Educating Cultural Heritage Information Professionals for Australia's galleries, libraries, archives and museums: A Grounded Delphi study

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Abstract

This research explored the skills, knowledge and qualities, and professional education needs, of information professionals in galleries, libraries, archives and museums (GLAM) in Australia. These cultural heritage institutions have always had a role in allowing us to experience, explore and interpret our world by enabling people to engage with information in multiple forms through their mutual core functions of acquiring, organising, storing, providing access to and preserving information.

With the advent of the digital environment, the role of the information professional has grown, but so too have the opportunities for making the collections of Australia's cultural heritage institutions available, including the increased ability for collaboration and convergence between institutions. The need to educate information professionals who can operate across these blurred cultural heritage boundaries is becoming paramount if we are to maximize the use of our rich collections of cultural heritage information.

This research identified similarities in skills, knowledge and qualities using the Grounded Delphi method, a relatively new methodological extension of the Delphi method. It integrates aspects of Grounded Theory – particularly with respect to the data analysis - with the Delphi method, a group communication tool and a means to achieve consensus. The process consisted of three rounds of data collection: this first was exploratory focus groups, followed by two rounds of online questionnaires. In keeping with Delphi procedures, an 'a priori' consensus level was set at 75%. Of the 74 questions that participants had to answer, 57 reached consensus.

The findings revealed that although full convergence of galleries, libraries, archives and museums is unlikely, many of the skills, knowledge and qualities would be required across all four GLAM sectors. However, some skills may require a 'change of focus' in the digital environment. Key findings included the need to 'understand

why we do what we do'; 'understand the broad purpose of our role'; 'the need to better articulate the profession's existence and its role in social capacity building'; and the need for broader, more generalist skills, but without losing any specialist capacity. The findings provide the first empirically based guidelines around what needs to be included in an educational framework for information professionals who will work in the emerging GLAM environment. A further recommendation is to consider establishing an undergraduate degree where the broader, cross-disciplinary skills and knowledge are taught in an Information Management/ Informatics focussed program.

As the first study of GLAM education requirements in Australia and the wider Asia-Pacific region to take a holistic approach by engaging information professionals across all four types of cultural heritage institutions, this thesis makes a significant contribution to the GLAM research field and to information education generally.

Keywords: information professional, cultural heritage information professional, GLAM, LAM, Australia, information education, grounded delphi method

Table of Contents

ABSTRACT ..... **III**

ABBREVIATIONS ..... **X**

LIST OF TABLES ..... **XI**

LIST OF FIGURES ..... **XI**

STATEMENT OF ORIGINAL AUTHORSHIP ..... **XII**

PROLOGUE ..... **XIII**

CHAPTER 1: INTRODUCTION **14**

1.1 INTRODUCTION **14**

1.2 STATEMENT OF THE PROBLEM **15**

1.3 RESEARCH QUESTIONS **16**

1.4 JUSTIFICATION FOR THE RESEARCH **17**

1.5 METHODOLOGY **19**

1.6 SUMMARY OF KEY FINDINGS **20**

1.7 DEFINITIONS **20**

1.8 SCOPE AND LIMITATIONS **23**

1.9 OVERVIEW OF THE DOCUMENT **24**

1.10 CONCLUSION **25**

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW **27**

2.1 INTRODUCTION **27**

2.2 BACKGROUND **28**

2.2.1 WHAT IS GLAM? AN HISTORICAL OVERVIEW OF GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS 30

2.3 LITERATURE REVIEW **36**

2.4 THE ROLE OF GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS IN SOCIETY 37

2.4.1 GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS' CONTRIBUTION TO TODAY'S KNOWLEDGE ECONOMY 39

2.4.2 THE PROFESSIONAL LANDSCAPE: HISTORY AND DEVELOPMENT OF THE PROFESSIONS AND PROFESSIONAL ASSOCIATIONS OF GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS 42

