but it can still be easily accessed using the web browsing platforms on the mobile devices.

Which system platforms are in use today? Future platforms?

System platforms in use today are Windows, Macintosh, Linux, UNIX, Ubuntu, etc. Future platforms could possibly be Google.

What other applications are in use? Does your application need to integrate with them?

Other applications in use would be a common web browser, servers, database system, and the Google API. Being able to integrate with the Google API is key to the success of the project.

Summary of Key Stakeholder or User Needs:

Need	Priority	Concerns	Current Solution	Proposed Solutions
Database of Mental Health Institutions Based on Zip Codes	1	The sheer amount of data that would be needed to be gathered and what format to put it in.	Google maps	Create a huge centralized repository of purely mental health institutions information and use different methods of displaying this information.

Map of Mental Health Institutions	1	Working with Google API, translating from PHP to rails	Google maps	Using Google maps and rails plug-ins we intend to build a customizable mapping system of mental health institutions.
Site redesigns	2	Minimal PHP knowledge	-	Based on what the client thinks, either switch the redesigns to rails or hack away at it with PHP.

Product Features: Display map based on zip code entered
 Allow customization of search parameters

3. Project Requirements

3.1 Use Cases

3.2 Statement of Nonfunctional Requirements

MIWatch's map system will make use of the Google Maps API and thus be subject to a few constraints. The first is that locations, that are not already stored locally, will have to be looked up via Google and subject to whatever latency and downtime Google is currently experiencing. This should not be a problem, however, since Google is an extremely reliable source and any latency or downtime will surely be more likely on MIWatch's end than with Google. Another constraint on the current setup of the mapping system is that Google will only allow 500,000 map loads a day. This will most likely not be a concern as this is extremely high load and not typical for a site like MIWatch. However, should this become a concern, all that is required is to submit a form to Google explaining the need and the limit will be removed.

The mapping system for MIWatch will be written in Ruby on Rails, making use of the Google Maps API. Both Ruby and Rails work under Mac OS, Windows, and Linux, so issues with Operating System incompatibilities are not a concern. However, some deployment software will be required to get the mapping system accessible on the Internet. Several great pieces of software exist, one of which is called Phusion Passenger and we will be suggesting it to the client. This piece of software requires either a Linux or Mac Operating System to run under. The rest of the site not part of the mapping system will be a combination of PHP and HTML and requires no special attention.

Security is not a major concern for MIWatch as no personal information (no user accounts are needed) is being stored and all of the information being provided is already publically known.

Our client has one or more individuals working for them that will be available as support to the system once our system has been deployed. We expect our system to require minimal maintenance once it has gone online. The Ruby on Rails deployment software recommended above requires little attention and if a problem does occur, there is extensive documentation and support from the developers available. The rest of the site will require about the same amount of maintenance and attention that it is getting in its current state. The skills required to maintain this system are typical of any IT individual working in a web development environment. This knowledge includes an understanding of HTML, database management systems (like MySQL), object orientated programming languages (like PHP and Ruby), and web server software (like Apache).

4. Scope, Complexity, Project Feasibility

4.1 Scope, Complexity and Workplan Estimates

The project, which spans approximately 15 weeks, with four team members, each of whom is expected to work about 20 hours a week, gives a total of 1200 work hours. However, calculating for time lost, including 5 sick days for each member, and 3 days for out of town interviews (assuming each person works 4 hours a day during the week), will result in a loss of 128 work hours. Other factors such as examinations and holidays will also reduce about 64 work hours. This results in a total of 1008 work hours to allocate. If needed, the team can work more hours during some weeks.

Since the main task of the project is to redesign the MIWatch website, interface and graphic design will play a major role and thus take a significant amount of the team's efforts. In order to redesign the website, tasks include:

Milestone 1

Run PHP code provided	8 work hours
Convert current PHP code to Ruby	20 work hours

Milestone 2

Create and populate database	30 work hours
Implementing map and features	100 work hours
Create wireframes and prototypes	40 work hours

Milestone 3

Redesign website based on prototypes	100 work hours
Implement map features	140 work hours
Unit Testing	30 work hours

Milestone 4

Complete map for designated locations	80 work hours
Complete website design	52 work hours
Unit Testing	30 work hours

Since the team agreed to 3 weekly meetings, assuming each is an hour long, 135 work hours is designated for meetings. Conference calls with the client will occur during these meetings. An additional 100 work hours will be designated for creating, running, and compiling user tests. Because all team members are already familiar with Ruby on Rails, and one team member is quite familiar with Google Maps applications, minimal time is needed to obtain new skills, but some are needed for research. An approximate 40 hours will be allocated for this task. Other tasks, such as documentation, archiving, etc. will take approximately 100 work hours, totaling about 1000 work hours.

