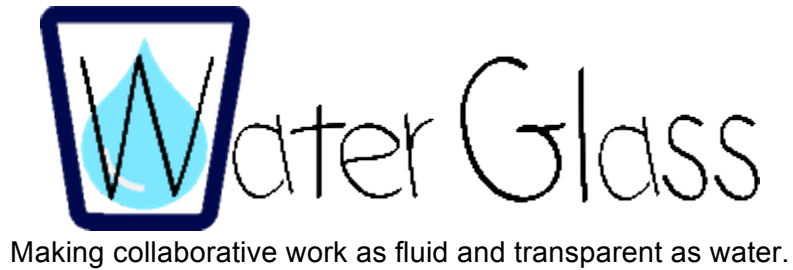


# Functional Specification

WaterGlass™ Collaborative Work: A Solution



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# 1.0 General Information

## 1.1 Purpose and Scope

This document is intended to define the purpose and specifications for the web-based application WaterGlass™.

### 1.1.1 Important Terms

Before we begin, we must clarify what is meant by several key terms that will be used throughout this document.

- **Social Justice Goals:** WaterGlass™'s purpose can be boiled down to two social justice goals: autonomy and accountability
  - **Autonomy:** Refers to the state of self-governing. In project management, it is crucial that team members are well-informed and able to directly contribute to project planning in a way that is meaningful and enables them to be self-directed in their work.
  - **Accountability:** Refers to an obligation or willingness to accept responsibility. While it is crucial that team members are able to be self-directed, it is equally important that team members are able to count on one another to finish important tasks.
- **Bandwidth:** A calculation completed by WaterGlass™ using a team member's provided skills and time available to determine how much work that team member/team is capable of taking on at a given time. Team bandwidth is determined by aggregating all members' individual bandwidth.

## 1.2. Application Description and Justification

### 1.2.1 Intended Audience

WaterGlass™ will facilitate collaborative work activities for teams without a strong background in project management or for teams that do not have an appointed project manager. Sample users include student work groups, community organizations, activist groups, small companies, and teams within larger companies without a project manager. What defines these teams is their ability, if afforded the opportunity, to be self-directed in the work they choose to complete, as well as their lack of access to enterprise level project management software.

### 1.2.2 Need for Application

Effective project planning is an essential component for success when any group of people intends to work together to accomplish a goal. Unfortunately, the process of assigning, delegating and tracking various tasks necessary for accomplishing group goals is often one that is tedious and inefficient. Our research has shown that there is a great need for a solution that will clarify project management tasks and reduce the time required for these tasks. What often

occurs under these circumstances is team members are added to projects with little or no communication and often without knowing their capacity or level of interest and skills relevant to the project goals and outcomes. As a result, we observed that team members often feel frustrated and powerless.

### **1.2.3 Solutions the Application Will Provide**

WaterGlass™ transforms collaborative work by providing a highly accessible web-based tool that adds transparency to project management in order to encourage accountability within a team, while enabling team members to maintain a strong sense of autonomy. WaterGlass™ will automate the pain points of project management (namely calculating bandwidth) in order to allow team members to make accurate and informed decisions about projects. Primarily, this application makes the process of project management a reciprocal one. This solution allows team members to approve a request, as well as know why they were chosen for a project after their bandwidth and skills were taken into consideration.

WaterGlass™ will also simplify the process of finding qualified and available team members when asking for help with specific projects and tasks. If a user experiences issues or comes across roadblocks for a task, they can use this application to seek help from team members with relevant qualifications. In respect to accountability, this application will automate communication between team members. When tasks are completed, a user checks a box next to the name of a task to indicate its status. Upon checking the box, the system generates an alert to any team member that has a responsibility contingent upon completion of the previous team member's task. When tasks are completed, the progress will also be reflected in the project status bar, which allows other members of the team, who may not be directly related to various tasks, to see progress, too.

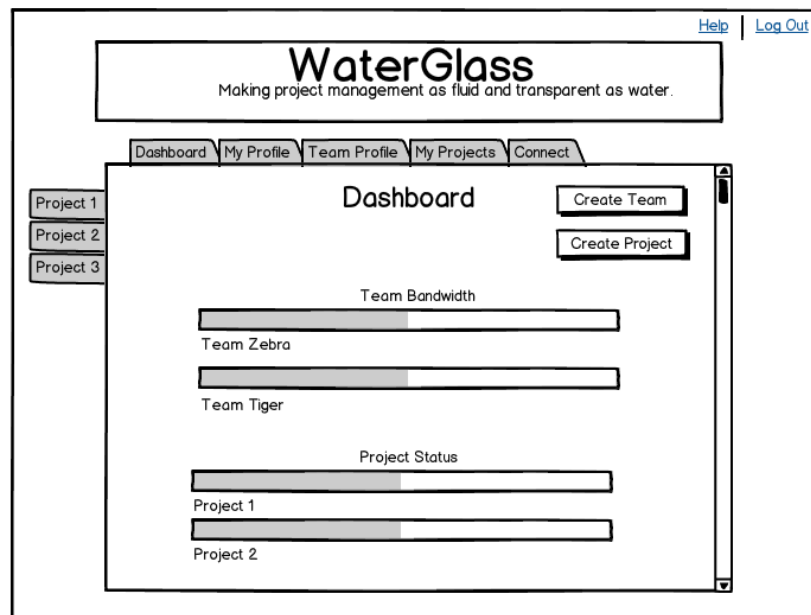
## 2.0 Design Overview

### 2.1 Layout of Application

#### 2.1.1 Interface Elements and Placement

##### 2.1.1.1 Dashboard Layout (See Fig. 1)

- For ease of navigation, project tabs are placed on the left of the page if the user wants to quickly access a project to determine its status or other relevant information.
- Team bandwidth allows each individual user to see the capacity of a team as a whole. This is helpful because the team's bandwidth is directly related to the ability of a team to take on a new project and can be verified before someone creates a new project within the application.
- Project status allows users to see their projects at a glance and know how much has been completed. The status bar will be comprised of the tasks assigned to each team member and the complexity or duration of the task; each task block within the bar will reflect the size of the task. If you hover over different blocks in the status bar, it will tell you what task it relates to. This allows users to see how their individual contributions affect the larger goal and objectives of the team.
- Create Team and Create Project buttons are placed on this page so users can consider the bandwidth of a team and the status of current projects before creating a new one for the team to add to their docket.



**Fig. 1: Dashboard Layout**

##### 2.1.1.2 My Profile Layout (See Fig. 2)

- The My Profile page is either generated using the skills from LinkedIn (or information inputted manually by the user) and data pulled from Outlook, iCal, or another calendar

tool, which is used to calculate individual bandwidth. The aforementioned information is also used to create a calendar for each individual.