2.4.2.1 Galleries and Museums *43*

2.4.2.2. Libraries *46*

2.4.2.3 Archives *47*

2.4.2.4 GLAM in Australia *50*

2.5 WHY (RE)CONVERGE? OR WHY NOT? **55**

2.6 WHAT IS 'INFORMATION' IN A GLAM CONTEXT? **63**

2.7 WHAT IS AN INFORMATION PROFESSIONAL (IP)? **65**

2.8 INFORMATION PROFESSIONALS IN GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS: CURRENT ROLES 69
2.8.1 INFORMATION PROFESSIONALS IN GALLERIES 69
2.8.2 INFORMATION PROFESSIONALS IN LIBRARIES 73
2.8.3 INFORMATION PROFESSIONALS IN ARCHIVES 74
2.8.4 INFORMATION PROFESSIONALS IN MUSEUMS 77
2.9 RISE OF THE CULTURAL HERITAGE INFORMATION PROFESSIONAL 79
2.10 PROFESSIONAL EDUCATION FOR GLAM 80
2.10.1 THE ISCHOOL MOVEMENT 86
2.11 DIGITAL PRESERVATION, CURATION AND STEWARDSHIP 88
2.12 KNOWLEDGE, SKILLS AND QUALITIES OF INFORMATION PROFESSIONALS IN GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS 93
2.13 CONCLUSION 98
CHAPTER 3: METHODOLOGY 101
3.1 INTRODUCTION 101
3.2 THE RESEARCH PARADIGM 102
3.2.1 CONSTRUCTIVISM AND SOCIAL CONSTRUCTIVISM 104
3.2.2 RELATIONSHIP OF RESEARCH TO PRACTICE IN THE INTERPRETIVIST TRADITION 107
3.2.4 SUMMARY 108
3.3 METHOD: THE GROUNDED DELPHI METHOD 108
3.3.1 THE DELPHI METHOD 109
3.3.1.1 The Panel of Experts 111
3.3.1.2 Delphi Rounds 113
3.3.1.3 Advantages and Disadvantages of Delphi 114
3.3.2 GROUNDED THEORY 117
3.3.2.1 Open coding 119
3.3.2.2 Axial coding 120
3.3.2.3 Selective coding 120
3.3.3 GROUNDED DELPHI METHOD 121
3.3.4 JUSTIFICATION FOR USING GROUNDED DELPHI METHOD 123
3.4 RESEARCH DESIGN: APPLICATION OF THE GROUNDED DELPHI METHOD 124
3.4.1 ROUND 1: EXPLORATORY FOCUS GROUPS 125
3.4.1.1 Participant selection 126
3.4.1.2 Data collection instrument: Focus group discussion guide 127
3.4.1.3 Round 1 focus group: Pilot 129
3.4.1.4 Round 1 focus group: Galleries 130
3.4.1.5 Round 1 focus group: Libraries 131
3.4.1.6 Round 1 focus group: Archives 131
3.4.1.7 Round 1 focus group: Museums 132
3.4.2 ONLINE QUESTIONNAIRE ROUNDS 2 AND 3 133
3.4.2.1 Selecting the Panel of Experts 134
3.4.2.2 Setting the a priori consensus level 138
3.5 CONCLUSION 139
CHAPTER 4: DATA ANALYSIS PROCEDURES AND DATA COLLECTION INSTRUMENT DEVELOPMENT 140
4.1 INTRODUCTION 140
4.2 ROUND 1: EXPLORATORY FOCUS GROUPS 140

4.2.1 Analysis Procedures 141

4.3 ROUND 2: ONLINE QUESTIONNAIRE 143
4.3.1 Development of Round 2 questionnaire 143
4.3.1.1 Part 1: Demographics 144
4.3.1.2 Part 2: Validating information gathered from Round 1 Focus Groups 145
4.3.1.3 Part 3: Future roles and responsibilities of information professionals 146
4.3.1.4 Part 4: GLAM convergence and the information professional's role 146
4.3.2 Pilot of Round 2 questionnaire 147
4.3.3 Analysis procedures for Round 2 questionnaire 149
4.3.3.1 Part 1: Demographics and Part 2: Validating information gathered from Round 1 Focus Groups 150
4.3.3.2 Part 3: Future roles and responsibilities 151
4.3.3.3 Part 4: GLAM convergence and the information professional's role 154

4.4 ROUND 3: ONLINE QUESTIONNAIRE 155
4.4.1 Development of the Round 3 questionnaire 156
4.4.1.1 Part 1: Emerging roles and responsibilities (10 questions) 156
4.4.1.2 Part 2: New skills and knowledge (9 questions) 157
4.4.1.3 Part 3: Skills and knowledge no longer needed (6 questions) 158
4.4.1.4 Part 4: Likelihood of GLAM convergence in Australia (1 question) 158
4.4.1.5 Part 5: How might the roles of information professionals be impacted if some level of convergence were to occur (7 questions) 159
4.4.1.6 Part 6: How might the education be impacted/changes that might be needed (8 questions) 160
4.4.1.7 Part 7: Aspects of gallery/museum, library or archival studies that would be beneficial … (etc.) (4 questions) 160
4.4.1.8 Part 8: Aspects of gallery/museum, library or archival studies not relevant in the future (6 questions) 161
4.4.2 Pilot of Round 3 questionnaire 161
4.4.3 Analysis procedures for Round 3 questionnaire 161

4.5 ADHERENCE TO AND DEPARTURE FROM GROUNDED DELPHI METHOD ... 162

4.6 CONCLUSION 167

CHAPTER 5: FINDINGS 168

5.1 ROUND 1: EXPLORATORY FOCUS GROUPS 168
5.1.2 Skills, knowledge and attitudes: current and future 168
5.1.2.1 Current requirements 169
5.1.2.2 Future requirements 171
5.1.2.3 Skills and knowledge required of co-workers 172
5.1.3 Thoughts on "information professional" and "cultural heritage information professional" 173
5.1.4 A case for converged education? 174

