Capturing Cultural Requirements in the Design of a Website for an Aboriginal Community

Reece George, B.Comp

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy, Information Technology

The University of Newcastle

February 2012
Statement of Originality

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. I give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying subject to the provisions of the Copyright Act 1968.

(Signed): _______________________________

Reece D George
Acknowledgements

The Wollotuka project acknowledges with respect, the Pambalong clan of the Awabakal people, traditional custodians of the land on which this campus of The University of Newcastle is located.

Thanks to Dr. Keith Nesbitt, a good teacher.

Thanks to Dr. John Maynard, a Worimi man.

Thanks to Dr. Patricia Gillard, for encouragement.

Thanks to my wife Meighan, for the coffee.

Thanks to our three children, Joah, Lara and Asher, for inspiration.
# Table of Contents

Statement of Originality ................................................................. 2  
Acknowledgements ....................................................................... 3  
List of Figures ............................................................................... 8  
List of Tables ................................................................................ 11  
Publications ................................................................................. 13  
Abstract ....................................................................................... 14  

## Chapter 1 – Introduction

1.1 Culture and Design ................................................................. 16  
1.2 The Wollotuka Project ............................................................ 17  
1.3 Research Questions ............................................................... 21  
1.4 Methodology ........................................................................... 21  
1.4.1 Ethics ................................................................................ 24  
1.4.2 Transferable Methodology ................................................... 26  
1.5 The Design Process ............................................................... 26  
1.6 Hofstede’s Values Survey ........................................................ 29  
1.7 Study Participants ................................................................. 30  
1.8 Contributions ......................................................................... 32  
1.9 Conclusion .............................................................................. 32  

## Chapter 2 – Literature Review

2.1 Introduction ............................................................................. 34  
2.2 Use and Context ..................................................................... 35  
2.3 Human Characteristics ........................................................... 41  
2.4 Computer System and Interface Architecture ......................... 45  
2.4.1 Input and Output Devices .................................................... 45  
2.4.2 Dialogue Genre .................................................................. 47  
2.5 Development Process ............................................................. 49  
2.6 Design Approaches ............................................................... 51  
2.7 Evaluation Techniques ........................................................... 60  
2.7.1 Iterative Prototyping .......................................................... 60  
2.7.2 Hofstede’s Cultural Dimensions ......................................... 62  
2.8 Example Systems and Case Studies .......................................... 70  
2.8.1 Indigenous Computer Literacy Course ................................ 70  
2.8.2 The Digital Songlines Project ............................................. 73  
2.9 Conclusion .............................................................................. 78
Chapter 3 – Focus Group

3.1 Introduction

3.2 Focus Group Approach

  3.2.1 Introduction (Scoping)
  3.2.2 First Stories (Training)
  3.2.3 Stories About The Space
  3.2.4 Stories About Communication
  3.2.5 Stories About The Existing Website
  3.2.6 Direct Design Questions
  3.3.7 Conclusion of Focus Group

3.3 Analysis of Outcomes

3.4 Discussion of Themes

  3.4.1 Local Landscape
  3.4.2 A Fun Place to Study
  3.4.3 Community Involvement
  3.4.4 Aboriginal Artwork
  3.4.5 Navigation
  3.4.6 Multimedia
  3.4.7 Role models
  3.4.8 Kinship
  3.4.9 Language
  3.4.10 Humour
  3.4.11 Music, Dance and Ceremony
  3.4.12 Not Using Templates

3.5 Limitations of Focus Group

3.6 Conclusion

Chapter 4 – Iteration One

4.1 Introduction

4.2 Key Design Features Of Prototype One

  4.2.1 Simple Structure And Navigation
  4.2.2 Location Map
  4.2.3 Virtual Tour
  4.2.4 Multimedia (Video And Sound)
  4.2.5 Interactive Games
  4.2.6 Community Links
  4.2.7 Feedback Mechanism
  4.2.8 Informal Language And Humour
  4.2.9 Traditional Art, Imagery And Ceremony
  4.2.10 Indigenous Wiki
Chapter 5 – Iteration Two