- A user can see their personal calendar, which takes project deadlines and bandwidth into account and colors days in reference their availability. For example, if a Sarah Harris' bandwidth is full until she completes her project on December 14th, it will be red. After her project is completed by the deadline and her bandwidth reduces, her calendar will turn yellow, which will be displayed in the calendar.
- A user can also see their personal bandwidth, or if on a team member's profile, they can see the bandwidth of that team member.
- Skills are also a crucial part of this layout because many of the application's functions is contingent upon the presence of this information. These skills are taken into account when creating a project and searching for team members, in addition to searching for help when users encounter impediments.
- The notification center on this page houses all requests and alerts for individual users. If someone has requested to add them to a project, requested their help in solving an issue, or an action was completed in relation to a current project prompting them to complete an action, it will show up here when the user logs in. When a user checks off a task in the My Projects view, it will generate a notification to linked team members and will then show up in their notification center prompting them to take action.

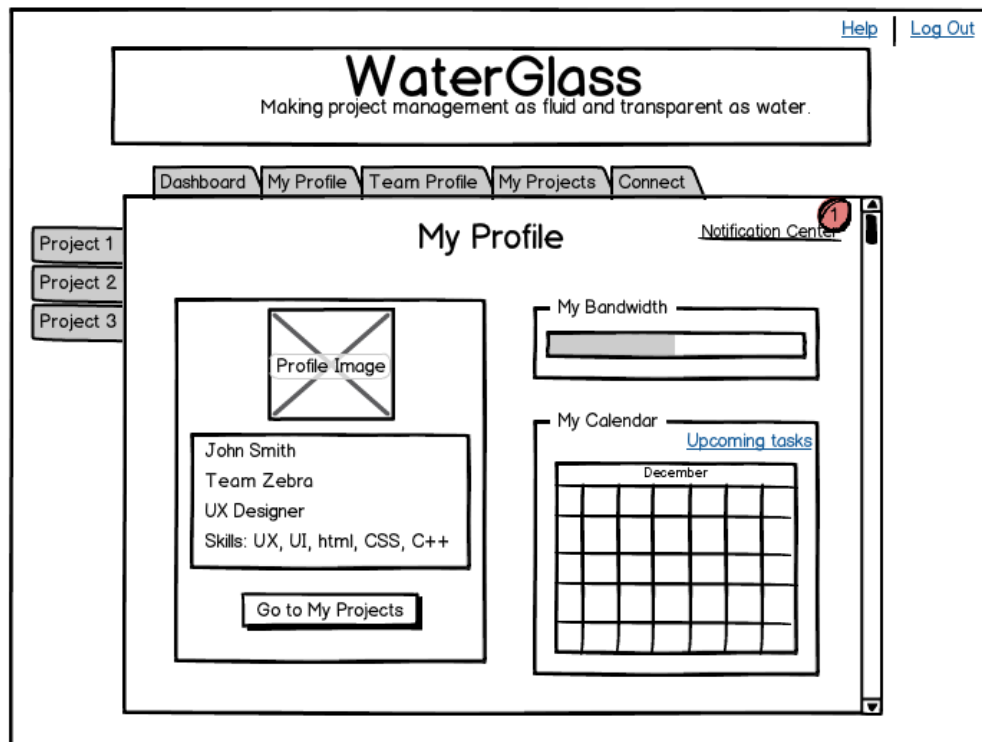


Fig. 2: My Profile Layout

## 3.0 User Roles and Tasks

### 3.1 Team Member

#### 3.1.1 Inadequacies of Current Scenario

In current uses, when project management tools fail, the following may occur:

- Team member roles and tasks are black-boxed. From our initial research, we observed that in group work, team members employ many different tools (Google Docs, email, handwritten notes, etc) to track and manage tasks in distributed work. This current scenario makes it difficult for team members to see the workflow of each other.
- Team members are overloaded with projects and tasks. Without a tool that makes bandwidth transparent, team members are often assigned to too many projects and are overcommitted.
- Little communication and/or justification for project assignment. User roles are determined with little explanation regarding which skills they were chosen to contribute or what purpose their role serves towards the project's goals and objectives.

#### 3.1.2 Description of Transformed Scenario

WaterGlass™ will enable teams to easily access and understand all of the information necessary for making informed project management decisions. WaterGlass™ hopes to transform the current scenario by

- allowing users to connect their existing LinkedIn accounts in order to pull information about their skills and abilities
- accessing Twitter, email and other social media sites that are already incorporated into users workflow in order to mediate the many different channels that information can be sent and received
- pulling information and data from personal calendars in order to automatically calculate their bandwidth--the basic determinant of whether a team can take on a given project and who in the team is capable of contributing to the project.
- providing a means for communication between team members, which improves accountability, by providing a notification center linked to completed tasks and users linked to those tasks.

By acting as a mediator of all the different tools people already use when working in groups, WaterGlass™ breaks down the walls of the black box that currently shroud individuals from working collaboratively towards a common end goal.

## 4.0 Screens

### 4.1 Functional Requirements

The WaterGlass™ system must facilitate the following activities in order to provide a valid project management solution for users.

- Users can connect their WaterGlass™ account with their existing LinkedIn accounts and Calendars. Connecting these accounts allows WaterGlass to use the skills in LinkedIn and time commitments in various Calendars to calculate an individual's bandwidth. Users must also be able to manually provide and/or adjust this information within their WaterGlass™ profiles.
- Users will be able to search for team members based on their skills and availability (bandwidth).
- Users will use search results when requesting that team members join a particular project or assist in completing a task.
- Users will be able to view requests and either accept or decline these requests. The requests will inform the user as to the nature of the request, and why they were chosen for a particular project.
- Users will be able to see a clear picture of what tasks they have to complete and when they are due.
- Users will be automatically notified when another team member completes a task on which the user is dependent.

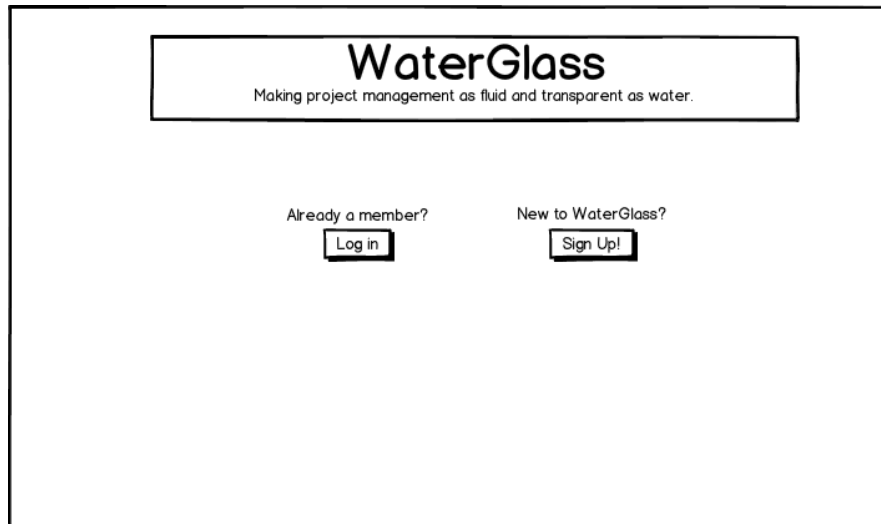
Because WaterGlass™ will be using third-party systems and softwares, it is important to know how we will be leveraging these services. To populate data for user profiles, WaterGlass™ will comb through LinkedIn Skills & Expertise, Summary, Job Titles, and Coursework. WaterGlass™ will find keywords that could be placed in a Skills section a user's profile in WaterGlass™. We will utilize personal calendar data in order to determine bandwidth. Our application is less concerned with daily tasks than with the ability to determine an individual's capacity over a certain period of time. In order to accurately determine bandwidth, team members will be required to ensure that their calendar accurately reflects their schedules. This application has the potential to improve accountability and efficiency of use of personal calendar systems since the data is a necessary component for WaterGlass to function properly and accurately.