5.2 ROUND 2 QUESTIONNAIRE: EXAMINATION AND DISCUSSION OF RESULTS 175
5.2.2 Part 1: Demographics 175
5.2.3 Part 2: Validating information gathered from Round 1 Focus Groups 177
5.2.4 Part 3: Emerging roles and responsibilities of information professionals 179
5.2.5 Part 4: GLAM convergence and the information professional's role 188

5.3 ROUND 3 QUESTIONNAIRE: EXAMINATION AND DISCUSSION OF RESULTS 193
5.3.1 Part 1: Emerging roles and responsibilities 195
5.3.2 Part 2: New skills, knowledge and qualities required 195

5.3.3 PART 3: SKILLS AND KNOWLEDGE NO LONGER REQUIRED 197
5.3.4 PART 4: THE LIKELIHOOD OF CONVERGENCE BETWEEN GALLERIES, LIBRARIES, ARCHIVES AND MUSEUMS IN AUSTRALIA 198
5.3.5 PART 5: THE IMPACT ON THE ROLES OF INFORMATION PROFESSIONALS 199
5.3.6 PART 6: CHANGES THAT MIGHT BE NEEDED IN EDUCATION FOR INFORMATION PROFESSIONALS 200
5.3.7 PART 7: ASPECTS OF MUSEUM, LIBRARY OR ARCHIVAL STUDIES PROGRAMMES THAT WOULD BE BENEFICIAL TO ONE OR MORE OF THE OTHER PROGRAMMES 202
5.3.8 PART 8: ASPECTS OF MUSEUM, LIBRARY OR ARCHIVAL STUDIES PROGRAMMES THAT MAY NOT BE RELEVANT IN THE FUTURE 203

5.4 CONCLUSION 203

CHAPTER 6: DISCUSSION 205

6.1 THE GLAM CONVERGENCE IN AUSTRALIA: LIKELY OR UNLIKELY? 206

6.2 ROLES AND RESPONSIBILITIES OF GLAM INFORMATION PROFESSIONALS 209
6.2.1 EMERGING ROLES AND RESPONSIBILITIES OF INFORMATION PROFESSIONALS 210
6.2.2 IMPACT ON ROLES IF SOME LEVEL OF CONVERGENCE WERE TO OCCUR 218
6.2.2.1 Potential role for a meta-professional in GLAM 222

6.3 SKILLS, KNOWLEDGE AND QUALITIES 225
6.3.1 NEW SKILLS, KNOWLEDGE AND QUALITIES 226
6.3.2 SKILLS AND KNOWLEDGE NO LONGER REQUIRED 232
6.3.3 SKILLS AND KNOWLEDGE REQUIRED OF CO-WORKERS 235

6.4 EDUCATION NEEDS FOR INFORMATION PROFESSIONALS 237
6.4.1 CHANGES IN EDUCATION FOR GLAM INFORMATION PROFESSIONALS 238
6.4.2 ASPECTS OF MUSEUM, LIBRARY OR ARCHIVAL STUDIES PROGRAMS THAT WOULD BE BENEFICIAL TO ONE OR MORE OF THE OTHER PROGRAMS 241
6.4.2.1 Library Studies programs 242
6.4.2.2 Archival studies programmes 243
6.4.2.3 Gallery and Museum studies 243
6.4.3 ASPECTS OF MUSEUM, LIBRARY OR ARCHIVAL STUDIES PROGRAMMES THAT MAY NOT BE RELEVANT IN THE FUTURE 244
6.4.4 A CASE FOR CONVERGED EDUCATION? 245

6.5 MOVING TOWARDS A FRAMEWORK FOR CULTURAL HERITAGE INFORMATION PROFESSIONALS 246
6.5.1 ONTOLOGICAL DIMENSION 247
6.5.1.1 Ontological and pedagogical elements 247
6.5.2 CONTEXT OF GLAM 249
6.5.3 THEORIES, VALUES AND ETHICS OF GLAM 249
6.5.4 EPISTEMOLOGICAL DIMENSION 250
6.5.4.1 Common core element 250
6.5.4.2 Variables element 251