5.1 Introduction.................................................................................. 121
5.2 Refining Key Design Features................................................................. 122
  5.2.1 Simple Structure And Navigation....................................................... 124
  5.2.2 Location Map............................................................................... 125
  5.2.3 Virtual Tour................................................................................ 125
  5.2.4 Multimedia (Video And Sound) ....................................................... 126
  5.2.5 Traditional Art, Imagery And Ceremony............................................ 127
5.3 Evaluation Interviews........................................................................... 129
  5.3.1 Interview 1................................................................................ 130
  5.3.2 Interview 2................................................................................ 131
  5.3.3 Interview 3................................................................................ 132
  5.3.4 Interview 4................................................................................ 133
  5.3.5 Interview 5................................................................................ 134
  5.3.6 Interview 6................................................................................ 136
  5.3.7 Interview 7................................................................................ 137
  5.3.8 Interview 8................................................................................ 138
  5.3.9 Interview 9................................................................................ 139
  5.3.10 Interview 10............................................................................. 140
5.4 Discussion of Outcomes...................................................................... 141
5.5 Conclusion........................................................................................... 143

Chapter 6 – Design Evaluation Using Hofstede Cultural Dimensions

6.1 Introduction....................................................................................... 144
6.2 Method.............................................................................................. 145
6.3 Discussion........................................................................................... 148
  6.3.1 Power Distance Dimension................................................................. 150
  6.3.2 Individualism................................................................................ 151
6.3.3 Masculinity.................................................................................. 152
6.3.4 Uncertainty Avoidance.................................................................. 153
6.3.5 Long Term Orientation.................................................................. 154
6.4 Conclusion.......................................................................................... 155

Chapter 7 – Conclusion

7.1 Introduction...................................................................................... 157
7.2 Culturally Appropriate Design Features.................................................. 157
  7.2.1 Simple Structure And Navigation................................................... 158
  7.2.2 Location Map.................................................................................. 159
  7.2.3 Virtual Tour..................................................................................... 160
  7.2.4 Multimedia (Video And Sound)....................................................... 161
  7.2.5 Interactive Games......................................................................... 162
  7.2.6 Community Links.......................................................................... 163
  7.2.7 Feedback Mechanism.................................................................... 164
  7.2.8 Informal Language And Humour................................................... 165
  7.2.9 Traditional Imagery And Ceremony............................................ 165
7.3 Culturally Acceptable Design Process.................................................... 167
  7.3.1 Focus Group.................................................................................. 168
  7.3.2 Iterative Prototyping and Interviews.............................................. 169
  7.3.3 General Considerations............................................................... 170
7.4 Future Work......................................................................................... 171

Bibliography

Bibliography.............................................................................................. 174

