

Software Requirements Specification

for

U-Survey

Version 0.1

Prepared by CellSurv

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Name	Date	Reason For Changes	Version
Wes Paugh	7/2/09	Initial Submission	1.0

1. Introduction

1.1 Purpose

This product is a presenter control application that is a web-based service, which shall interact with mobile communication devices, such as cell phones. It shall be utilized by students in a classroom setting or presentation environment.

1.2 Document Conventions

- The Stimulus / Response section of the System Features section occasionally includes optional branches to the central stimulus / response path. These branches are labeled Stimulus:(Optional1), Response:(Optional1), etc., to indicate the stimuli and responses for a unique branch 1. A second, independent branch (2) in the same Sstem Feature with unrelated functionality would be labeled by S:(Optional2), and so forth.
- The Stimulus / Response section of the System Features section occasionally includes reference to actions that a described user must take with hardware or software systems other than those within the scope of the UMO / CellSurv developed software. Such instances will be flagged as such: Stimulus(External):.

2. Overall Description

2.1 Product Perspective

U-Survey is a new product designed to ease the process of taking surveys during presentation sessions. Convenience is achieved by enabling users to utilize their mobile devices to use the system.

2.2 Operating Environment

The system shall be accessible through The Internet. Thus, it inherits all of the security issues and concerns that come from using The Internet. Also, the system must be accessible by many different cell phones browsers. However, older cell phone models may need to use the SMS text service to access the system.

2.3 Design and Implementation Constraints

The software shall make use of the established SMS protocol for receiving text messages from cell phones. Development of software to provide this feature beyond a simple interface is outside the scope of the project, so an existing solution must be used. It is therefore a project requirement that any technologies used be compatible with such a solution, including language and development libraries.

Eventually, it is a goal of the Product Owner to port the software to device-specific platforms, such as an iPhone or Nokia Symbian application to provide an interface to Audience Member functions. Constraints posed by this goal have been deemed not worth considering for the initial release of the software due to the goal's low priority and the small scope encompassed by the Audience Member features.

2.4 User Documentation

To Be Determined

3. System Features

3.1 User Authentication with UMO Server

3.1.1 Description and Priority

Users, both the presenter and audience members, will need to be able to log in to the software to begin using the other System Features. Personal identification is a high priority, as it satisfies safety requirements for the system. However, the high priority of the feature is offset by the simplicity of implementing it, making the overall risk for this feature low to moderate.

3.1.2 Stimulus/Response Sequences

Stimulus: User accesses UMO website

Response: System prompts user for login information

S: User enters login information and gestures to submit login information to the system.

R: System verifies log in information and routes the user to the appropriate web location for the user's account (a presenter interface or an audience interface)

3.1.3 Functional Requirements

REQ-1: User textual input shall be collected and displayed to the user for log in information.

REQ-2: One clearly labeled input mechanism shall exist which collects the user's username, and is visible to the user as he is supplying it.

REQ-3: One clearly labeled input mechanism shall exist which collects the user's password, and is coded as asterisks as he is supplying it.

REQ-4: Contents of both fields shall be collected and submitted for authentication when the user gestures to log in.

REQ-5: A descriptive and concise error message shall be presented to the user in the event of syntactically invalid or missing authentication credentials

REQ-6: A descriptive and concise error message shall be presented to the user in the event of syntactically valid authentication credentials that do not match an existing account

3.2 User Registration with UMO

3.2.1 Description and Priority

The first time a user accesses the system, she must create an persistent account for personal identification with future use of the system. Initially, this account will include only a username and password, but may be expanded if additional information is required. As the authentication feature is dependant on registration, registration is also a high priority, and is similarly straightforward to implement, making registration a low-to-medium risk feature.

3.2.2 Stimulus/Response Sequences

Stimulus: User accesses the system

Response: System displays the account authentication page

S: User gestures to create an account

R: System displays the account creation page, prompting the user for a unique username and password, and user class (presenter or audience participant)

S: User provides textual input for Username

R: System displays username input

S: User provides textual input for password

R: System retains password input, but displays asterisks for each password character put in.

S: User indicates her user class (presenter or audience participant)

S: User gestures to submit account information and create an account

R: System stores account information, logs the user in to the new account, and navigates to the appropriate web location for the user's account (a presenter interface or an audience interface)

3.2.3 Functional Requirements

REQ-1: UI element is accessible from the log in page which allows the user to navigate to the account creation screen.