6.6 RECOMMENDATIONS 251

6.7 CONCLUSION 254

CHAPTER 7: CONCLUSIONS 255

7.1 INTRODUCTION 255

7.2 RESEARCH OVERVIEW 255

7.3 ORIGINAL CONTRIBUTION TO RESEARCH 256
7.3.1 CONTRIBUTION TO GLAM EDUCATION FOR PROFESSIONAL PRACTICE 256

7.3.2 CONTRIBUTION TO EDUCATION FOR INFORMATION PROFESSIONALS 257
7.3.3 CONTRIBUTION TO POLICY DEVELOPMENT 258
7.3.4 CONTRIBUTION TO THE METHOD 258
7.4 LIMITATIONS 259
7.6 IMPLICATIONS FOR FUTURE RESEARCH 260
7.7 CONCLUSION 262
EPILOGUE: REFLECTIONS ON GLAM CONVERGENCE 264
APPENDIX 1: FOCUS GROUP DISCUSSION GUIDE 266
APPENDIX 2: KNOWLEDGE RESOURCE NOMINATION WORKSHEET 268
APPENDIX 3: EXPERTS MAPPED AGAINST CRITERIA 269
APPENDIX 4: INVITATION TO PARTICIPATE EMAIL TEXT 271
APPENDIX 5: FOCUS GROUP ANALYSIS ON WHITEBOARD 273
APPENDIX 6: EMERGENCE OF FIVE BROAD CATEGORIES FROM FOCUS GROUP ANALYSIS AND CROSS-REFERENCED CORE KNOWLEDGE STATEMENTS 274
APPENDIX 7: 25 KNOWLEDGE CONCEPTS AND 15 GENERIC SKILLS 275
APPENDIX 8: SECOND ROUND QUESTIONNAIRE 277
APPENDIX 9: THIRD ROUND QUESTIONNAIRE 284
APPENDIX 10: CORRESPONDING QUESTIONS FROM ROUND 2 TO ROUND 3 QUESTIONNAIRE 311
APPENDIX 11: EXAMPLE OF INITIAL OPEN CODING PROCESS 314
APPENDIX 12: 17 FIRST-LEVEL CATEGORIES FROM OPEN CODING 315
APPENDIX 13: EXAMPLE OF FIRST-LEVEL CATEGORIES WITH SUPPORTING RESPONSES 316
APPENDIX 14: VALIDATING INFORMATION FROM FOCUS GROUPS – RESULTS 317
APPENDIX 15: LIKELIHOOD OF CONVERGENCE - ROUND 2 AND 3 RESULTS 319
REFERENCES 320

Abbreviations

ALIA	Australian Library and Information Association
ASA	Australian Society of Archivists
CCA	Collections Council of Australia
CHIM	Cultural Heritage Information Management
CMC	Cultural Ministers' Council
CUA	Catholic University of America
GDM	Grounded Delphi Method
GLAM	Galleries, Libraries, Archives and Museums*
IMLS	Institute of Museum and Library Services
ICT	Information and Communication Technologies
IS	Information Systems
IT	Information Technology
LAC	Library and Archives Canada
LIS	Library and Information Science
NCAF	National Collections Advisory Forum
MA	Museums Australia
MLA	Museums, Libraries and Archives Council
RIMPA	Records and Information Management Professionals Australasia

* 'Galleries' are included in the acronym, because in Australia, an "Art Gallery" is where one goes to look at art, not purchase art, as is the case in North America and Europe. 'Art Museum' as a term is not common usage in Australia.

List of Tables

Table 3.1: Summary of data collection and analysis process

Table 3.2: Participant invitations, acceptances and actual participation numbers

Table 4.1: Grounded Delphi process as used by Päivärinta, Pekkola and Moe (2011)

Table 4.2: Grounded Delphi Method process as used in current study

Table 5.1: Qualifications held: Total number and discipline specific to GLAM

Table 6.1: Emerging roles and responsibilities – Consensus

Table 6.2: Impact on IP roles if some level of convergence were to occur

Table 6.3: New skills and knowledge

Table 6.4: Skills and knowledge no longer needed

Table 6.5: Changes in education if some level of convergence were to occur

Table 6.6: Aspects of Library Studies programmes that would be beneficial to other programmes

Table 6.7: Aspects of Archival Studies programmes that would be beneficial to other programmes

Table 6.8: Aspects of Museum and Gallery Studies programmes that would be beneficial to other programmes

Table 6.9: Aspects of Museum, Library or Archival Studies that may not be relevant in the future

List of Figures

Figure 1: The Collaboration Continuum, (Zorich, Waibel and Erway, 2008, p. 11)

Statement of original authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signature: Date: 29 June, 2015

QUT Verified Signature

Prologue

No PhD journey is complete without a team of people fulfilling often very different roles in order for the thesis to come to fruition. A few words on a page are small recognition for their contribution to this expedition.

There would be no thesis at all without the Supervisory team 'par excellence' of Professor Helen Partridge, Dr. Hilary Hughes and Dr. Gillian Oliver. There really are no words to express my deep gratitude for all you have done and given me. I was once advised that the most important thing about doing a PhD was to "get a good supervisor". I got three of the best.

To my family: my husband Scott and my parents. Without your love and support over the last 8 years especially, this journey would not have even started. At times I'm sure you wish it hadn't…!

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Finally, thank you to everyone who took time out of their days and weeks to participate in this research. Without willing participants, there would be nothing to write about.

CHAPTER 1: INTRODUCTION

1.1 Introduction

On the world stage, Australia's cultural heritage institutions – galleries, libraries, archives and museums – are comparatively young, yet they each have rich collections detailing both our British and Indigenous past. These have been added to over the years as people from many nations came to our shores: Europeans and Chinese during the gold rush of 1851; British, Irish and Europeans after the First and Second World Wars; and more recently people from Middle Eastern countries and Africa. With them they bring parts of home, which are woven into the cultural fabric of this ever-changing country.