Appendix

Appendix 1 – Participant Screening Phone Script........................................... 193
Appendix 2 – Poster..................................................................................... 195
Appendix 3 – Information Sheet................................................................... 196
Appendix 4 – Participatory Design Sessions (Iteration One).......................... 198
Appendix 5 – Participatory Design Sessions (Iteration Two).......................... 201
Appendix 6 – NVivo Analysis Of Focus Group Transcript................................ 202
Appendix 7 – Transcript Of Focus Group Discussion................................... 203
Appendix 8 - Stories Written By Participants But Not Discussed During the Focus Group... 226
# List of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The Birabahn Building Houses The Wollotuka Institute (Johnston 2011)</td>
<td>18</td>
</tr>
<tr>
<td>1.2</td>
<td>The Western-Style Homepage Of The Wollotuka Institute (UON 2008)</td>
<td>18</td>
</tr>
<tr>
<td>1.3</td>
<td>The University of Newcastle ‘Brand’ Guidelines (UON 2012)</td>
<td>19</td>
</tr>
<tr>
<td>1.4</td>
<td>Typical Page Showing CMS Editable Areas (UON 2008c)</td>
<td>20</td>
</tr>
<tr>
<td>1.5</td>
<td>An Overview Of The Design Process</td>
<td>27</td>
</tr>
<tr>
<td>1.6</td>
<td>Community Involvements In The Design Process</td>
<td>28</td>
</tr>
<tr>
<td>1.7</td>
<td>Language Groups Represented By Participants (Tindale &amp; Winfred 1974)</td>
<td>31</td>
</tr>
<tr>
<td>1.8</td>
<td>Iteration Two of the Prototype</td>
<td>33</td>
</tr>
<tr>
<td>2.1</td>
<td>Prototyping Model</td>
<td>62</td>
</tr>
<tr>
<td>2.2</td>
<td>Screenshot1 Of The Digital Sonlines Project From YouTube™ (Digital Songlines 2010)</td>
<td>75</td>
</tr>
<tr>
<td>2.3</td>
<td>Screenshot2 Of The Digital Sonlines Project From YouTube™ (Digital Songlines 2010)</td>
<td>75</td>
</tr>
<tr>
<td>3.1</td>
<td>The Focus Group Process (Insite Mapping® 2009)</td>
<td>81</td>
</tr>
<tr>
<td>3.2</td>
<td>NVIVO - Percentage of Transcript Covered by Each Category</td>
<td>85</td>
</tr>
<tr>
<td>4.1</td>
<td>The Design Process of Iteration One</td>
<td>100</td>
</tr>
<tr>
<td>4.2</td>
<td>Simple Horizontal Navigation Using Aboriginal Dot Art</td>
<td>102</td>
</tr>
<tr>
<td>4.3</td>
<td>Satellite Map Showing Geographical Location (Google™ et al. 2011)</td>
<td>103</td>
</tr>
<tr>
<td>4.4</td>
<td>Virtual Tour Of The Birabahn Building</td>
<td>104</td>
</tr>
<tr>
<td>4.5</td>
<td>Video Showing Staff Introducing Themselves</td>
<td>105</td>
</tr>
<tr>
<td>4.6</td>
<td>Games Using Local Indigenous Art And Humorous Overtones</td>
<td>106</td>
</tr>
<tr>
<td>4.7</td>
<td>Community Links To Other Local Aboriginal Organizations</td>
<td>107</td>
</tr>
<tr>
<td>4.8</td>
<td>Anonymous Feedback System</td>
<td>108</td>
</tr>
<tr>
<td>4.9</td>
<td>Straightforward Informal Language with Humorous Overtones</td>
<td>108</td>
</tr>
</tbody>
</table>
Figure 4.10  Aboriginal Dot Art................................................................. 109
Figure 4.11  Casual Handwritten Font In Earthy Colours...................... 109
Figure 4.12  Screenshot of Indigenous Australians Wiki on Wikipedia™ (Wikipedia 2012).................................................................................. 110
Figure 5.1   The Process of Iteration Two.............................................. 121
Figure 5.2   Handwritten Images are used for Navigation..................... 124
Figure 5.3   Virtual Tour Splash Screen Providing Navigation Instructions.... 124
Figure 5.4   Visual Menu for Navigating Virtual Tour............................ 124
Figure 5.5   Visual Menu for Navigating Virtual Tour............................ 124
Figure 5.6   Slide-out Location Map (Source: Google™ et al. 2011)........... 125
Figure 5.7   The Virtual Tour............................................................... 126
Figure 5.8   Audio of Traditional Awabakal Story Embedded in Virtual Tour.... 126
Figure 5.9   Video Embedded Into The Virtual Tour.............................. 127
Figure 5.10  Aboriginal Art Displayed Within the Virtual Tour.................. 128
Figure 5.11  Imagery of Local Animals.................................................. 128
Figure 5.12  Traditional Aboriginal Bush Bar-B-Q Area......................... 129
Figure 5.13  Images of Flags and Traditional Eaglehawk Floor Mural.......... 129
Figure 7.1   Simple Menu, Earthy Colours, Handwritten Fonts, Aboriginal Dot Art And Informal Language...................................................... 159
Figure 7.2   Visual Menu For Navigating Virtual Tour............................ 159
Figure 7.3   Virtual Tour Splash Screen Providing Navigation Instructions.... 159
Figure 7.4   Satellite Image Map (Google™ et al. 2011)..................................... 160
Figure 7.5   Virtual Tour Of the Birabahn Building.................................. 175
Figure 7.6   Friendlt Contact Us Video.................................................. 162
Figure 7.7   Two Interactive Games...................................................... 163
Figure 7.8   Community Links.............................................................. 164
Figure 7.9  Feedback Mechanism…………………………………………………… 165
Figure 7.10  Aboriginal Dot Art in Earthy Colours…………………………………… 166
Figure 7.11  Traditional Imagery Of Local Animals…………………………………… 166
Figure 7.12  Traditional Imagery And Ceremony…………………………………… 166
List of Tables