## 4.2 Views & Objects

### 4.2.1 Log-In View (See Fig. 3)

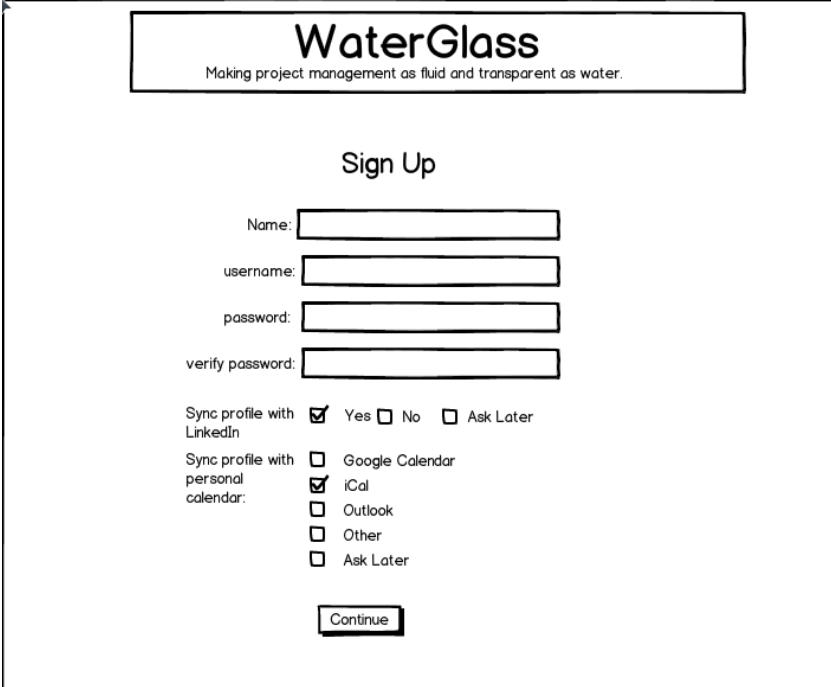
The Log-In View is the first screen users will see whenever they enter the WaterGlass™ application. It provides the easily recognizable options to log in to an existing account, or sign up for a new account.



**Fig. 3: Log-In View**

#### 4.2.2 Sign Up View (See Fig. 4)

This view becomes available if a new user clicks the “Sign Up” button in the “Log In View.” It includes the typical options of requesting the user’s name, username, password, and a request to verify the password. In addition, the Sign Up page provides the option for the user to connect their account to an existing LinkedIn account and/or personal calendars. Other optional accounts to link to WaterGlass™ that aren’t reflected in the sign up view are Twitter, Facebook, email, and any other social media site that people use to send and receive information. It is crucial to include the ability to link accounts that are already incorporated into users workflow, as well as to make it optional.



The image shows a sign-up form for WaterGlass. At the top, the logo "WaterGlass" is displayed with the tagline "Making project management as fluid and transparent as water." Below the logo, the heading "Sign Up" is centered. The form contains four input fields: "Name:", "username:", "password:", and "verify password:". Below these fields are two sections of checkboxes. The first section is "Sync profile with LinkedIn" with options "Yes" (checked), "No", and "Ask Later". The second section is "Sync profile with personal calendar:" with options "Google Calendar", "iCal" (checked), "Outlook", "Other", and "Ask Later". At the bottom of the form is a "Continue" button.

**Fig. 4: Sign Up View**

### 4.2.3 My Profile View (See Fig. 5)

This is the user's home base. It enables users to check their notifications, their personal bandwidth, and see upcoming due dates on their calendar. It also enables them to add a profile image and update their skills or availability as needed. This page should look familiar to any user with a profile on another web application. For a more detailed look at the Profile View, review section 2.1.1.2 of this document.

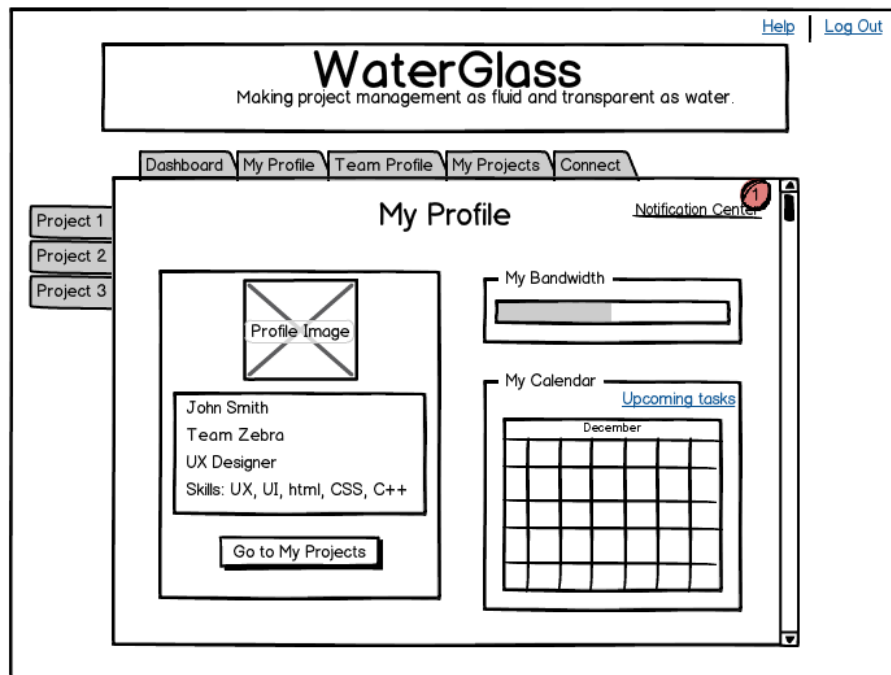
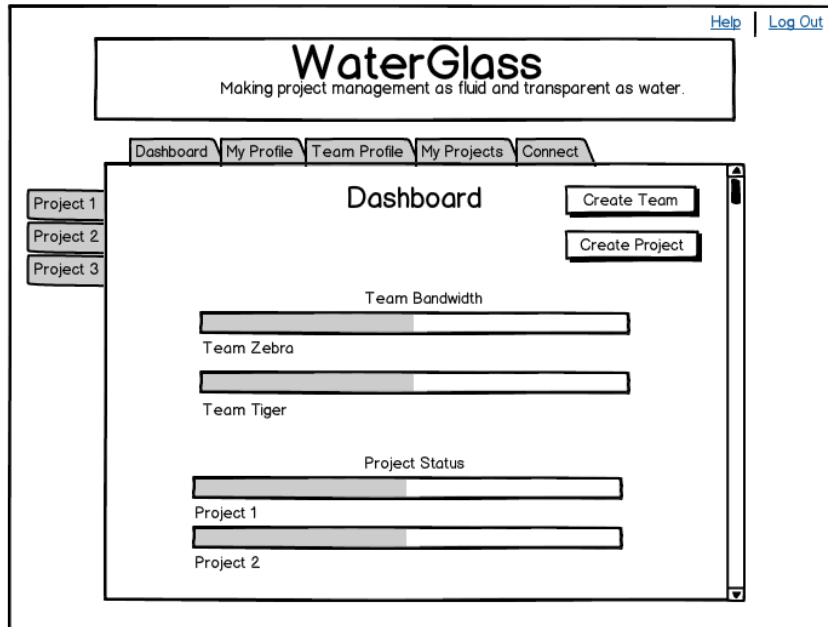