How do these people tell their stories? How do others hear about their stories? One way is by engaging with our cultural heritage institutions. These institutions themselves have a long history of collecting and making information available to citizens, which in turn has allowed humankind to progress towards the society we experience today. In order to make this kind of information available, there are professionals working to make it all possible. These are information professionals, who need to be highly skilled and trained in dealing with all facets of information.

With the advent of the digital environment, the role of the information professional has grown, but so too have the opportunities for making the collections of Australia's cultural heritage institutions available, including the increased ability for collaboration and convergence between institutions. This research investigated the roles of information professionals in galleries, libraries, archives and museums in Australia, identifying similarities and differences, with the intention of developing

an educational framework for those information professionals who will work in the emerging GLAM (Galleries, Libraries, Archives and Museums) environment.

This introductory chapter outlines the rationale for this research undertaking. It begins by outlining the research problem, which leads to the formation of the research question. The justification for the research and the methodology used in the study are then discussed, followed by its contribution to knowledge. Definitions of terms as they will be used in this thesis are then provided. The scope and limitations of the research project are then stated. Finally, an outline of the broad structure of this document is given.

1.2 Statement of the Problem

This research investigated the education needs for contemporary information professionals with a specific focus on information management practices in what is increasingly recognised to be a converging GLAM environment. If galleries, libraries, archives and museums wish to continue to maximize all that the digital environment offers now and into the future, the GLAM sector may require information professionals who have the flexibility, skills and knowledge to allow them to work across the full spectrum of the GLAM institutions. As the distinctions between these institutions continue to diminish, it is important to consider if existing, largely silo-ed educational structures are the best way forward in the continuing development of services and access to Australia's cultural heritage collections.

A significant impetus for this research came from the Digital Culture Public Sphere Submission Paper (Lundy, 2011), a report submitted to the National Cultural Policy consultation process. Under the heading of "Ideas for what success would look like" (in terms of digital access, participation by the public and opportunities to

collaborate in the GLAM sector), one contributor wrote: "If I am interested in Ned Kelly or Phar Lap, then all the books, photos, artefacts etc. are linked together online. I don't have to fly all over the place to personally inspect the items in dozens of museums, libraries etc." (Lundy, 2011, p. 88). This is precisely how the current researcher has envisaged the cultural collections of Australia being utilised. How that can be achieved in terms of the skills, knowledge and qualities of information professionals who will work in this area has therefore provided the motivation for this thesis.

As well as concerns regarding skills and knowledge, there are also theoretical issues that accompany the research problem. For example, there is some concern of a lack of theoretical development within the converging information disciplines (Myburgh, 2011). This is not surprising given that no empirical study of the scope of the current study has been conducted, as far as has been determined. Consequently, this research has contributed to the development of theoretical underpinnings in this area.

1.3 Research Questions

In order to address the identified research problem, this study addressed the overarching research question:

What are the future education needs of information professionals in a potentially converged cultural heritage environment?

In addition, it responded to the following two sub-questions:

- What are the current and potential roles and responsibilities of information professionals who deal with cultural heritage material in galleries, libraries, archives and museums?
- What are the knowledge, skills, and qualities they need to carry out their jobs now and into the future?

The first step in exploring the education needs for GLAM information professionals lay in identifying exactly where these areas of convergence were in terms of roles and responsibilities. This was investigated via the first research sub-question. The second research sub-question addressed the specific knowledge, skills, and qualities required of information professionals who deal with cultural heritage material in galleries, libraries, archives and museums. It should be noted here that differences in terminology between skills, attributes, competencies, qualities, capabilities and so forth is not a concern of this thesis. The intention is to ascertain what is required to carry out the role of information professional in cultural heritage institutions, regardless of what label might be attached to it. However, definitions for the terms 'skills' and 'qualities' as they are being used in this thesis are included in Section 1.7.

The significance of this study rested on the anticipation that the empirical data gathered would provide insight into what could or should be incorporated into an education framework for cultural heritage information professionals.

1.4 Justification for the Research

Whilst there has been a considerable number of international studies outlining the requirements for each specific sector, they have largely served to highlight differences in or changes to the information professionals' roles in GLAM institutions (Duff, Cherry and Sheffield, 2010; Currall and Moss, 2008; Marty 2004). Few studies have addressed common ground. However, there are some notable exceptions including Trant (2009), Dupont (2007), Martin (2007), Wythe (2007) and Hedstrom & King (2004).

Other research has addressed specific areas of convergence, such as digital curation (Tibbo and Lee, 2010; Tibbo and Duff, 2008; Lee, Tibbo and Schaefer, 2007) or museum informatics (Marty and Twidale, 2011; Marty, Rayward and Twidale, 2003).

This is reflected in the programmes offered by Graduate Schools of Library and Information Science (LIS) in the United States that tend to focus on these distinctions rather than commonalities. For example, a Master of Science with a specialisation in Data Curation (University of Illinois, 2011); a concentration in Archives and Records Management (University of Michigan, 2011a) or Preservation of Information (University of Michigan 2011b); a Certificate of Advanced Study in Preservation Administration (University of Texas, 2011).