4.2 Optimum Team Size

The team consists of four members, each with different capabilities. One member has a strong programming background and experience with Google Maps, which is very useful for this project. Another also has a strong programming background and feels very comfortable programming in Ruby. The designated project manager was project manager for her last project with some website design experience and strong communication skills. The last member was Quality Assurance manager for her last project and has experience creating and compiling surveys, as well as running user tests. All members are comfortable with Ruby on Rails, the language to be used on this project. Given time commitment estimates above and time needed estimates for the project, and skill sets of each member, the team is at an optimal size.

5. Draft of Client Agreement

Client Agreement

Project Name: MIWatch

Client: Phyllis Vine

Team Members: Karen Chen, Paul Dille, Hannah Leung, Chase Midler

Advisor: Raja Sooriamurthi

Problem:

Many people are unfamiliar with mental health services and feel overwhelmed when seeking such services. Some people who are currently enrolled in a program may need to move to a new area where he/she needs to seek out new forms of service. When people have a similar problem with dining, they can easily refer to Zagat for recommendations. However, this is not available for mental health services. Thus, MIWatch seeks to provide references for those who may be looking for mental services, based on location and types of services provided.

Solution:

The team will set up a map based on Google Maps on the website with pointers based on a personalized database using information given by the client about mental services in a designated area. Additional information about each location may include: insurance policy, types of services, and comments. Additional features include search based on location, insurance policy, services, and commenting. Incorporating a map will mean redesigning the website, allowing smoother navigation and better organized information.

Requirements include:

- Database containing services information based on location
- Google Map incorporated into website
- Search functions and filters
- Widgets to display Youtube videos
- User feedback- Blogs, Comments, Voting
- Map navigation(scrolling, zooming, displays information correctly)
- Compatibility on Mac OS, Windows, and Linux
- Loads map and pointers reliably

Deliverable Dates and Components

September 14, 2009- Deliverable 1

- Documentation
- List of known defects

October 11, 2009 - Deliverable 2

- Documentation
- List of known defects
- Software

November 9, 2009- Deliverable 3

- Documentation
- Training
- List of known defects
- Software

December 7, 2009 - Deliverable 4

- Documentation
- Training for website
- List of know defects
- Software

Client Responsibilities

The client is responsible for:

- September 11- Providing previous work done
- Keeping in contact with the team
- Providing feedback and answer questions as needed
- Before Deliverable 2, Deliverable 3, and Deliverable 4: at least 5 potential users who can test the system and provide feedback(5 testers for each deliverable can be the same)
- Before September 30 - Seminar on Mental Health Services
- September 24 - First set of locations for map and information needed for each location(update as needed)
- October 4 - 18 (any 1 day) : Meeting with client
- Final Presentation: Client be present for presentation

Acceptance Criteria

- All software solution provided by the team (web site, databases, networking components, etc.) has been installed, and is running properly, in the client's environment, on the client's designated machines.
- All administrative, technical, and user documentation has been received by the client.
- Archival copy of project has been given to client (CD, DVD, all documentation, etc.) along with all necessary instructions.
- All key functionality (A level use cases) are fully implemented and work as expected. No key functionality is missing, incomplete, or nonfunctioning. Test cases have been run to verify implementation.
 - o Google maps implemented according to specifications. Locations shown for searched zip codes are limited to data points specified by client
 - o Redesign/reorganization of webpage as specified and approved by client
 - o Implementation of user-participation elements, such as polls, blogs
- All key nonfunctional requirements have been satisfied.
- A list of known defects has been received by the client.
- Training of client personnel has been completed.