REQ-2: The account creation screen presents the user with prompts for username, password, and user class.

REQ-3: The system provides confirmation that the account creation process was successful.

REQ-4: Should the user attempt to create an account with a username that has already been registered, the system presents the user with an error message describing the problem.

3.3 Authentication with UMO Server Using OpenID

3.3.1 Description and Priority

After authentication with either an OpenID or UMO account, a user may, at any time, terminate use of the system. Doing so will remove access to system features and return the user to the authentication prompt.

3.3.2 Stimulus/Response Sequences

Stimulus: User gestures to log out of the currently authenticated account

Response: The system cleanly terminates any user or systprocesses in progress

S: User provides authentication credential

S: User indicates that provided authentication credentials are associated with an OpenID account

S: User gestures to submit authentication credentials and attempt login.

R: System submits authentication credentials to OpenID server for verification and, if successful, routes the user to the appropriate system location for the account.

3.3.3 Functional Requirements

REQ-1: One clearly labeled input mechanism shall exist which collects the user's username, and is visible to the user as he is supplying it.

REQ-2: One clearly labeled input mechanism shall exist which collects the user's password, and is coded as asterisks as he is supplying it.

REQ-3: Clearly labeled input mechanism shall exist which allow the user to submit the provided authentication credentials

REQ-4: Input mechanism shall exist to allow the type of account associated with the provided authentication credentials to be specified as either UMO or OpenID

REQ-5: A descriptive and concise error message shall be presented to the user in the event of syntactically invalid or missing authentication credentials

REQ-6: A descriptive and concise error message shall be presented to the user in the event of syntactically valid authentication credentials that to not match an existing account

3.4 Account Logout

3.3.1 Description and Priority

After creating a unique account with the UMO server (using feature 3.2 "User Registration with UMO"), users may associate said UMO account with an existing OpenID account for convenience. Entering the account username and password for either the UMO account or the OpenID account will grant access to the user's persistent UMO account information.

3.3.2 Stimulus/Response Sequences

Stimulus: User gestures to log out of the currently authenticated account

Response: System cleanly terminates any active user or system processes

R: System terminates the active session

R: System displays the authentication UI

3.3.3 Functional Requirements

REQ-1: One clearly labeled input mechanism shall exist which automates the various processes associated with account logout

3.5 View, Edit Account Information

3.3.1 Description and Priority

After creating a unique account with the UMO server (using feature 3.2 "User Registration with UMO"), users may view the persistent details associated with said UMO account, as well as update and save any fields information. Any information the user does not specifically gesture to save will be discarded should the user gesture to cancel the update process or navigate away from the account view / edit page.

3.3.2 Stimulus/Response Sequences

Stimulus: User gestures to access account information

Response: System displays the Account Information page, with input mechanisms for providing new information for each account information field

S: User provides updated information for one or more account information fields

3.3.3 Functional Requirements

REQ-1: One clearly labeled input mechanism shall exist which automates the various processes associated with account logout

3.7 View Survey List

3.7.1 Description and Priority

A registered and authenticated presenter shall have the ability to view the list of previously created surveys.

3.7.2 Stimulus/Response Sequences

Stimulus: User gestures to access the set of surveys associated with the user's account.

Response: System displays the (possibly empty) list of surveys that the user has previously created.

3.7.3 Functional Requirements

REQ-1: One clearly labeled input mechanism shall exist which allows the user to navigate to the View Survey interface

3.8 Create New Survey

3.8.1 Description and Priority

A registered and authenticated Presenter shall have the ability to create a new Survey. As a primary motivation for use of the software, this feature has high priority.

3.8.2 Stimulus/Response Sequences

Stimulus: User views the list of surveys associated with his account.

S: User gestures to create a new Survey

Response: System displays Survey creation interface

S: User provides textual Survey identifier

S: User defines a series of Questions

S: User gestures to save the Survey

R: System stores the provided information for the Survey identifier and associate Questions

R: System displays notification that the Survey was successfully created and saved

3.8.3 Functional Requirements

REQ-1 One clearly labeled input mechanism shall exist which allows the user to navigate to the Create Survey interface

REQ-2 The system shall provide clearly labeled fields allowing the Presenter to provide information to completely define each Question

REQ-3 The system shall provide clearly labeled fields allowing the Presenter to provide an identifier for the Survey