Fig. 5: My Profile View

#### 4.2.4 Dashboard View (See Fig. 6)

The Dashboard View gives users an overview of the status of the various teams and projects of which they are a part. The information in this view must be updated dynamically as projects are added and updated elsewhere in the application. Automating the information on the dashboard includes that it remains accurate and reflects all relevant information. For more information on the Dashboard View, view section 2.1.1.1 of this document.



**Fig. 6: Dashboard View**

#### 4.2.5 My Projects View (See Fig. 7)

The My Projects View provides a more detailed overview of a user's active projects than the Dashboard. Like the dashboard, it enables the user to see quickly the status of each of their projects. The My Projects View also shows users the individual tasks for which they are responsible and the related team and project. This table by default should show tasks in the order in which they are due. Users can check off these tasks as they are completed. Once a task is checked off, the project status and the team member's bandwidth levels are adjusted accordingly throughout the application. In addition, a notification is then sent to any team member who is also working on the project.

**WaterGlass**  
Making project management as fluid and transparent as water.

Dashboard | My Profile | Team Profile | My Projects | Connect

Project 1  
Project 2  
Project 3

**My Projects** Notification Center

Project 1 Status

Project 4 Status

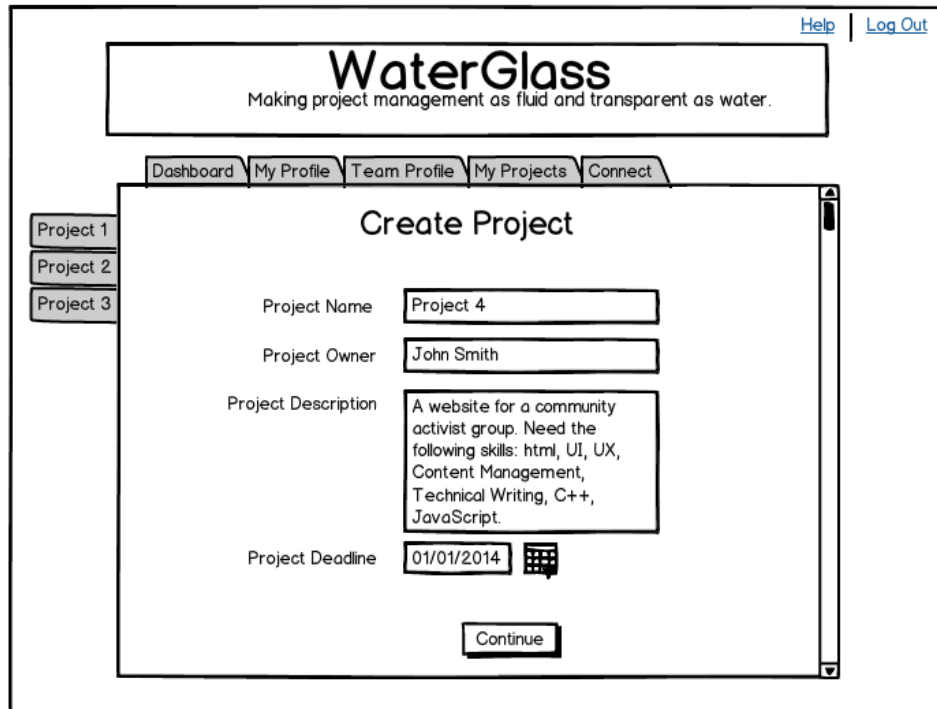
**Upcoming Tasks**

Task	Project	Team	Complete
Make Wireframes	1	Zebra	<input checked="" type="checkbox"/>
Draft Spec Report	1	Zebra	<input checked="" type="checkbox"/>
Prepare Presentation	1	Zebra	<input checked="" type="checkbox"/>
Edit Presentation	1	Zebra	<input checked="" type="checkbox"/>
Review Deliverables	1	Zebra	<input type="checkbox"/>
Draft Project Memo	4	Tiger	<input type="checkbox"/>

**Fig. 7: My Projects View**

#### 4.2.6 Create Project View (See Fig. 8 and Fig. 9)

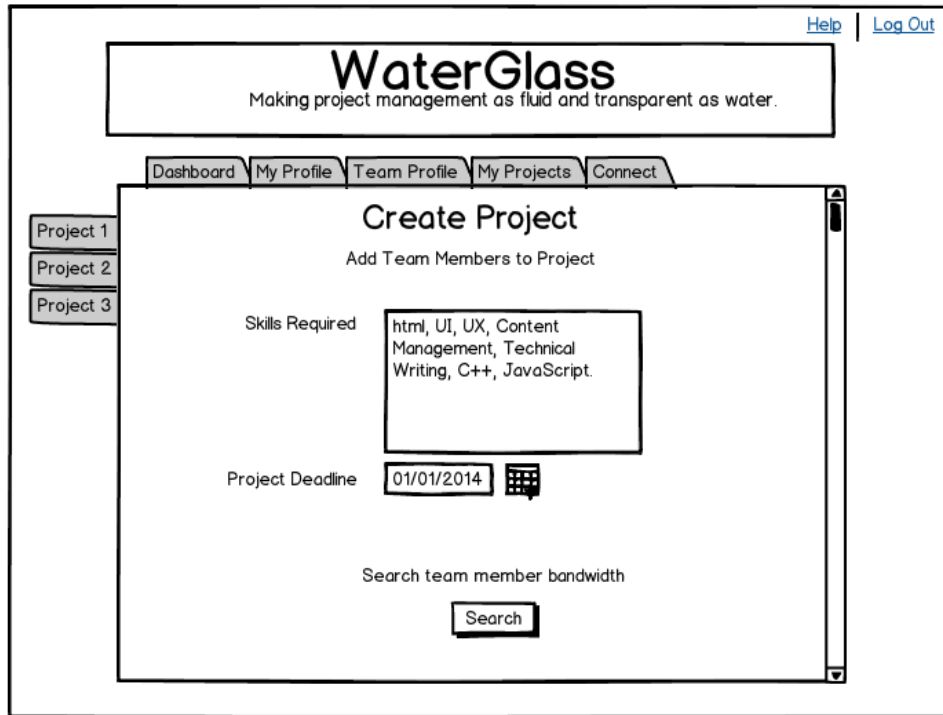
The Create Project View enables any user to add a new project to WaterGlass™. Users input all relevant information about the project, and are then able to search for collaborators based on bandwidth (available time and required skills). Basic information required to create the project should include a project name, owner, description, deadline, and required skills. Once the required skills and timeline for the project have been established, the user can then search through team members to determine who has the right combination of available time and skills to complete the project.