Warranty

Any intellectual property furnished pursuant to this agreement is furnished on an "as is" basis. Karen Chen, Paul Dille, Hannah Leung, Chase Midler and Carnegie Mellon University make no warranties of any kind, either express or implied, as to any matter, including, but not limited to, warranty of fitness for purpose, merchantability, exclusivity or results obtained from use; nor shall either party hereto be liable to the other for indirect, special, or consequential damages, such as loss of profits or inability to use.

Client Signature: _____ Client Signature (print): _____

Member Signatures: _____ Member Signatures (print): _____

Advisor Signature: _____ Advisor Signature (print) _____

6. Team Structure and Capabilities

Karen Chen	<p>Technical Skills: HTML, Ruby on Rails</p> <p>Soft Skills: Project management, communication, organization, testing</p> <p>Likely Contribution: Coordinate team meetings, keeping team on the project timeline, consolidate project documentation/milestones</p> <p>Missing Skills: PHP, Google API, Ruby on Rails</p> <p>Plans for Acquisition: Gain experience through learning from team and hands-on coding</p>
Paul Dille	<p>Technical Skills: Ruby on Rails, C, Java, Google Maps API, HTML</p> <p>Soft Skills: Organization, support, communication</p> <p>Likely Contribution: Any programming and technical aspects of the project. Also testing and other misc tasks.</p> <p>Missing Skills: PHP</p> <p>Plans for Acquisition: Gain experience through practice and experimentation.</p>
Hannah Leung	<p>Technical Skills: basic HTML, Java, Ruby on Rails</p> <p>Soft Skills: Documentation</p> <p>Likely Contribution: Quality assurance, documentation, creating prototypes, testing</p> <p>Missing Skills: Sophisticated programming for developing website</p> <p>Plans for Acquisition: Consult other team members, research similar projects</p>
Chase Midler	<p>Technical Skills: HTML, CSS, Python Java, Ruby on Rails, Cobol</p> <p>Soft Skills: leadership, peer to peer communication, etc.</p> <p>Likely Contribution: Programming, Documentation, Testing</p> <p>Missing Skills: PHP, Google API</p> <p>Plans for Acquisition: Learn by doing</p>

7. Project Management Section

7.1 Project Plan

Before Milestone 2

Run PHP code on team computers (Team)	Complete
Convert current PHP code to Ruby on Rails (Team)	Complete
Conference with client to discuss details of project (Team)	Complete
Documentation (Team)	Complete

Milestone 2

Create database for map locations (Paul, Chase)	Incomplete
Make prototypes for site redesign (Karen, Hannah)	Incomplete
Discuss with client site redesign plans (Team)	Incomplete
Testing on database (Team)	Incomplete
Documentation (Team)	Incomplete

Milestone 3

Redesign site (Team)	Incomplete
Add client specified information on map (Team)	Incomplete
Conference with client (Team)	Incomplete
Unit Testing (Team)	Incomplete
User Testing (Team)	Incomplete
Documentation (Team)	Incomplete

Milestone 4

Complete site redesign (Team)	Incomplete
Complete map for designated locations (Team)	Incomplete
Unit Testing (Team)	Incomplete
User Testing (Team)	Incomplete
Documentation (Team)	Incomplete

7.2 Project Metrics

The success of this project will be evaluated based on technical, usability, and client satisfaction aspects. To evaluate how successful the project is technically, the team will create a list of tasks and see if all tasks are implemented. The team will also test extensively to find bugs and keep track of bugs found. The team will use Lighthouse or a similar ticketing system to keep track of assigned and completion of tasks. To evaluate usability, the team will conduct a series of standardized user tests which evaluates design, navigation, and gain comments from users. The users will mostly be found through recommendations of the client. To evaluate client satisfaction, the team will hold regular conferences with the client to communicate current progress and future plans. Evaluation of the design of the map and site will be the most important factors.

7.3 Risk Analysis

Time Management

One major risk of this project is ineffective time management. This is a major risk with moderately high probability as the failure of one team member to accomplish his/her designated tasks will result in a failed project. Since all team members have many classes and activities in addition to this project, the team and each member must manage time efficiently and ensure that high quality tasks be completed on time. To ensure proper allocation of tasks and timely tasks completion, the team will hold three weekly meetings where members discuss current

status of the project and assign new tasks. This allows potential or current problems to be brought up immediately and solved by the group as a whole, and ensures the project progresses according to schedule.

