

Drupal Survey

Software Requirements Specification

1.0

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Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

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1. Introduction

1.1 Purpose

This is a specification of a Drupal Survey Module, used to collect information from the users of a Drupal site for Psychological, Social or Market Research purpose. The Survey module will allow privileged users of the site where this module is enabled to create a survey, consisting of multiple pages and flow control, which other non-privileged users will complete.

1.2 Scope

Survey Module For Drupal CMS

This module will collect data from Drupal users via an online survey, and provide the means to either download the data in a format suitable for further offline analysis or provide a mechanism to manipulate the data further.

This module will not (initially) provide reports beyond that of the frequency of responses to each question and will not in an of itself provide tools to analyse the data collected.

1.3 Definitions, Acronyms, and Abbreviations

CMS – Content Management System

Rotation – The first displayed response in an answer to a question or item within a container is moved to the end of the list for the subsequent survey respondent. The 'new' first displayed response/item will in it's turn be moved to the end and so forth.

1.4 References

None

1.5 Overview

At the moment only high level function requirements and class definitions are included

2. General Description

2.1 Product Perspective

There are a number of commercial and open source solutions for a web based system for gathering social and research quantitative data via online surveys. Examples of the former are ConfirmIT and SurveyWriter and an example of the latter is Limesurvey. Most of these have limitations of one sort or another, such as being too complex for end uses, not flexible enough to cope with non-standard survey layouts or problematic GUI work flows.

The Drupal CMS due to its modular nature and open architecture would provide a good basis for

the creation of an open, extensible and user friendly alternative to the current survey software in existence.

As such this is a specification of a Drupal module that will provide survey authoring and data collection functions for that web platform.

2.2 Product Functions

The module will provide an ability for a user to add a survey to a Drupal site, create questions, instructions and stimuli presentations for that survey, invite other Drupal users to complete the survey (via e-mail) and download the data associate with that survey.

The survey will consist of a number of independent pages which the user completing the survey will move through utilising navigation buttons to move forward and backwards through the survey, although it should be possible to block the users from moving backwards and allow timed presentation of stimuli before moving forwards.

It will be possible to alter the flow of the survey, as well as the layout and text of the questions based upon a users responses to previous questions in the survey.

2.3 User Characteristics

Researcher: The ability to add and edit their own survey.

Respondent: Can only complete surveys.

2.4 General Constraints

Operates as a module within Drupal

2.5 Assumptions and Dependencies

The software will operate in the context of the Drupal CMS, thus a working installation of Drupal is assumed, independent of platform.

3. Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

Web Browser

3.1.2 Hardware Interfaces

Desktop

Server

3.1.3 Software Interfaces

Drupal API

Sections module to provide custom theme's for each survey

User Import Module to upload Respondents

3.1.4 Communications Interfaces

HTTP

3.2 Functional Requirements

3.2.1 Create Drupal Survey Node

3.2.1.1 Introduction

Privileged users (Researchers) can create a survey node in Drupal. This can contain any number of survey items which form the questions asked in the survey as well as define the layout of the survey pages and flow of the survey through the survey questions.

3.2.1.2 Inputs

Signal to create Survey Node

3.2.1.3 Processing

Create Survey node and associated data structures with default values

3.2.1.4 Outputs

Survey Node

3.2.2 Update Drupal Survey Node

3.2.2.1 Introduction

Privileged users (Researchers) can update the configuration values of the survey

3.2.2.2 Inputs

Updated values for Survey Node (Intro Text etc. - see survey class)

3.2.2.3 Processing

Update Survey node and associated data structures

3.2.2.4 Outputs

Return code indicating success or failure

3.2.3 Create Survey Item Node

3.2.3.1 Introduction

Privileged users (Researchers) can create a Survey Item node in Drupal. These are the entities that will form the content of the survey and control the display and flow of the survey. They are:-

Question: Displays a question and defines the data associated with that question.

Skip: Alters the normal flow of the survey jumping either forward or back to a particular item

Mask: Based upon a previous questions data, sets or updates a mask data structure that will alter the display of subsequent questions so some of the response options do not appear, there is also an item that will reset this data structure.

Substitute: Sets up some substitution text based upon responses to a previous question. This will replace marked up text when a question is displayed.

There are also "Grid" versions of these Items (I may collapse these back into the base types for better usability)

Section: An item which contains other items which can be displayed in a random order.

Loop: An extension of a section which repeats the items within it.

Compound Page: An extension of Section that displays all the questions within it on the same page .

Instruction: Displays instructions (including possibly images, video or other Drupal node types).

3.2.3.2 Inputs

Signal to create Survey Item Node

3.2.3.3 Processing

Create Survey Item node and associated data structures with default values

3.2.3.4 Outputs

Survey Item Node

3.2.4 Update Survey Item Node

3.2.4.1 Introduction

Privileged users (Researchers) can update the configuration values of the survey Item.