Whilst it is acknowledged that these specialisations are important in the digital world, they do not provide a holistic approach to educating information professionals who can work across increasingly blurred GLAM boundaries. Few studies into the education requirements of information professionals who will work in these cultural heritage institutions have been undertaken. Noteworthy exceptions include Marty and Twidale (2011); Ray (2009); Choquette (2009), and the report from the Cultural Heritage Information Professionals Workshop (Marty, 2008) Significantly, no study into the convergence of information professionals' roles within the GLAM institutions, nor the education of those professionals has been conducted in the southern hemisphere, a gap which this study rectifies.

The purpose and nature of LIS education in Australia has undergone extensive analysis with the Australian Learning and Teaching Council (ALTC) funded project about repositioning LIS education (Partridge et al., 2011). The final report of this project, released in December 2011, provided a set of eleven recommendations forming the "Framework for Education of the Information Professions in Australia" (Partridge et al., 2011, p. 2). A notable and deliberate omission in each of the recommendations is the use of the word "library", suggesting that LIS education is in fact becoming more than just 'library education.' With this in mind, the current study is a logical step in the research into the education of information professionals in Australia.

1.5 Methodology

The research philosophy that underpinned this study was a Social Constructivist paradigm within the Interpretivist tradition. Social Constructivism is said to be a strand of Constructivism, and there are subtle differences in these paradigms. Where Constructivism emphasises the individual construction of knowledge, Social Constructivism focuses on social processes and interactions when constructing reality (Schwandt, 2007).

For Interpretivists, reality is a socially constructed, group process where language and the traditions of the social environment play a fundamental role (Willis, 2007a). Therefore, the research process itself was also influenced by the researcher's own worldviews that have themselves been socially constructed (Willis, 2007a) as Interpretivists do not believe that there is one true, correct path to knowledge. These aspects of the research philosophy are discussed in more detail in Chapter 3, Section 3.2.

The method used for this research was the Grounded Delphi Method, a relatively new methodological extension of the Delphi method. It integrates aspects of Grounded Theory – particularly with respect to the data analysis - with the Delphi method. European researchers Carl Erik Moe, Tero Päivärinta and Samuli Pekkola developed the Grounded Delphi Method while working on research into Information Systems procurement within the Norwegian public sector. They argued that incorporating elements of Grounded Theory assists in and enhances the theory capabilities of the Delphi method. A detailed description of this method is provided in Chapter 3, Section 3.3.3. Chapter 3 also provides a more complete discussion about the components of Delphi method (Section 3.3.1) and Grounded Theory (Section 3.3.2) and how they are combined to form the Grounded Delphi Method.

1.6 Summary of key findings

The findings revealed that although full convergence of galleries, libraries, archives and museums is unlikely, many of the skills, knowledge and qualities will be required across all four GLAM sectors. However, some skills may require a 'change of focus' in the digital environment. Key findings included the need to 'understand why we do what we do'; 'understand the broad purpose of our role'; 'the need to better articulate the profession's existence and its role in social capacity building'; and the need for broader, more generalist skills, but without losing any specialist capacity. The findings provide the first empirically based guidelines around what needs to be included in an educational framework for information professionals who will work in the emerging GLAM environment. A further recommendation is to consider establishing an undergraduate degree where the broader, cross-disciplinary skills and knowledge are taught in an Information Management/Informatics focussed program.

1.7 Definitions

Many research projects require clarification of what can be ambiguous concepts, and this study is no exception. The following definitions provide an explanation and place into context the more common terms being used in this thesis.

Cultural Heritage: In its broadest sense, Cultural Heritage includes "the things, places, and practices that define who we are as individuals, as communities, as nations or civilisations and as a species" (University of Canberra, 2009). This includes historic buildings, national parks, sacred places, intangible cultural heritage such as traditions, music and dance, as well as the collections and institutions of galleries, libraries, archives and museums. In this thesis, Cultural Heritage refers to the institutionalised embodiment of this term (i.e. the collections and institutions of galleries, libraries, archives and museums), unless stated otherwise.

GLAM: In this thesis, GLAM is considered to represent something broader than an acronym denoting four cultural heritage institutions. It refers to these institutions – galleries, libraries, archives and museums – as a collective. So the 'GLAM sector' is an entity of its own – it is something greater than the sum of its parts. When referring to the institutions as individual entities, they are referred to as such. A good example of this is the difference between the concepts of 'education for gallery, library, archive or museum professionals' and 'GLAM education' where the former produces a professional who is qualified to work in *either* a gallery, library archive or museum, whereas the latter would refer to an education programme that produces a 'Cultural Heritage Information Professional' able to work across the boundaries of these institutions. A more detailed discussion about the Cultural Heritage Information Professional is provided in Chapter 2, Section 2.9.

Information: The view of information in this thesis corresponds to Buckland's (1991) concept of 'information-as-thing', which he describes as 'that which is informative.' In Buckland's (1991) view, not only are data and documents considered information, but objects, such as those collected by museums, should also be considered as sources of information. A more complete discussion of this is offered in Chapter 2, Section 2.6.