Client Communication

Because the client resides outside of Pittsburgh, regular, in-person meetings are difficult to schedule. . However, without client input and satisfaction, the project will not succeed. Thus, inability to communicate with the client effectively is a major risk with moderate to high probability. To prevent this problem, the team holds regular meetings to discuss what questions the client needs to answer. In addition, setting up conference calls allows the team to discuss the project with greater detail with the client present. This allows the client to view progress and provide feedback for the team, limiting the possibility that the team will create an unsatisfactory product.

Testing/Usability

Because targeted users of the product are people affected by mental illness, user testing must be conducted on potential users. However, it is difficult for the team to find potential users to test the system at various times during the project because there is no experience or knowledge as to how and where to find these potential users. Without user input and feedback, bugs or design issues of the system might not be found. This is a high risk for the project with a moderately high chance of occurring. To deal with this potential problem, the team has brought up the concern of finding testers to the client, and the client agrees to search for potential users to test the system. However, this will remain a risk until the project is completed because it is uncertain how many testers can be found and how useful their feedback will be.

Team Dynamics

A team that does not get along will not be an effective team, especially since the team will need to collaborate on many tasks, such as conferences with the client, redesigning the site, and creating and completing user tests. This is a major risk for the above reasons and is expected to occur with low to moderate probability. To ensure positive team dynamics, the team will meet three times a week to address any problems that might arise and allow team members to interact with each other, building a more effective, communicative, and professional team.

Technical Failure

Because the project is a continuation from a previous project, there are many potential compatibility issues. For example, the map interface was created in PHP, which the team is unfamiliar with. In order to redesign the current system and add new functionality, the team decided to convert current work into Ruby on Rails and add several plug-ins. This introduces the risk of technical failure, where the team fails to convert previous work and add new functionality due to differences in programming languages. This is a major risk with a moderate chance of occurrence. To address this risk, the team has made code conversion a first priority, ensuring that compatibility issues are immediately dealt with. After the code has been successfully converted to Ruby on Rails, the team can use this more familiar language to increase functionality and redesign the website.

7.4 Problem Analysis

One current and expected problem is communication with the client. Because the client is located outside of Pennsylvania and is not very technical, setting time to have meetings in person is difficult. The team has made an attempt to have conference calls with the client as often as needed and use email to update the client as necessary. However, communication with the client will continue to be a difficulty, especially when prototypes and testing is needed. To present current progress, the team may record videos displaying the functionality, and attempt to have a face-to-face conference with the client in order for both sides to present concerns, questions, and provide feedback.

Another problem is that team has no background in mental health and may fail to realize some basic concepts needed for the design of the site. To address this problem, the team has asked the client for a seminar on mental health to increase awareness and more deeply understand current conditions of mental health care.

One last problem is finding users to test the redesigned website. Users need to be potential users or fit the profile of a potential user (knows someone mentally affected). This information is hard to gather and may only be a small subset of the population. In order to gain feedback from potential users, the team has posed this problem and asked the client for assistance since she has much more expertise and connections with potential users. If limited testers are available, the team will gather feedback from those who have some experience describing a site with more technical information and meaningful feedback.

8. Appendix

Appendix A : Item List for Service Map

Each of these is numbered in no particular order. Please list your preferences by item number and we'll do the tabs.

Services:

- (1) services by age: child, adolescent-teen, transition, adult, geriatric.
- (2) category (eg. mental health services, substance abuse services, suicide prevention programs,)
- (3) programs offered (group; individual; ICM; CBT; DBT; individual; ACT teams; telephone/computer sessions)
- (4) payment types (private insurance, public insurance, clinic, non-profit resource; managed care, HMO)
- (5) provider training: Consumer outreach, MD., PhD., Peer-consumer specialist, social worker.
- (6) Inclusion of administrative numbers (not just clinical service providers)
- (7) Languages spoken

Web-based features

- (8) Feedback and comments: (eg: this place no longer takes appts; the doctors are great but the receptionists are rude; the waits are too long; everybody is seen within 15 minutes of appt;)
- (9) Wikis so visitors can start their own conversation;
- (10) Real time mash-ups of information when updated at original.
- (11) Hyperlink to agency
- (12) mailbox so user can keep a list of the agencies/calls of interest without having to do the search all over.

What would you like to see that we didn't enumerate? Please specify in your reply.