3.2.4.2 Inputs

Updated values for Survey Item Node.

3.2.4.3 Processing

Update Survey Item node and associated data structures. Response List (lists of Question Responses and Associated Numeric codes) objects (nodes?) can be created or existing ones assigned to the item as part of this process (Question, Skip, Mask, Substitute and Loop items)

3.2.4.4 Outputs

Return code indicating success or failure

3.2.5 Add an Item to a Survey

3.2.5.1 Introduction

Privileged users (Researchers) can add a Survey Item to a Survey.

3.2.5.2 Inputs

Survey Item Node ID and list order.

3.2.5.3 Processing

Add the Survey Items ID to the Surveys Items List in the appropriate place.

3.2.5.4 Outputs

Return code indicating success or failure.

3.2.6 Reorder an Item in a Survey

3.2.6.1 Introduction

Privileged users (Researchers) can reorder a Survey Item in a Survey.

3.2.6.2 Inputs

Survey Item Node ID and order.

3.2.6.3 Processing

Move the Survey Items ID to the appropriate place in the List.

3.2.6.4 Outputs

Return code indicating success or failure.

3.2.7 Remove an Item from a Survey

3.2.7.1 Introduction

Privileged users (Researchers) can remove a Survey Item from a Survey.

Drupal Survey

3.2.7.2 Inputs

Survey Item Node ID.

3.2.7.3 Processing

Remove the Survey Items ID from the Surveys Items List.

3.2.7.4 Outputs

Return code indicating success or failure.

3.2.8 Add an Item to a Section Item (including derivatives - Loop and Compound Page)

3.2.8.1 Introduction

Privileged users (Researchers) can add a Survey Item to a Section Item.

3.2.8.2 Inputs

Survey Item Node ID and order.

3.2.8.3 Processing

Add the Survey Items ID to the Section Items' "Section Items List" in the appropriate place.

3.2.8.4 Outputs

Return code indicating success or failure.

3.2.9 Reorder an Item in a Section Item (including derivatives - Loop and Compound Page)

3.2.9.1 Introduction

Privileged users (Researchers) can reorder a Survey Item in a Section Item.

3.2.9.2 Inputs

Survey Item Node ID and order.

3.2.9.3 Processing

Move the Survey Items ID to the appropriate place in the List.

3.2.9.4 Outputs

Return code indicating success or failure.

3.2.10 Remove an Item from a Section Item (including derivatives - Loop and Compound Page)

3.2.10.1 Introduction

Privileged users (Researchers) can remove a Survey Item from a Section Item.

3.2.10.2 Inputs

Survey Item Node ID.

3.2.10.3 Processing

Remove the Survey Items ID from the Section Items' "Section Items List".

3.2.10.4 Outputs

Return code indicating success or failure.

3.2.11 Invite Users to a Survey

3.2.11.1 Introduction

Privileged users (Researchers) can invite other users into a survey.

3.2.11.2 Inputs

User Table fields for e-mail and survey qualification.

3.2.11.3 Processing

Send an e-mail to a users e-mail address if they qualify for the survey, this e-mail will include a

direct link to the survey including login credentials if necessary.

3.2.11.4 Outputs

Return code indicating success or failure.

3.2.12 Start User Interview

3.2.12.1 Introduction

When an unprivileged user (Respondent) enters the survey the interview is started.

3.2.12.2 Inputs

User ID.

3.2.12.3 Processing

Create state data for user and display introductory text. This page will also allow the users to re-enter previous interviews if that is enabled. If an interview is not completed the user will be redirected to the latest incomplete Item.

3.2.12.4 Outputs

State Data for interview.

3.2.13 Process Survey Item

3.2.13.1 Introduction

Process the survey item the Respondent is directed to.

3.2.13.2 Inputs

Item ID, Indication if moving backwards through survey.

3.2.13.3 Processing

Process item specific code. This will be:

Question: Display question, Collect Respondent input.

Skip:Redirect to specific Item (or next Item)

Mask:Update state data.

Substitute:Update state data.

Section:Update state data.

Loop:Update state data.

Compound Page:Display all question and Instruction within Compound page and wait for user input.

Instruction: Display question and wait for user input.

Survey End:Close interview and redirect.

Some operations will have to be reversed if moving backwards through survey

3.2.13.4 Outputs

Next Item ID or signal to go to next/previous survey page.

3.2.14 Go to next Survey Page

3.2.14.1 Introduction

Route Respondents through the Survey.

3.2.14.2 Inputs

Next Item ID or signal to go to next/previous survey page.