Information Management practices: The act of collecting, organising, describing, storing, providing access to and preserving information (Dupont, 2006; Given and McTavish, 2010; Myburgh, 2011).

Information Professional: A person who in the course of their daily work performs some or all of the Information Management practices as described above. For the purposes of this thesis, their workplace includes galleries, libraries archives and museums. The definition of an information professional that also includes a description of the information professional's role is that given in the report of the

Cultural Heritage Information Professionals' (CHIPs) Workshop Report (Marty, 2008):

> The cultural heritage information professional uses or manages information technology to organize and provide access to information resources for all users of cultural heritage organizations, including libraries, museums, and archives (p. 1).

Knowledge: Incorporates subject matter learnt in a formal education programme (either diploma, degree or post-graduate level), or that has been learnt since graduation (for example through Continuing Professional Development (CPD) training). Examples include knowledge of metadata, technical and quality standards, museum theory and archival description.

Programme: The area or discipline of study, the completion of which leads to a qualification (for example: diploma, undergraduate degree, postgraduate degree).

Qualities: are values and personal traits and include things such as being dedicated, reliable, responsible, self motivated and having a sense of humour.

Subject: The individual components that make up a programme. In a Library and Information Science programme, Collection Management and Information Management would be considered two subjects. If a different term is used in a direct quote (e.g. unit, course), the original terminology will be maintained but with the preferred terminology of this thesis in square brackets.

Skills: Refers to what a graduate can do. They include cognitive skills, technical skills, communication skills, creative skills, interpersonal skills and generic skills (Australian Qualifications Framework, 2013). They often cut across disciplines, and include things such as leadership, communication and teamwork.

1.8 Scope and Limitations

In order to provide some boundaries for this study, the following scope and limitations were applied:

- Geographically, the study was limited to Australian galleries, libraries archives and museums, as the aim was to provide an educational framework for the Australian context.
- The resulting foundations for the GLAM education framework are aimed at university level programmes. The level at which this programme is taught (i.e. undergraduate, post-graduate diploma or masters) is not a consideration for this study (although recommendations around this are given) and is therefore out of scope.
- Although Professional Development (PD) may be mentioned as a possible way to educate existing professionals in various aspects, PD itself is also out of scope
- As with any research method, there are advantages and disadvantages with using the Grounded Delphi method. Most of these concern aspects of the Delphi method that are used. These are discussed in Chapter 3, Section 3.3.1.3.

Perhaps the biggest scoping issue was in the Archives domain. As the researcher was specifically interested in the cultural heritage aspect, a distinction was made between 'records' and 'archives' based on the 'Life-cycle' model of records management. The researcher acknowledges that for many archivists (or 'recordkeepers/recordkeeping professionals' as they sometimes prefer to be known) this is a false demarcation, leading to "custodial thinking" (see for example Boadle, 2004 and Cook, 2007). These archivists subscribe to the 'Continuum' model of records and archives rather than the 'Life-cycle' model. However, the researcher could not reconcile the inclusion of 'records' in a thesis about cultural heritage, so this demarcation – for better or worse – was applied. This led to comments from

some archive participants throughout the questionnaire rounds highlighting areas that appeared to them to be completely ignored. Although these areas were not specifically addressed in the questionnaires, the researcher was aware of them, and acknowledges that any educational changes would need to incorporate the continuum thinking perspective. A more complete discussion of continuum thinking is provided in Chapter 2, Section 2.8.3.

1.9 Overview of the document

The first chapter of this document has provided a rationale for the research project by presenting a discussion of the research problem followed by the statement of the research questions. Definitions and scope and limitations follow the justification for the research, to further contextualise this study.

Chapter 2 begins by providing some background to the development of galleries libraries, archives and museums in order to provide context and impetus for this study. This is followed by a review of the literature that informed this study. Overviews are provided for the role of galleries, libraries, archives and museums in society, and for the development of GLAM in Australia. The advantages and disadvantages of convergence are then examined. A discussion of information in the context of GLAM is given, followed by an examination of what constitutes an information professional in the GLAM environment. The potential of a cultural heritage information professional role is suggested and examined. Professional education and the knowledge, skills and attitudes required of information professionals in galleries, libraries, archives and museums as covered in the literature are highlighted. A statement confirming the research gap as identified by the literature review concludes the chapter.

Chapter 3 outlines the methodology used in this research and provides justification for the choices made. The Social Constructivist paradigm within the Interpretivist tradition is explained, followed by a discussion of the Grounded Delphi method and its unique features as a research method. The specific application of the Grounded Delphi Method to this research is discussed, including details of the pilot study.

Chapter 4 describes the data analysis procedures and how the data collection instruments were developed, including the Focus Group discussion guide and the Round 2 and 3 online questionnaires. As data analysis informs the development of the data collection instrument/s, the procedures for data analysis are also included in this chapter.