The screenshot shows the 'Create Project' form in the WaterGlass application. The header includes the 'WaterGlass' logo and the tagline 'Making project management as fluid and transparent as water.' Navigation tabs for 'Dashboard', 'My Profile', 'Team Profile', 'My Projects', and 'Connect' are visible. A sidebar on the left lists 'Project 1', 'Project 2', and 'Project 3'. The main form fields are: 'Project Name' (Project 4), 'Project Owner' (John Smith), 'Project Description' (A website for a community activist group. Need the following skills: html, UI, UX, Content Management, Technical Writing, C++, JavaScript), and 'Project Deadline' (01/01/2014). A 'Continue' button is at the bottom.

Project Name	Project 4
Project Owner	John Smith
Project Description	A website for a community activist group. Need the following skills: html, UI, UX, Content Management, Technical Writing, C++, JavaScript.
Project Deadline	01/01/2014

Fig. 8: Create Project View (1)



**Fig. 9: Create Project View (2)**

#### 4.2.7 Create Project: Search Results View (See Fig. 10)

This view is populated with the search results generated after a project is created. It provides an overview of all available team members. It should include the team members' names, profile images, specific matching skills, and bandwidth. Users have the option to click on a team member to view their profile for more information, or to immediately send a request to join the project.

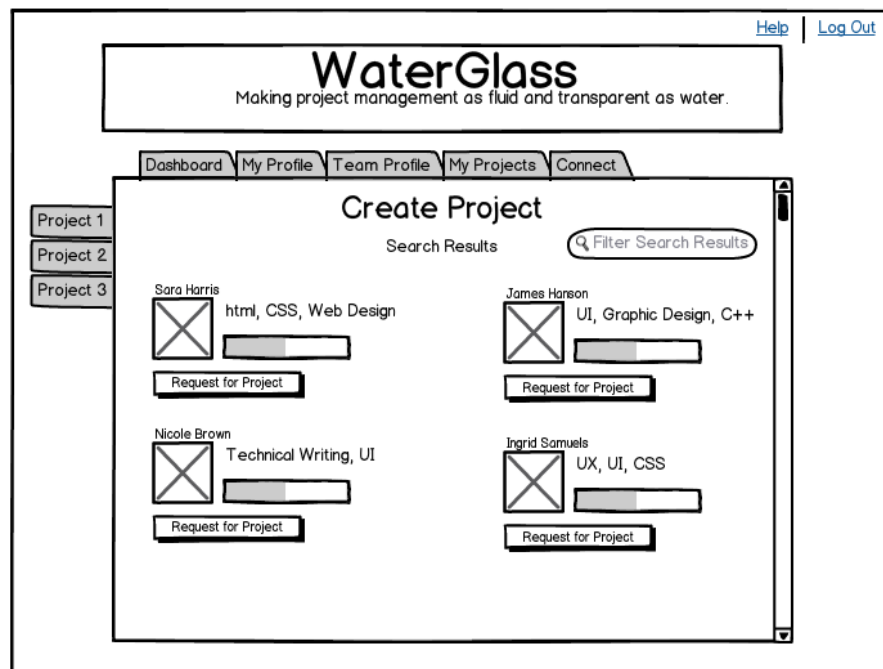
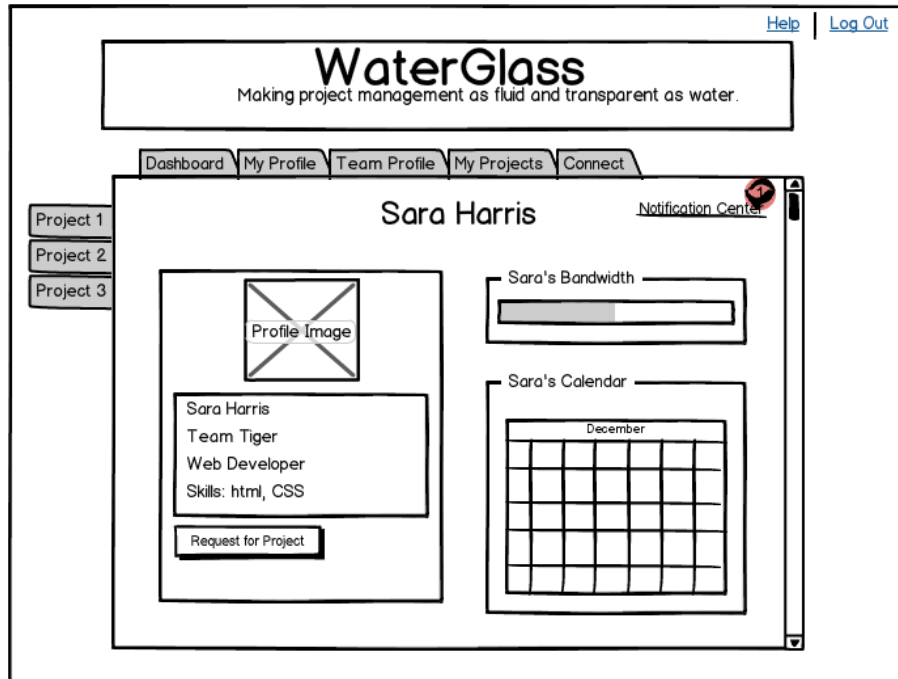


Fig. 10: Create Project: Search Results View



#### 4.2.8 Team Member Profile View (See Fig. 11)

This view allows users to see profile information for any other team member. The information is most valuable when determining which team members should be invited to join a project or send a request for help on a particular task. However, it does not include the ability to edit another team member's profile information or settings, as in the user's own profile.



**Fig. 11: Team Member Profile View**

#### 4.2.9 Connect View (See Fig. 12)

This view enables users to efficiently seek help when they come across an impediment in one of their tasks. First, they are able to choose a specific task from a list of all currently active tasks, describe the nature of the impediment, and the skills required to provide help.