3.2.14.3 Processing

Determine the next or previous Item in the survey on appropriate signal. Extra processing at Section and Loop boundaries, and if skips to an Item within a Compound Page will instead be

directed to the Compound Page Item itself.

3.2.14.4 Outputs

Item ID, Indication if moving backwards through survey.

3.2.15 Check Question Progress

3.2.15.1 Introduction

Privileged users (Researchers) can check a Questions progress.

3.2.15.2 Inputs

Signal to check data for Item ID.

3.2.15.3 Processing

Retrieve all Responses to Question in current survey and Display.

3.2.15.4 Outputs

Return code indicating success or failure.

3.2.16 Download Data

3.2.10.1 Introduction

Privileged users (Researchers) can download the data collected by the survey.

3.2.10.2 Inputs

Signal to download data.

3.2.10.3 Processing

Extract survey data from Drupal Database into formatted file (Comma Separated Variable, SPSS etc.).

3.2.10.4 Outputs

Link to data file.

3.3 Use Cases

3.3.1 Use Case #1

3.3.2 Use Case #2

3.4 Classes / Objects

* designates a function only available to Researchers

3.4.1 Survey

3.4.1.1 Attributes

-Active – BOOLEAN – Users can only enter the survey if this is true.

-Intro Text – Introductory Survey Text

-Items – Ordered list of Items (nodes) in the survey

-Repeated – Integer – Indicates how many times the survey can be completed by a respondent (default 1)

-Back Button – BOOLEAN – Indicates if the back button is visible (ie, the respondent can go backwards through the survey, default TRUE)

-Locked – BOOLEAN – Indicates if a user can go into a completed survey and change their answers (default FALSE)

Drupal Survey

//State data – stored per user/survey instance

-Current Loop

-Current Container

-Current Question

+Current Mask – A list of code values which will be excluded from display in any question or iterators in a loop

+Current Scale Mask – A list of values which will be excluded from display in any scale

+Current Question Mask – A list of items which will be excluded from display

+Current Substitutions – A list of text substitutions with associated codes which will be done when a page is being displayed, based upon a marker within the text (say #1# to substitute the code 1 value, escaped with \#)

3.4.1.2 Functions

+Add Survey Item – Add an item to the item list*

+Remove Survey Item – Remove an item from the item list*

+Reorder Survey Item – Reorder a list item*

+Download Data – Download the data collected by the survey*

+Update Repeated*

+Update Back Button*

+Update Intro Text*

+Start Survey

-DisplayPage

The survey object will display each page of the survey by calling appropriate methods in each item. Respondent users will not see masked questions, skips, masks or text substitutions however the processes associated with these items will take place and the NextPage function called automatically. Sections will have to have control passed to them?

-NextPage

This handles Forward and Back Button functions

3.4.2 Item (template)

3.4.2.1 Attributes

~Item ID – Unique Identifier

~Timer – If non-zero displays the item for this many seconds before automatically going to the next item (default 0)

3.4.2.2 Functions

+Update Item ID*

+Update Timer*

+Do Item Processing – Does whatever is needed to be done by this particular item.

3.4.3 Response List

Drupal Survey

3.4.3.1 Attributes

Response List ID – Unique Identifier

List of Possible Responses - STRING

Codes - List of values associated with each response

3.4.3.2 Functions

Update Response List ID*

Add Response*

Remove Response*

3.4.4 Response Container (child of Item) (template)

3.4.4.1 Attributes

List of Response List – This class contains one or more “Response List” classes

3.4.4.2 Functions

+Add Response List – Adds new Response List to list, must ensure unique codes for all responses (maybe?)

+Remove Response List

+Create Response List – Response List should be created via these objects/pages

3.4.5 Question (child of Response Container)

3.4.5.1 Attributes

Question Text

Required – BOOLEAN – is a response to this question required (default TRUE)

Order – Are the responses in the Response List's presented in order (default TRUE)

Random – BOOLEAN – Are the responses in the Response List's presented in a random or rotated (default = TRUE)

Text Response – BOOLEAN – Indicates if the responses are open ended text or selected (ie. Text box or check box/radio button). The letter code 0 or 1 in the database. (default FALSE)

Responses - INTEGER– How many responses may be selected or contain a text response(default = 0 which indicates any number)

//Additional attributes for Responses in response list – these are all compound variables mapped back to the response codes

Specify – BOOLEAN - This response is an “Other/Specify”. If “Text Response” is FALSE and text box will be displayed next to the response which will need to be filled in if the response is selected (default FALSE)

Exclusive – BOOLEAN – If this response is selected or answered none of the other responses may be (default FALSE)

