Thinking Inside the Box: Streamlining VUI Design Documentation

Karen Owens
Senior Consultant
Avaya Professional Services
Overview

- Challenges of VUI Design Documentation
  - Commonly Used Approaches
  - Pros and Cons
- A Different Approach to VUI Design Documentation
  - Embedding Data in Visio Objects
  - Applying Data Graphics
  - Extracting Hidden Data
Challenges of VUI Design Documentation

- Lack of industry standards
- Lack of VUI design tools
- Personal preferences
  - Visio call flows versus Word documents or Excel spreadsheets
- Various audiences
  - Customers, Developers, QA Testers, Project Managers
- Customer-specific requirements
Common Methods of Documenting VUI Designs

- Typical methods of VUI design documentation range from:
  - A simple call flow and prompt list
  ...to...
  - A detailed call flow combined with detailed dialog state tables/descriptions
Pros and Cons of Using Only Detailed Call Flows

- **Pros**
  - Provide visual representation of the user experience
  - Easy for non-technical and technical audiences to follow

- **Cons**
  - Too much detail on a page can make the design difficult to read
  - Too little detail
    - Can cause confusion with customers, developers, and QA
  - Difficult to make and track changes
Pros and Cons of Using Only Detailed Dialog State Tables

- **Pros**
  - Can hold all details needed for development, QA, and customer review
    - Retries, confirmations, exit prompting, developer notes, grammar names, etc
  - Provides customer with comprehensive documentation of the VUI design

- **Cons**
  - Difficult to navigate, maintain and format
  - Very large document
  - Extremely time consuming
  - Manual process allows room for lots of error
Pros and Cons of Combining Call Flows and Dialog State Tables

**Pros**
- Little room for ambiguity
- Good representation of the user experience
- Appeals to all audiences

**Cons**
- Double effort
  - Same details in both documents
- Maintenance nightmare
  - Both documents must be updated simultaneously or documents become out of synch
  - Lots of room for error
Combining the Best of Both Worlds

- Data can be hidden inside of Visio objects
  - Can include all details needed for each dialog state
    - Prompting
    - Developer notes/special handling
    - Grammar names
  - Call flows remain uncluttered
  - Data documented in one location resulting in easy maintenance
  - Automated extraction of data for easy review
  - Customizable data display
  - Reusable templates
Embedding Data in Visio Objects
Embedding Data in Visio Objects

- Drop object on the page
- Right click on the object
  - Choose data/shape data from drop down menu
  - When asked if you would like to define shape data now, click ‘yes’
Defining Shape Data

- The following pop up box will appear which will allow you to define all of the properties for this shape
Defining Shape Data - Continued

- Simply add your own values to each property
- Add new properties as necessary by clicking “New” at the bottom of the pop up
  - See Appendix A “Shape Data Properties” table for descriptions of each property
Customized Shape Data Example

Define Shape Data

Label: DialogStateName
Name: DialogStateName
Type: String
Language: English (U.S.)
Format: @
Calendar:
Value: MainMenu
Prompt: Enter the name of the dialog state in the value slot above.
Sort key: a

Ask on drop
Hidden

Properties:

<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>DialogStateName</td>
<td>DialogStateName</td>
<td>String</td>
</tr>
<tr>
<td>Lang1_Init_Prompt_Name1</td>
<td>Lang1_Init_Prompt_Name1</td>
<td>String</td>
</tr>
<tr>
<td>Lang1_Init_Text1</td>
<td>Lang1_Init_Text1</td>
<td>String</td>
</tr>
</tbody>
</table>

New  Delete  OK  Cancel
When finished, click “OK” and a box displaying the information you just entered will appear. For instance…

```
Shape Data

DialogStateName: MainMenu
Lang1_Init_Prompt_Name1: MainMenu_Init.wav
Lang1_Init_Text1: Would you like to speak with someone in sales or service?

(Note: Additional properties not shown)

Prompt
Enter the name of the dialog state in the value slot above.
```

Define...  OK  Cancel
Defining Shape Data - Continued

- Click “OK” again and the shape will look exactly as it did when you dropped it on the page

- Now you can apply a data graphic
  - Displays only what you want the viewer to see
  - Customizable for different audiences
Applying Data Graphics
Applying Data Graphics

- Right click on the shape and choose data/edit data graphic
  - The following pop up box will appear
From the “New Item” drop down box in the top left corner, choose “text”. The following will appear…
Customizing Data Graphics

- Customize your data graphic details. For example...

![Edit Text window]

- Display:
  - Data field: DialogStateName
  - Callout: Heading 3

- Callout position:
  - Horizontal: Center
  - Vertical: Top

- Details:
  - Value Format: @
  - Border Type: Bottom
  - Fill Type: Filled
  - Horizontal Offset: None
  - Vertical Offset: None
When finished adding display data to the data graphic, click “OK”

This window now lists the data fields you have chosen to display
Click “OK” again

The Visio object will now appear with the data graphic applied, for example…

Would you like to speak with someone in sales or service?
Benefits of Hidden Data

- Having data hidden inside of the Visio objects
  - Allows the call flows to stay clean and easy to read
  - Allows for automated extraction of the data
    - Saves time
    - Saves money
    - Reduces human errors
  - Maintenance remains in one document
  - Custom objects can be saved in a template for reuse later
Extracting Embedded Data
Running reports from Visio is simple and can extract the data in several formats (excel, xml, html)

- To run a report
  - Go to Data/Reports/New from the top menu and follow the prompts