The screenshot displays the 'WaterGlass' application interface. At the top, the logo 'WaterGlass' is centered with the tagline 'Making project management as fluid and transparent as water.' Below the logo is a navigation bar with tabs for 'Dashboard', 'My Profile', 'Team Profile', 'My Projects', and 'Connect'. The 'Connect' tab is active. On the left side, there is a vertical list of project buttons labeled 'Project 1', 'Project 2', and 'Project 3'. The main content area is titled 'Connect' and contains the instruction 'Ask Team Members for Help or Search for Skills'. It features a 'Select Task' dropdown menu with 'Draft Project Memo' selected. Below this is a 'Description' text area containing the text: 'Having difficulty with formatting. Need a technical writer to assist me. Please and thank you! :)'. At the bottom of the form, there is a 'Skill(s)' input field with 'Technical Writing' entered, and a 'Search' button. In the top right corner of the application window, there are links for 'Help' and 'Log Out', and a 'Notification Center' icon with a red circle containing the number '1'.

**Fig. 12: Connect View - Input Data**

#### 4.2.10 Connect View (See Fig. 13)

This view is automatically generated as a result of the search conditions input by the user in the Connect View. Users are provided with a list of team members with the appropriate combination of skills and available time. The user can use the information to determine who to ask for help, and then finalize the request. The next time the team member whose assistance has been requested logs in, they will see a notification of the request and then can accept or deny the request.

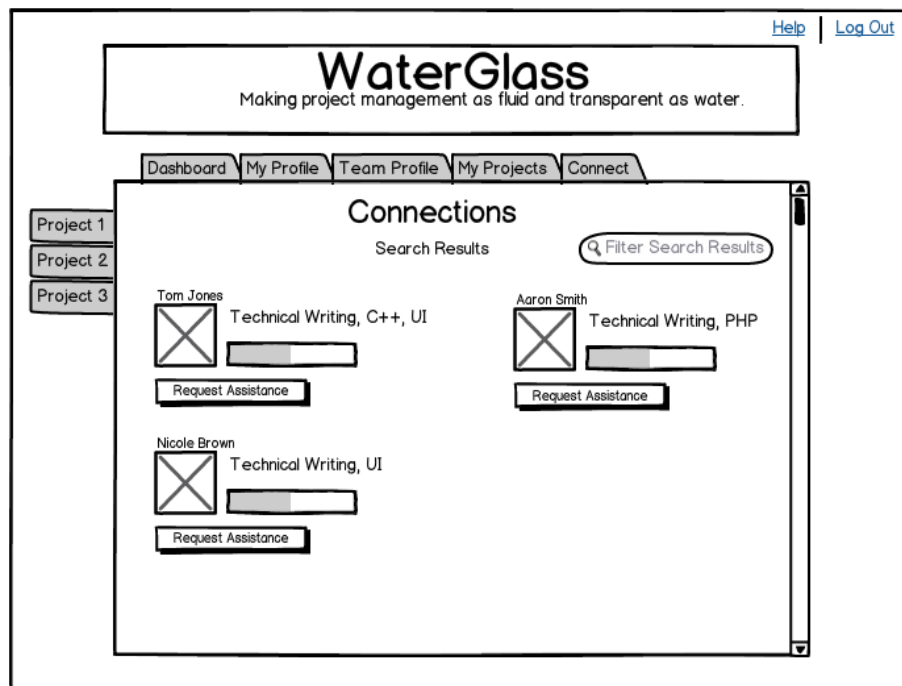
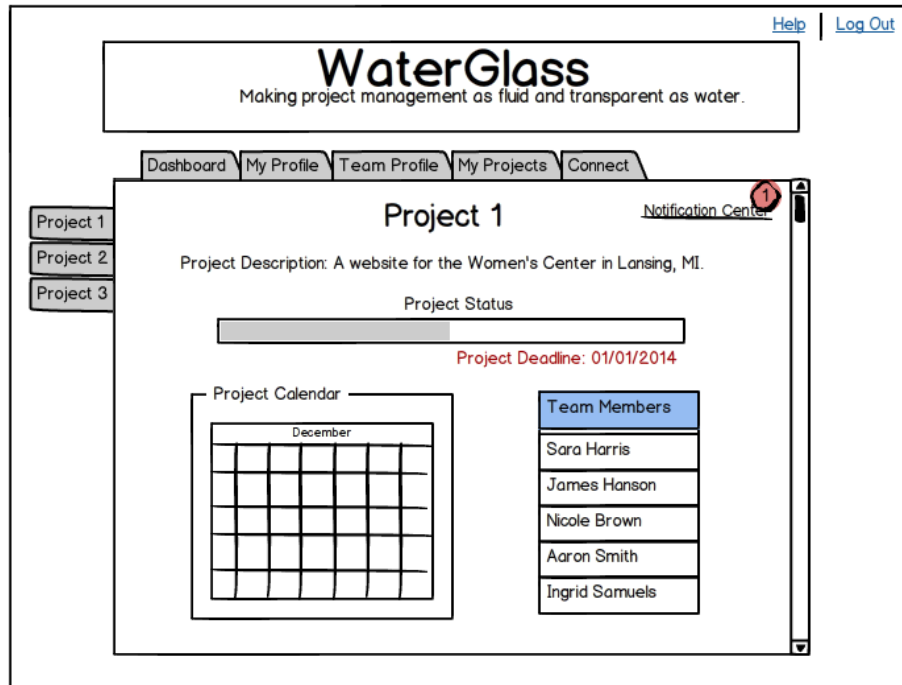


Fig. 13: Connect View - Search Results

#### 4.2.11 Project Page View (See Fig. 14)

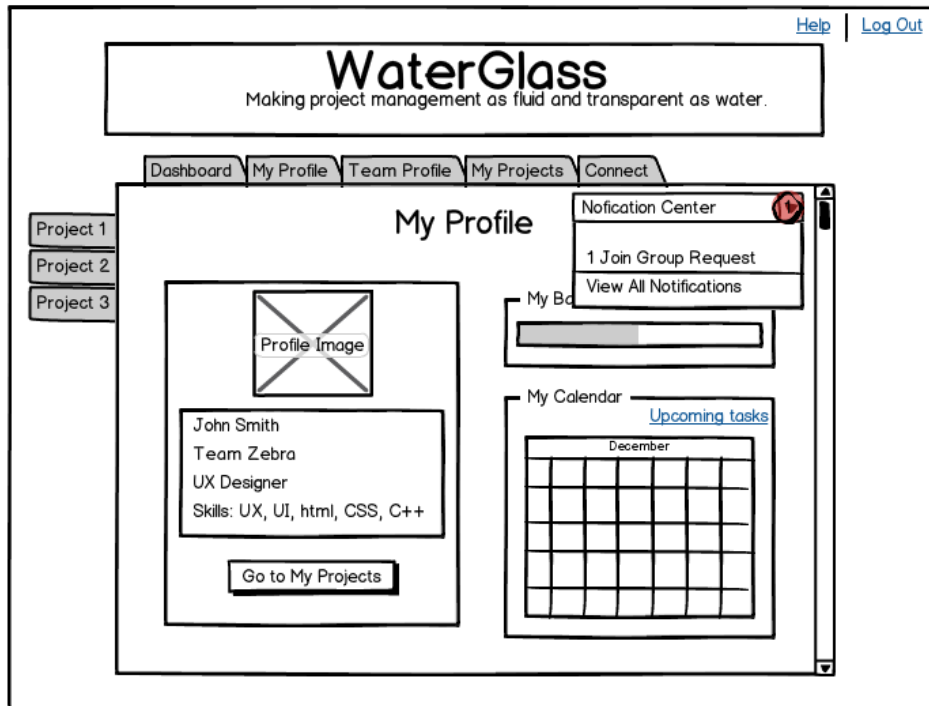
Project page views are accessible from the side tabs for immediate access. Users can click on any open project to see all of the specific information related to that project: overall status, project members, upcoming tasks, etc.