3.4.5.2 Functions

Update/set the various attributes*

Show responses* - display data collected so far for this question

3.4.6 Grid Question (child of Question)

3.4.6.1 Attributes

Scale – List of “Response List” to use as the grid scale

Scale Responses - INTEGER – How many scale items may be selected or contain a text response across a single response (default = 0 which indicates any number)

Orthogonal – BOOLEAN – Normal a scale will appear across the top of the grid, if this is true it will appear on the right side and the responses across the top (default FALSE)

3.4.6.2 Functions

Update/set the various attributes*

3.4.7 Text Substitute (child of Response Container)

3.4.7.1 Attributes

Base – A reference to the question or loop on which the text substitution is based, if the question is inside a loop which the Object is not then the reference must include a loop value as well

//Additional attributes for Responses in response list – these are all compound variables mapped back to the response codes

Update Target – INTEGER – The substitution value to be updated (default to Response List code value)

Comparator – The value that the responses in base will be compared to

Operator - '<' '>' '=' '!=' 'substring' – operator used in the comparison

Result – The string to be substituted (default to Response List text)

3.4.7.2 Functions

Update/set the various attributes*

+Update Current – Updates the Current Substitutions structure for any code : operator : comparator equations found to be true.

3.4.8 Grid Text Substitute (child of Text Substitute)

3.4.8.1 Attributes

Scale – List of “Response List” to reference a grid scale

//Additional attributes for Responses in response list – these are all compound variables mapped back to the response codes

Scale Value – The scale value the function corresponds to

3.4.8.2 Functions

Update/set the various attributes*

+Update Current – Override to include grid values

3.4.9 Mask (child of Text Substitute)

Same as Text Substitute but updates the current mask

3.4.10 Grid Mask (child of Grid Text Substitute)

Ditto

3.4.11 Skip (child of Text Substitute)

3.4.11.1 Attributes

Targets – STRING – the Item ID that will be the next item for a given response in base, if null string (default) go to next item normally

Result – Override (default to null)

3.4.11.2 Functions

Update Base*

Update Conditions*

Update Targets*

+Update Current – Override, go to item as specified in Targets if any condition resolve to true.

If Result is non-null display that text at the beginning of the question

3.4.12 Grid Skip (child of Skip)

3.4.12.1 Attributes

Scale – List of “Response List” to reference a grid scale

//Additional attributes for Responses in response list – these are all compound variables mapped back to the response codes

Scale Value – The scale value the function corresponds to

3.4.12.2 Functions

+Update Current – Override to include grid values

3.4.13 Section (child of Item)

3.4.13.1 Attributes

Section Items – Ordered list of Items (nodes) in the Section

Order – Are the items in the Section presented in order (default = TRUE)

Random – BOOLEAN – Are the items in the Section presented in a random or rotated (default = TRUE)

Rotation Level – INTEGER – If items are rotated, used to determine what item in the rotation is currently first

Respondent Order – The order of items for each respondent

3.4.13.2 Functions

Update Order*

Update Random*

Add Section Item – Add an item to the container item list*

Remove Section Item – Remove an item to the container item list*

Reorder Section Item – Reorder a list item*

Reorder – Randomises or rotates the order of the items for each respondent if appropriate

Exit Section – Processing done when a section finishes

3.4.13 Loop (child of Section)

3.4.13.1 Attributes

Iterations – list of Response List – the codes in the response list will be iterated through

Iteration Order – Are the iterations presented in order (default TRUE)

Iteration Random – BOOLEAN – Are the Iteration presented in a random or rotated (default = TRUE)

Current Iteration – INTEGER – code value of current iteration

3.4.13.2 Functions

Update/set the various attributes*

3.4.13 Compound Page (child of Section)

3.4.13.1 Attributes

3.4.13.2 Functions

Add Section Item – Override so that Sections, Loops and other pages can not be included in a page*

3.4.14 Instruction (child of Item)

3.4.14.1 Attributes

Instruction Text

3.4.14.2 Functions

Update Instruction Text*

3.4.15 Clear Mask (child of Item)

3.4.14.1 Attributes

3.4.14.2 Functions

3.4.15 Survey End (child of Instruction)

3.4.15.1 Attributes

Redirect – STRING – URL where users are send when they have completed the survey, this will be the last page they see. It should be possible to include text substitutions and User fields in this URL if necessary.

3.4.15.2 Functions

3.4.16 Question Mask (child of Mask)

Masks a question instead of a Response list item

3.5 Non-Functional Requirements

3.5.1 Performance

3.5.2 Reliability

3.5.3 Availability

3.5.4 Security

3.5.5 Maintainability

3.5.6 Portability

3.6 Inverse Requirements

Drupal Installation

3.7 Design Constraints

TBA

3.8 Logical Database Requirements

Drupal Supported

3.9 Other Requirements

None

4. Change Management Process

Chaotic update via Internet