Detailed Request for Proposal
for
Smart Shower Management System

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Version 1.1

Prepared By
WetSoft Inc.

Executive Summary

Showering is an important part of everyone's day; it relaxingly starts off the morning, until the hot water runs out, that is. WetSoft Inc. has a dream to bring an end cold showers everywhere by turning that simple shower into a Smart Shower Management System, complete with the latest in shower monitoring technology.

The idea of combining smart technology with low-tech showers will allow users to easily monitor and react to ever changing hot water levels, adjusting their shower temperature and duration where necessary. With this knowledge, the users will not only be more aware of their impact on others and the environment, but also save energy thanks to using less hot water.

The Smart Shower Mangement System must abide by the following conditions (including but not limited to):

- Display remaining hot water levels in time and percentage to the user currently showering
- Allow the user to set a shower routine - the system controls the shower duration upon a predefined schedule set by the user
- System consists of a waterproof and intuitive interface
- Ability to retrofit many to all hot water tanks and showers to accommodate the product while being minimally invasive

WetSoft Inc. believes that the Smart Shower Management System will change the way people shower. We know the market is there, people shower, we just have to make it smart. With this proposal we offer the chance to join an industry with a strong user base. It is time to bring the shower into the 21st century.

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	Smart Shower Management System
2016-01-21	**Version 1.1**

Version	When	Who	What
1.0	2016-01-7	Justyn Houle	Initial Drafting
1.1	2016-01-21	Justyn Houle, Brandon Harvey, Sam Taylor, Graeme Turney	RFP Refinement

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1.0 Problem Description

When multiple people in a household take a shower during the same time period, the last one to shower is usually left with little or no hot water. This is a simple issue where the people who took their shower first are not aware of how much hot water they are using, therefore taking a leisurely and unnecessarily long shower. This often leads to the next user feeling unsatisfied with their showering experience due to a lack of hot water.

The problem stems from the fact that no user is able to easily and quickly determine how much hot water is available in their hot water tank. Hot water tanks never empty. Instead, cool water is constantly fed to the tank. This water is then heated in the tank and whenever someone wishes to use hot water, the tank provides the water regardless of temperature. This is why a user who is showering with a low quantity of remaining hot water still receives water, but at a lower temperature.

The Smart Shower Management System hopes to solve this problem by providing a user controlled interface that monitors and controls the usage of hot water on a per user basis.

2.0 Project Objectives

This section details the functionality and features that are required to create the Smart Shower Management System.

- Display remaining hot water levels in time and percentage to the user currently showering
    - Show warnings when hot water level is low (~20% hot water left)

- Allow the ability to create user profiles which save shower routines
    - User profiles can also save the user's preferred temperature of water for the system to output. This temperature will be the default temperature for that user. If no preferred temperature is provided, default to the last used temperature.
    - When creating a new user, these fields are to be completed:
        - User's name (required)
        - Routine (optional, setup of a new user prompts to make a routine but this step can be skipped)
        - Preferred temperature (optional)

    - Profiles track statistics on water uses which include (but are not limited to) the following:
        - Average water temperature

        - Average time spent in shower (total)
        - Average time spent in shower (using water)
        - Average amount of hot water used per shower

- Allow the user to set a shower routine
    - Example: stage 1: 1 minute drench (water on), stage 2: 1 minute lather (water off), stage 3: 2 minute rinse (water on), done (water off)
    - Allow the user to choose whether the stages of the shower routine progress automatically by the system or if the user has to manually turn off/on the water and only notifications are shown to the user to tell them to turn the water on/off.
    - Allow each stage to be named by the user with defaults to “stage 1, stage 2 etc..”
    - Shower routines are bound to the profile which created the routine.

- Water is always default to off. The water can be turned on after the user has selected a profile and has knowledge of what temperature the water will be.