**Fig. 14: Project Page View**

#### 4.2.12 Notification Center Drop-down View (See Fig. 15)

The notification center is accessible in all views in WaterGlass™ once a user is logged in. When clicked, a drop-down list informs users when they have new notifications and allows them to access those notifications.



**Fig. 15: Notification Center Drop-down View**

#### 4.2.13 Notification Center (See Fig. 16)

This view provides an overview of all notifications for a specific user. These include requests to join new projects, requests for help with specific tasks, and project updates. This view should provide a collapsed view of each of the notifications. This collapsed information should include the type of notification, who sent the notification, when a response is due by, and options to accept or deny the request. In addition, there must be an option to see More Information.

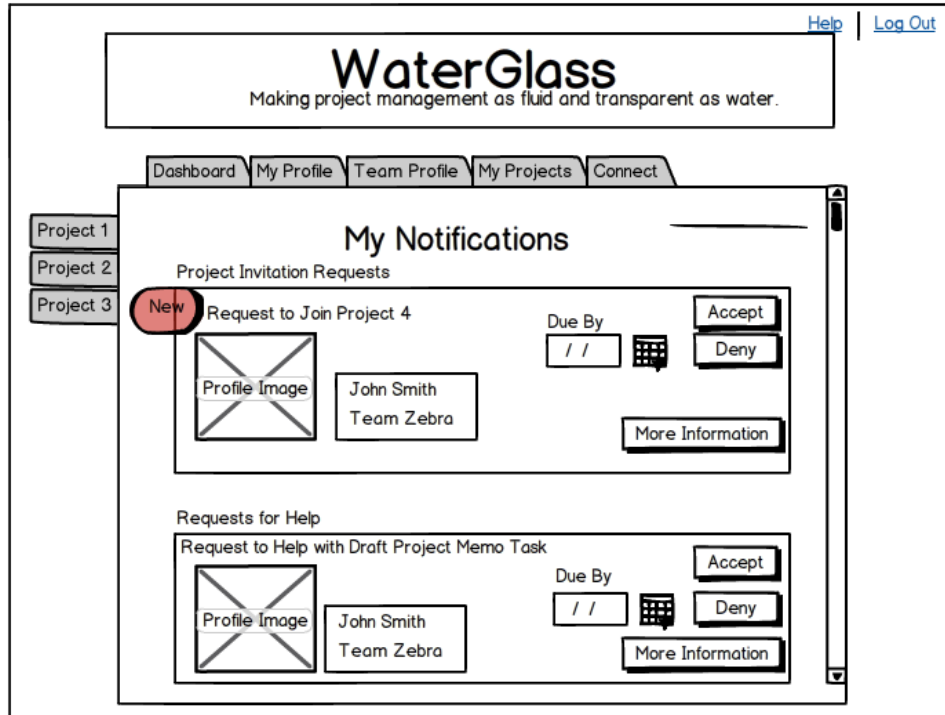
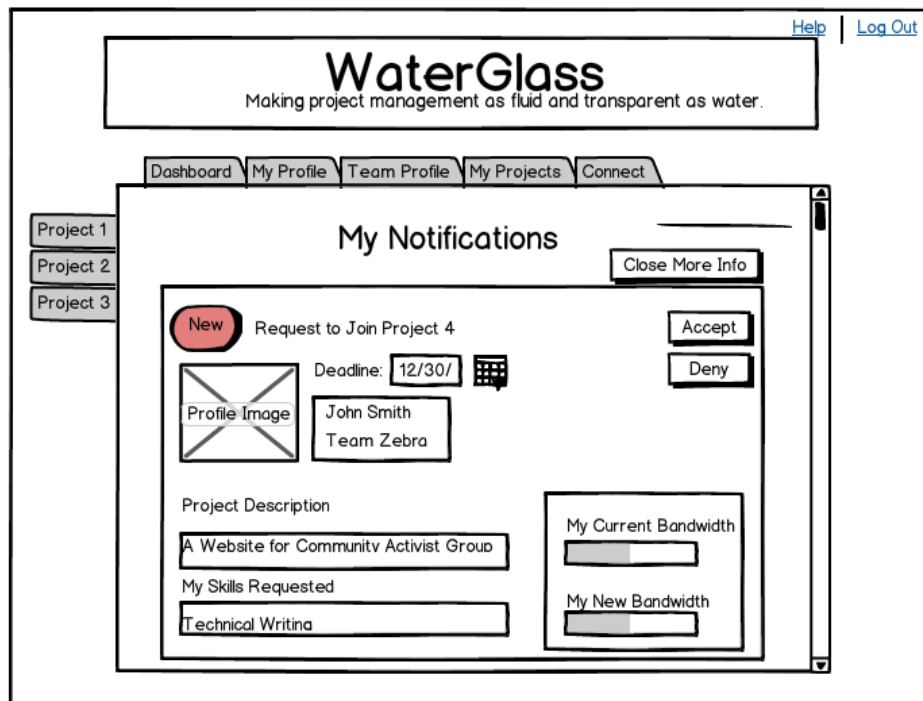


Fig. 16: My Notifications View

#### 4.2.14 My Notifications (See Fig. 17)

If the user selects the more information button, that particular notice will expand to show a detailed view of that request. This detailed view will show all of the information available in the collapsed view, as well as a description of the work requested, the skills that will be used, and how accepting the request will impact the user's bandwidth.



**Fig. 17: My Notifications Expanded View**

## 5.0 Validation Requirements

To this point, the design of WaterGlass™ has been validated through three key development stages: activity analysis, contextual design, and prototyping.

### 5.1 Methods

#### 5.1.1 Activity Analysis

The first stage of our research clearly showed current gaps in the process of project management. We determined through fly-on-the-wall observations of current practices that

- 1 Current groups typically use multiple tools to store project management related information in order to supplement gaps in each tool.
- 2 The use of multiple tools often results in team members spending more time updating and trying to understand the tools than they do analyzing the information and making effective project planning decisions. (See Chart 1)
- 3 Team members often abandon or work around the existing tools in order to get to the actual project management tasks. (In the case of the student work group.)