REQ-4 The system shall display an appropriate error message in the event that invalid or incomplete input is provided at the time the Presenter gestures to create the new Survey

3.9 Edit Existing Survey

3.9.1 Description and Priority

A registered and authenticated presenter shall have the ability to update an existing Survey with new parameters for any of the information provided through use of the Create New Survey feature. Due to the possibility of human error during survey creation and the software's emphasis on modifiability, this feature is of high priority

3.9.2 Stimulus/Response Sequences

S: Presenter views list of surveys associated with his account

S: Presenter gestures to edit a specific survey

R: System displays the Edit Survey Interface

S: Presenter provides input for updated values of desired fields

S: Presenter gestures to save changes to Survey

R: System saves updated values to database and displays confirmation message

3.9.3 Functional Requirements

REQ-1 An input mechanism(s) shall exist allow the Presenter to navigate to the Edit Survey interface for an arbitrary pre-existing Survey

REQ-2 Appropriate error messages shall be displayed in the event that invalid or incomplete input is provided at the time the Presenter gestures to save the updated information

3.10 Delete Existing Survey

3.10.1 Description and Priority

A registered and authenticated presenter shall have the ability to delete an existing Survey. Due to the possibility of human error during survey creation and the software's emphasis on modifiability, this feature is of high priority

3.10.2 Stimulus/Response Sequences

S: Presenter views list of surveys associated with his account

S: Presenter gestures to delete a specific survey

R: System displays a confirmation dialog

S: Presenter gestures to confirm the deletion of the Survey

R: System removes the Survey from the database and updates the View Surveys interface appropriately

3.10.3 Functional Requirements

REQ-1 An input mechanism(s) shall exist allow the Presenter to delete an arbitrary pre-existing Survey

REQ-2 The system shall display a descriptive dialog asking for confirmation of the Presenter's intent to delete the provided Survey

3.11 Create Question with Parameter for Duration

3.11.1 Description and Priority

It may be desirable to disallow response to Survey Questions after a period of time on the order of minutes. Should the presenter desire, when either creating or editing a Survey, Questions may be given such a duration. The coupled positive effect of this feature on system security and uncertain desirability of the feature have placed parametric duration for Questions at a medium priority.

3.11.2 Stimulus/Response Sequences

Stimulus: Presenter gestures to create or edit a Survey

Response: System displays the Create Survey / Edit Survey interface

S: User gestures to indicate that a desired Question has a duration (Prerequisite: the question has already been created)

S: User specifies the duration for the desired Question

3.11.3 Functional Requirements

REQ-1 An input mechanisms shall exist allowing the Presenter to flag a Question as having a duration, and the duration itself (these may be the same mechanism) in both the Create Survey and Edit Survey interfaces.

3.12 Create Survey Session

3.12.1 Description and Priority

Presenters shall have the ability to compose a Survey Session and synchronize the display of successive Questions to the Audience Member-accessible survey website. The Survey Session Questions may either be imported from a preexisting Survey, composed of previously generated Survey Questions, or created within the Survey Session Creation interface. Optionally, the Presenter can also add an expected list of attending Audience Members from either a predefined Audience List or by adding UMO accounts individually.

3.12.2 Stimulus/Response Sequences

Stimulus: Presenter gestures to create a new Survey Session

Reponse: System displays the Create Survey Session interface

S: Presenter provides an ordered list of questions by any combination of the following methods

- Appending a previously created Survey to the list of Survey Session Questions
- Appending a single preexisting Question from the Presenter's stored collection of Questions
- Appending a new Question after defining the requisite information

S(Optional1): Presenter gestures to apply a preexisting Audience List to the Survey Session

S(Optional2): Presenter gestures to add individual Audience Members to the Survey Session

S: Presenter gestures to publish the defined Survey Session

R: System generates the Survey Session web page for access by Audience Members, and displays this page to the Presenter

S: Presenter gestures to advance the survey to subsequent Questions

R: System displays the next survey Question defined

S(Optional3): Presenter gestures to insert an additional, undefined, survey Question

R(Optional3): System displays a Create Question interface prompting the Presenter for additional input

S(Optional3): Presenter gestures to create survey Question

R(Optional3): System displays newly defined Question

S: Presenter gestures to advance the survey beyond the last Question specified

R: System composes and displays group Survey Session results

3.12.3 Functional Requirements

REQ-1: A clearly labeled input mechanism shall allow Presenters to navigate to the Create Survey Session interface.