Table 1.1 Ethical Research Principles Adopted For the Wollotuka Project .................. 25
Table 2.1 Chapter Contents Derived From HCI (ACM SIGCHI 2009, pp. 13-27) ........... 35
Table 2.2 Issues in the Design Process for an Aboriginal Community ....................... 41
Table 2.3 Design Principles for an Aboriginal Community .................................. 54
Table 2.4 General Cultural Design Guidelines .................................................. 57
Table 2.5 Key Differences Between Small and Large Power Distance Societies in a Family, School and Work Context .................................................. 64
Table 2.6 Key Differences Between Collectivist and Individualist Societies in a Family, School and Work Context .................................................. 65
Table 2.7 Key Differences Between Feminine and Masculine Societies in a Family, School and Work Context .................................................. 66
Table 2.8 Key Differences Between Weak and Strong Uncertainty Avoidance Societies in a Family, School and Work Context .................................................. 67
Table 2.9 Hofstede’s Dimensions For a Selection of Countries (Hofstede 2005) .......... 80
Table 3.1 Emerging Themes Supported by Literature Review ............................... 100
Table 3.2 Themes Emerging From the Focus Group Discussion ........................... 115
Table 4.1 References to Design Ideas from the Focus Group and Literature ............ 119
Table 5.1 Cultural Principles Satisfied by using the Virtual Tour Interface ............... 143
Table 6.1 Hofstede Dimensions for a Selection of Countries ............................... 171
Table 6.2 A List of Low and High Countries as Measured on the Hofstede Cultural Dimensions (Callahan 2005b, Dormann and Chisalita 2003) .................. 172
Table 6.3 Key Design Features Expected for Low and High Values in Hofstede’s Power Distance Dimension (Callahan 2005b) .............................. 175
Table 6.4 Key Design Features Expected for Low and High Values in Hofstede’s Individualism Dimension (Callahan 2005b) .............................. 176
Table 6.5  Key Design Features Expected for Low and High Values in Hofstede’s Masculinity Dimension (Callahan 2005b) ................................................................. 178

Table 6.6  Key Design Features Expected for Low and High Values in Hofstede’s Uncertainty Avoidance Dimension (Callahan 2005b) ............................... 179

Table 6.7  Key Design Features Expected for Low and High Values in Hofstede’s Long Term Orientation Dimension (Callahan 2005b) ........................................ 180
Publications


Abstract

This three year case study examines the key design features and methodology required to develop a website that best reflects the culture of an Indigenous Australian community. The study also considers general issues related to the representation and capture of Indigenous knowledge.

The Wollotuka project is grounded in previous contextual design work. The aim was to investigate two main questions: what key design features should be incorporated into a website to meet the requirements of an Aboriginal community and what culturally acceptable process can be used to capture these requirements?

The Wollotuka project adopted an iterative prototyping approach that built on previous knowledge concerning Indigenous design elements. The user-centred design process engaged closely with 12 members of the local Aboriginal & Islander community throughout the process. The ethnographic process included a focus group discussion and one-on-one interviews.

The final design incorporated a virtual tour of the building and the grounds. Within the tour are situated other key features such as storytelling, video, Aboriginal art, humour, music and dance, messages from community members, a facility for feedback and some simple interactive games.

Many existing guidelines for Aboriginal cultural design were affirmed in the study, including the use of simple language, local imagery and the provision of an interaction style appropriate to the Indigenous group. A number of helpful guidelines related to Aboriginal culture and design features were identified in the project.

The project also identified important guidelines regarding a culturally acceptable design process for an Indigenous community. Overall, the community-based design process used in the Wollotuka project met with approval from all members of the group. Interviews with the project participants highlighted the importance of this close community involvement in the design process. It can be concluded that the respect for traditions is paramount and that practices can vary significantly between varying Indigenous groups.
The design features identified as most appropriate to capture the cultural identity of the group were also evaluated, by considering them in terms of Hofstede’s cultural model. Hofstede’s cultural dimensions have been frequently used to study the way culture impacts on web design. Some correlations have been measured between Hofstede’s cultural dimensions, including the structural and aesthetic design features used in websites from different cultures. To perform this final analysis, a survey of the community group was completed, to position them in terms of Hofstede’s dimensions. A comparison was then made on the key design features identified from the Wollotuka project and the outcomes that might be expected, given the low position of the group on each of Hofstede’s five cultural dimensions. The results of this analysis were mixed. There were some good correlations and some disagreements between the Wollotuka project findings and the results from previous studies.