Activity Log: Observation 1  
Thursday, September 13, 2012  
TechSmith Camtasia Core Team

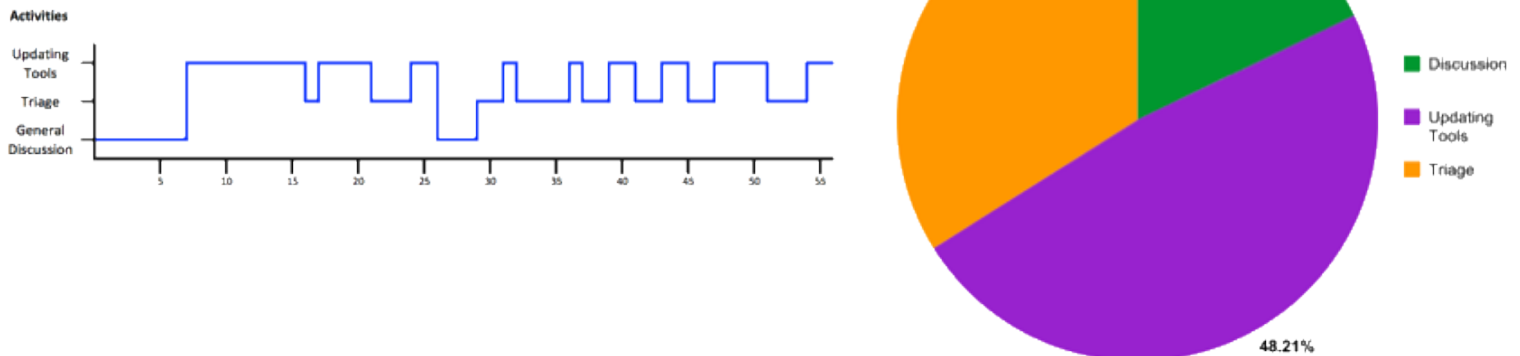


Chart 1: Project Management Analysis

#### 5.1.2 Contextual Design

Using qualitative research methods, we actively observed project management work in order to determine the required functionality of our project management solution. By asking questions during these observations, we are able to determine the reasoning behind certain decision making processes as well as areas that are important to individual users. This research has shown the important information needed to effectively manage projects and the relationship between team members and projects. (See Chart 2)



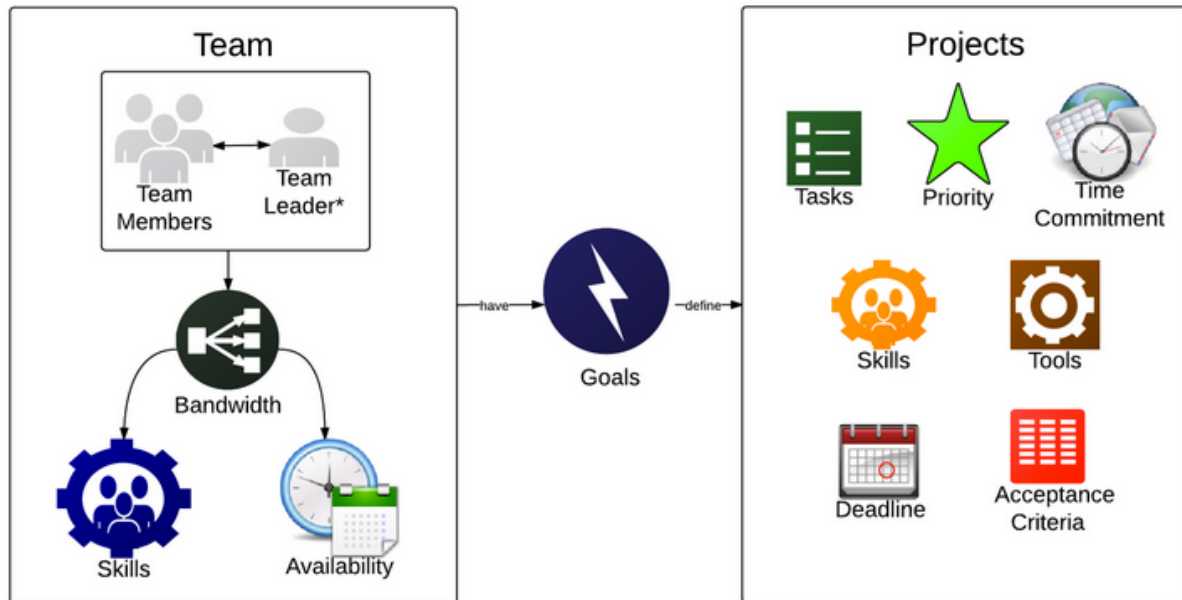


Chart 2: Project Management Class Diagram

This research has shown that team members are more invested in their work if they are involved in the decision making process. When team members are simply handed projects to complete without understanding that decision making process, the end result can be a lack of motivation and feelings of resentment toward the assigned project.

### 5.1.3 Prototyping (Usability Testing)

To this point, we've tested primarily paper prototypes to gain user feedback on layout and discoverability. These informal tests have been used to create the slightly more developed Balsamiq prototypes, which we then used to create a user experience in the InVision app. In order to continue developing WaterGlass™, we will need to conduct further tests with the Balsamiq prototypes. Once these have been fully developed, we will move on to creating a more formalized prototype in order to conduct additional Usability Tests with focus groups. In every stage, this will continue to be a thoroughly iterative process of making small changes and obtaining immediate user feedback. At no point will expansive changes be made without 1. ensuring that the changes remain in line with our activity analysis and contextual design research and 2. obtaining user feedback to further justify the changes and make any alterations as needed to fully account for the user feedback.

## 6. Results

### 6.1 User Testing

Our usability testing consisted of finding individuals of varying backgrounds to navigate our user experience created in InVision App. At this point in our research, all test subjects responded positively to design choices regarding usability and accessibility of the product (i.e. buttons, size buttons, button location, layout, etc).

## 7. Risk Analysis

Though the research clearly points to both a need and a strong potential market for WaterGlass™, a number of risks to its development must still be documented and accounted for. These risks include:

- Overcoming working team's disinclination towards project management tools created by the shortcomings of existing solutions.
- Differentiating WaterGlass™ from current project management tools in order to encourage its adoption.
- Balancing the need for flexibility within the system to account for different types of work groups while creating strong enough scaffolding to guide and support varying user levels.
- Appropriately monetizing the system while enabling universal access for all levels of work teams.

## 8. Future Steps

A number of steps must still be taken in order to ensure that the WaterGlass™ system is designed in such a way that it will legitimately remove the current pain points related to project management without creating new problems. These steps include the following.

- Perform additional user testing with current prototype screens.
- Analyze results from user testing in order to modify prototypes and create a thoroughly discoverable user interface.
- Once the UI has been fully determined, work with a small development team to create a fully functioning WaterGlass™ prototype.
- Conduct formal usability tests with several focus groups.
- Determine potential revenue models in order to develop a strong business case.