REQ-2: Clearly defined input mechanisms shall allow Presenters to

- Provide a unique Survey Session identifier
- Retrieve all questions from a preexisting Surveys and insert them into the Survey Session being created
- Create a new Question and add it to the Survey Session
- Retrieve a preexisting Audience List and add it to the Survey Session's list of expected attendants
- Add an individual Audience Member to the Survey Session's list of expected attendants

REQ-3: A clearly labeled input mechanism shall allow Presenters to gesture to publish the defined Survey Session

REQ-4: A clearly labeled input mechanism shall exist to allow Presenters to advance to the next Question in a Survey

3.13 Create Audience List

3.13.1 Description and Priority

Should a presenter expect more than one of her presentations to be attended by a recurring set of Audience Members, the presenter may define a list of these members to streamline the process of creating the attendance list for Survey Sessions. The Product Owner has designated this feature to be of medium priority.

3.13.2 Stimulus/Response Sequence

Stimulus: Presenter gestures to create and Audience List

Response: System displays the Create Audience List Interface

S: Presenter provides a textual name for the Audience List

S: Presenter selects an Audience Member using the Search for UMO Account feature

S: Presenter gestures to add selected Audience Member to Audience List

R: System displays an updated Audience List with the new Audience Member

S: Presenter gestures to save the Audience List

R: System stores the Audience List information

R: System displays confirmation dialog that the Audience List was successfully saved

3.13.3 Functional Requirements

REQ-1 A clearly labeled input mechanism shall exist allowing the Presenter to navigate to the Create Audience List interface

REQ-2 Clearly labeled input mechanisms shall exist allowing the Presenter to provide a textual name for the survey

REQ-3 Access to Search for UMO Account feature shall exist within the Create Audience List Interface

REQ-4 A clearly labeled input mechanism shall exist allowing the Presenter to gesture to save a created Survey

3.14 Delete Audience List

3.14.1 Description and Priority

If a created Audience List is no longer of use to a Presenter, the Presenter shall be able to remove a desired Audience List permanently. As this feature is paired with the creation of the Audience List, Audience List deletion is also of medium priority.

3.14.2 Stimulus/Response Sequence

Stimulus: Presenter gestures to edit an Audience List

Response: System displays the Edit Audience List interface

S: Presenter selects the desired Audience List to mark it for deletion

S: Presenter gestures to delete the selected Audience List

R: System prompts user for confirmation to delete the selected Audience List

S: Presenter gestures to confirm intent to delete the selected Audience List

R: System removes the selected Audience List from the Presenter's account

3.14.3 Functional Requirements

REQ-1 A clearly labeled UI mechanism shall allow the Presenter to navigate to the Edit Audience List interface

REQ-2 A clearly labeled UI mechanism shall allow the Presenter to gesture to delete a selected Audience List

3.15 Receive SMS Text Response

3.15.1 Description and Priority

Audience Members shall be able to submit Responses to Questions displayed during a Survey Session. As this is a primary motivation for the Audience Member user class, it is of high priority.

3.15.2 Stimulus / Response Sequences

Stimulus: Audience Members inputs a textual response for the currently displayed Question in a Survey Session.

S (External): Audience member gestures to submit Response to the appropriate number

Response: System receives and stores the submitted response

3.15.3 Functional Requirements

NA

3.16 Search for a Survey Session

3.16.1 Description and Priority

An Audience Member, when physically attending a presentation, will be given information unique information pertinent to locating the Survey Session for said presentation. The Audience Member shall, through use of the software, be able to enter this information to search for the Survey Session of interest. As this facilitates ease of use for Audience Members, and by extension the software's accessibility requirements, this feature has medium priority.

3.16.2 Stimulus / Response Sequences

Stimulus: Audience Member gestures to search for a specific Survey Session

Response: System displays the Search for Survey Session interface

S: Audience Member enters relevant search criteria

S: Audience Member gestures to search for a Survey Session matching the provided criteria

R: System displays all active Survey Sessions matching the provided criteria

3.16.3 Functional Requirements

REQ-1 A clearly labeled input mechanism shall exist allowing an Audience Member to navigate to the Search for Survey Session interface

REQ-2 Clearly labeled input mechanisms shall exist allowing an Audience Member to enter information pertinent to searching for a Survey Session

REQ-3 A clearly labeled input mechanism shall exist allowing an Audience Member to gesture to submit provided search information and search for matching Survey Session

3.17 Register for a Survey Session

3.17.1 Description and Priority

Presenters may wish to view the identities of those Audience Members participating in a given Survey Session. This feature allows Audience Members to identify themselves as taking part in the survey.