- Allow user to ‘logout’ when they are done their shower so that statistics can be reliably tracked
    - Automatically logout current user if no water has been used by the shower for the past 5 minutes (5 minute timer can be changed)
        - Logout timer will not be accounted for in average total time spent in shower

- Display to the user how much hot water is left (percentage and time)

- Display the temperature of the water that is currently being dispensed

- Allow changing temperature of the water being dispensed through the interface

- Allow user to control whether the water is running or not

- Waterproof touch screen interface
    - Displays a list of selectable user profiles to access personal shower schedules

- Ability to retrofit many to all hot water tanks and showers to accommodate the product while being minimally invasive
- Should the system fail (e.g. power outage, electronic failure, etc.) the system shouldn’t prevent the shower from normal operation (manual operation)

3.0 Current System(s)

The current system deployed at a user's home only involves the shower head, hot water tank and the plumbing between the two. The plumbing simply transports the hot water from the hot water tank to the shower head. Control of the heat of the water is usually done by adjusting the amount of hot and cold water flowing to the shower head to achieve a comfortable mixed temperature. Currently the only reliable feedback to determine the temperature of the water is for the user is to physically touch the water. This system has no way of tracking the amount of hot water that has been used or the amount of hot water left in the hot water tank. This system also has no way of determining the amount of time spent in the shower.

4.0 Intended Users and Interaction

The target user is someone living in a household with a shower that is used by multiple people where hot water usage is a problem. This involves users of ages 6 and older. They interact with the system through a waterproof touch screen present inside the shower, or somewhere easily accessible around the shower. The user can easily see and interact with the touch screen while taking a shower. The intended users are not experts of plumbing systems so the the information displayed on the interface needs to be accessible and understandable to the common user.

5.0 Known Interaction with other Systems

The Smart Shower Management System will require interaction between two other existing systems that are already installed in a user’s home, the shower and the hot water tank. The system must be installable with the various shower and hot water tank systems available on the market.

- Hot water tank
    - Must track remaining hot water level, displayed in both time (rough) and percentage remaining

- Shower head / bath faucet
    - Track the hot water flow through the shower head or bath faucet to determine changing hot water levels

6.0 Known Constraints to Development

This section details the constraints on the development of the Smart Shower Management System. The developers of the application will have approximately 3 months of development time enforced once their reply to the RFP is accepted. There will be funding provided by WetSoft to develop the prototypes and the final product. However, this funding will be negotiated after this RFP is received by the development team. WetSoft will discuss funding options with the development team based on their expertise and the time constraints. If the development team goes over budget, WetSoft will re-enter negotiations with the team to determine if additional funding is available for the development of the application. A constraint on the final product is that the system must be able to be installed on existing shower and hot water tank technologies. The interaction that the system must exist between these technologies is detailed in section 5.

7.0 Project Schedule

The following table details the proposed project schedule for when deliverables from the development team are due. These deadlines are strictly enforced.

Deliverable	**Date**
Review of Related Products and Projects	January 22, 2016
Functional Specification and Management Plan	February 16, 2016
Detailed Requirements Specification	March 1, 2016
Demonstration of Initial Prototype	March 3, 2016
Final Requirements Specification	March 15, 2016
User Manual	March 22, 2016
Demonstration of Final Prototype	March 29-31, 2016

The exact date of the demonstration of the final prototype will be determined closer to the deliverable date.

8.0 Project Team Requirements

An ideal development team would have at least four members, where the sum of the team is able to fill the following roles:

- Project Lead
- Webmaster
- Toolsmith
- User Interface Expert
- Analyst - Testing
- Technical Writer
- Design Expert - UML Diagrams

The project lead is the main point of contact between the development team and all members of WetSoft. The development team will also need to provide a website, managed by the webmaster, where WetSoft members can periodically check up on the developments team deliverables. It is highly recommended for the development team to have at least one dedicated analyst for testing the application at its various stages of development. The majority of the deliverables for the development of this application is written documentation. Therefore, it is expected that the development team have experienced technical writers and design experts for the creation of requirements documentation and UML diagrams.