A custom script can then be applied to format the data as desired

Or a custom script can be written to extract the data using the VBScript editor in Visio
### State Name
- **MainMenu**

### Developer Notes
- barge in on

### Recordings

### Initial Handling
<table>
<thead>
<tr>
<th>File Name</th>
<th>File Text</th>
<th>Data Playback</th>
<th>Confirmation Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>MainMenu_Init.wav</td>
<td>Would you like to speak with someone in sales or service?</td>
<td>N/A</td>
<td>1</td>
</tr>
</tbody>
</table>

### No Match Handling

#### No Match Occurrence
<table>
<thead>
<tr>
<th>File Name</th>
<th>File Text</th>
<th>Data Playback</th>
<th>Confirmation Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>First No Match</td>
<td>MainMenu_Err1.wav I didn't get that. To speak with someone in sales, say 'sales' or press 1. To speak with someone in service, say 'service' or press '2'.</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>Second No Match</td>
<td>MainMenu_Err2.wav Sorry I still didn't get that. Please press 1 for sales or 2 for service.</td>
<td>N/A</td>
<td>1</td>
</tr>
</tbody>
</table>

### No Input Handling

#### No Input Occurrence
<table>
<thead>
<tr>
<th>File Name</th>
<th>File Text</th>
<th>Data Playback</th>
<th>Confirmation Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>First No Input</td>
<td>MainMenu_NoInput1.wav I couldn't hear you. To speak with someone in sales, say 'sales' or press 1. To speak with someone in service, say 'service' or press '2'.</td>
<td>N/A</td>
<td>1</td>
</tr>
<tr>
<td>Second No Input</td>
<td>MainMenu_NoInput2.wav Sorry I still couldn't hear you. Please press 1 for sales or 2 for service.</td>
<td>N/A</td>
<td>1</td>
</tr>
</tbody>
</table>

### Confirmation Handling

#### Slot
<table>
<thead>
<tr>
<th>Slot</th>
<th>File Name</th>
<th>File Text</th>
<th>Data Playback</th>
<th>Confirmation Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmation - Slot 1</td>
<td>ConfirmSales.wav you said sales, right?</td>
<td>N/A</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Confirmation - Slot 2</td>
<td>ConfirmService.wav You said service, right?</td>
<td>N/A</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Exit Handling

#### Slot
<table>
<thead>
<tr>
<th>Slot</th>
<th>File Name</th>
<th>File Text</th>
<th>Confirmation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit - Slot 1</td>
<td>MainMenu_EXIT_Sales.wav OK. Sales.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Exit - Slot 2</td>
<td>MainMenu_EXIT_Service.wav OK. Service.</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Grammars

<table>
<thead>
<tr>
<th>Speech Grammar(s):</th>
<th>MainMenu.gram</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTMF Grammar(s):</td>
<td>MainMenu_DTMF.gram</td>
</tr>
</tbody>
</table>

### Grammar Slots Speech
- **Sample Speech Expressions**
  - sales: "sales", "sales please", "I want"
  - service: "service", "service please", "the service department"

### Grammar Slots DTMF
- **Sample DTMF Expressions**
  - sales: 1
  - service: 2
Questions?
thank you

Karen L. Owens
klowens@avaya.com
Appendix A: Shape Data Properties
## Shape Data Property Descriptions Table

<table>
<thead>
<tr>
<th>Shape Data Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Name of the property that appears in the shape data dialog box</td>
</tr>
<tr>
<td>Name</td>
<td>Uniquely identifies the column in the data record set. Not necessarily the same as the Label.</td>
</tr>
<tr>
<td>Type</td>
<td>Type of data to be displayed (string, number, boolean, etc)</td>
</tr>
<tr>
<td>Format</td>
<td>Format of the text (normal, lower case, upper case)</td>
</tr>
<tr>
<td>Language</td>
<td>Returns the language ID recorded in the object's VERSIONINFO resource.</td>
</tr>
<tr>
<td>Shape Data Property</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Value</td>
<td>The data to be displayed in the shape data dialog box</td>
</tr>
<tr>
<td>Prompt</td>
<td>Description of what to place in the value slot.</td>
</tr>
<tr>
<td>Sort key</td>
<td>Used to sort the order of the properties in the shape data dialog box.</td>
</tr>
<tr>
<td>Ask on drop (check box)</td>
<td>Prompts user to enter this property when object is dropped on the page.</td>
</tr>
<tr>
<td>Hidden (check box)</td>
<td>Does not prompt user to enter this property when object is dropped on the page.</td>
</tr>
</tbody>
</table>
Appendix B: Data Graphic Fields
# Data Graphic Field Descriptions

<table>
<thead>
<tr>
<th>Data Graphic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Callout” drop down box</td>
<td>Determines how the data is displayed on the Visio object. (Heading versus text)</td>
</tr>
<tr>
<td>“Callout position” drop down boxes</td>
<td>Determines where on the Visio shape the data will be displayed. (Top, center, bottom, etc)</td>
</tr>
<tr>
<td>“Value Format”</td>
<td>The format of the data to be displayed (text, percentage, date)</td>
</tr>
</tbody>
</table>
### Data Graphic Field Descriptions - Continued

<table>
<thead>
<tr>
<th>Data Graphic Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Border Type”</td>
<td>Determines where to place a border around the text.</td>
</tr>
<tr>
<td>“Fill Type”</td>
<td>Determines if data will be displayed with a background color or not.</td>
</tr>
<tr>
<td>“Horizontal and Vertical Offsets”</td>
<td>Determines where the text will appear within the data graphic.</td>
</tr>
</tbody>
</table>