3.17.2 Stimulus / Response Sequences

Stimulus: Audience Member selects a Survey Session with which registration is desired

S: Audience Member gestures to register for selected Survey Session

Response: System adds the Audience Member to the Survey Session attendance list

R: System displays the current survey Question in progress, or a dialog describing the Survey Session state if the Survey Session has not begun or has already ended.

4. External Interface Requirements

4.1 User Interfaces

The user interface for the survey application shall be web-based and is accessible through a web browser. Standard web GUI elements, such as buttons, radio buttons, images, tables, and other web GUI elements shall be used throughout the system as appropriate. The system shall also display different pages and access permissions depending on the type of user (survey administrator or normal user).

4.2 Hardware Interfaces

Mobile phones shall be the primary means of accessing the system. Newer more sophisticated models typically access the system through their web browser system, while older less sophisticated phones can access the system through the SMS text service technology. Other special phones utilizing Symbian OS may be able to utilize a special application to access the system.

4.3 Software Interfaces

The system shall employ several commercial web development technologies to facilitate persistent storage of data pertaining to surveys, survey results, and account information, temporary storage of incoming text messages, user interface display across multiple platforms and varied internet browsers, and interfaces between these technologies and the application code.

4.4 Communications Interfaces

The system shall be accessible using The Internet and as such, all communications to and/or to the system must go through the HTTP protocol. The site shall also be encrypted using the HTTPS technology to protect data integrity during transmission.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- The server shall accept client responses and carry out requests in a reasonably fast span of time for the following operations:
 - User authentication
 - User deauthentication
 - Survey Question display
 - Survey Question submission
 - Survey Response submission

5.2 Safety Requirements

NA

5.3 Security Requirements

- Users must be authenticated in order to gain access to the system
- Authenticated users shall have different access permissions and privileges depending on the group in which they belong to
- A user may belong to one or more groups

5.4 Software Quality Attributes

Accessibility for presentation attendants is a key quality attribute of the software, requiring support for multiple browsers and an emphasis in simple interaction paradigms and streamlined use cases for these users. Reliability is also a key concern, as the intended professional use of the software increases the consequences of system failures. Persistent access to data, specifically Questions during a presentation, is a high priority. Additionally, due to the desired long-term use of the system and reuse of questions, it is of high priority that information related to account information and Surveys be modifiable beyond the scope of the initial account and Survey creation processes.

6. Other Requirements

Appendix A: Glossary

- Survey: A list of Questions created by the user and stored for later use in a Survey Session
- Survey Session: A composition of information collected during a presentation from individual audience member responses.

- Presenter: A user class whose motivation in using the system is the creation of Surveys and associated questions, the creation of Survey Sessions, enabling and disabling of data collection for Survey Sessions, and display of populated Survey Sessions.
- Audience Member: A user class whose motivation in using the system is to respond to Survey Questions with a response, which will populate a single Survey Session.
- Question: A piece of text and an associated number of possible Responses, with text describing each Response.
- Response: An identifier representing an Audience Member's selection in response to a specific Question.

Appendix B: Analysis Models

NA

Appendix C: Issues List

- A partially-defined requirement exists outlining the ability of the software to track presentation attendance. The mechanism for signaling attendance has not yet been defined, and related non-functional requirements, chiefly security in the way of disallowing presentation registration for all but those physically present at the presentation, will need to be discovered.
- The initial requirements for an account maintain personal information limited to the user's username and password. It is possible that, in the future, more information such as name, e-mail address, phone number, etc., may be desirable information to persist.
- Account information may need to be retrievable in the event that account information is forgotten. A contact e-mail address may need to be stored during account creation for this reason, and it may prove worthwhile to set up an automated e-mail script to process account information requests.
- Feature 3.13 (Create an Audience List) makes reference to a feature wherein a Presenter may search for a specific UMO account. No such feature has yet been defined or given priority by the Product Owner
- Feature 3.17 (Register for a Survey Session) appears to overlap another feature listed on the product backlog, "Logging Audience Attendance". Clarification of the motivation for each feature may expose a need for both, suggest a means of combining them, or identify that either is superfluous.
- The degree and nature of the User Documentation that the system shall require must be determined