Chapter 5 examines the overall findings of the data collected. Chapter 6 discusses the significance of the findings with reference to the literature presented in Chapter 2 and in relation to the research questions.

The final chapter, Chapter 7, presents the foundations for an educational framework and recommendations as to how this might be implemented. Areas for further research are identified, and the contributions to knowledge are explored.

1.10 Conclusion

This introductory chapter has presented the research problem statement, leading to the research questions that frame this thesis. Justifications for undertaking this research have been provided. The methodology has been briefly described and definitions and scope and limitations as they apply to this study have been addressed. An overview of how this thesis will progress has also been provided. The following chapter provides background information on the evolution of

galleries, libraries, archives and museums, and reviews the literature as it pertains to this study.

CHAPTER 2: BACKGROUND AND LITERATURE REVIEW

2.1 Introduction

This chapter examines existing research related to the convergence of galleries, libraries, archives and museums, which is also referred to as the cultural heritage sector. It also provides context for where this research is positioned by providing background information and an historical overview of the development of galleries, libraries, archives and museums in order to contextualise the apparent growing interest in convergence. A critical review of the literature further assists in positioning the study and establishes the gaps in the body of research, thus providing justification for the current study.

Considering the roles, knowledge, skills and qualities of information professionals in the cultural heritage sector, the literature review has necessitated several lines of inquiry, resulting in nine main sections. The first section of the literature review (Section 2.4) provides an overview of the role of galleries, libraries, archives and museums in society. A discussion of how the cultural heritage sector through the ages has contributed to the knowledge-based economy that is experienced today is followed by an overview of the development of GLAM in Australia.

Following this is a discussion of the advantages and disadvantages that GLAM convergence in today's digital environment may bring. The third section responds to the premise that information professionals deal with and manage information; that the information in galleries, libraries, archives and museums is somehow dissimilar and therefore a hindrance to convergence. This section serves to contextualise what is meant by 'information' in this thesis, and argues that while

there may be barriers to convergence, differences in the type of information managed is not one of them.

The roles of information professionals in galleries, libraries, archives and museums are wide and varied and therefore require investigation as to what constitutes an information professional in these contexts. The sixth section makes a case for the possible emergence of a new kind of information professional – the cultural heritage information professional. How such a professional might be educated is explored in the seventh section, which includes an overview of the iSchool movement.

The eighth section discusses digital preservation, digital curation and digital stewardship and the possibility for them to be the unifying element in a potential converged education programme. The ninth section is a discussion of what the existing literature suggests is required in terms of the knowledge, skills and qualities of information professionals working in galleries, libraries, archives and museums. A conclusion provides a summary of the chapter, highlighting again the research gaps as determined by this critical examination of the knowledge base as it currently stands.

2.2 Background

Cultural heritage institutions have always had a role in allowing us to experience, explore and interpret our world by enabling people to engage with information in multiple forms through their mutual core functions of acquiring, organising, storing, providing access to and preserving information. The digital environment has brought with it a change in how cultural heritage institutions are able to interact with their user communities, and indeed what the community now expects of these institutions. Digital collections blur the boundaries of who owns what content as

the format and medium of the artefacts traditionally collected by each institution becomes less domain specific. Institutions share rare and precious objects through digitised images; exhibitions of digital objects are curated online; metadata is added by professionals and users alike through 'social tagging'. Documents created electronically (the so-called 'born digital' documents) are now archived along with 'dusty old documents', while 'dusty old documents' are now digitised. Portals such as the National Library of Australia's Trove bring together the collections of multiple institutions and offer users the 'born digital' material and images of very old material in the same search results.

Looking to the future, access to this content cannot be effectively or efficiently facilitated by the information professionals who will work in these institutions without appropriate educational frameworks that address these areas of potential convergence. The need to educate information professionals who may need to operate across these blurred cultural heritage boundaries is becoming paramount if we are to maximize the use of our rich collections of cultural heritage information. The concept of what constitutes an information professional as it is being used in this study was defined in Chapter 1, Section 1.7 and is discussed in greater detail in Chapter 2, Section 2.7.

This study will identify areas of commonality and convergence of Information Professionals working within galleries, libraries, archives and museums in Australia. It is the first study of education needs for future GLAM professionals in Austrarlia and the wider Asia-Pacific region and takes a holistic approach by engaging professionals across all institutions. Findings are used to make recommendations for the education of these professionals in the future.

2.2.1 What is GLAM? An historical overview of Galleries, Libraries, Archives and Museums

This section provides and overview of the historical development of galleries, libraries, archives and museums, which reflects the current inclination towards a GLAM convergence.

The convergence of galleries, libraries, archives and museums is a seemingly recent development amongst cultural heritage institutions. However, these four institutions have been intertwined from some of the earliest known institutions, and can in fact trace their historical development back to similar origins.

Any discussion of the origins of recorded information necessarily involves a discussion of 'documents' and the infrastructure that developed in order to manage them (Bawden and Robinson, 2012). The earliest examples of recorded information of which we are aware are cave paintings in Spain, approximately 40,000 years old (National Geographic, 2012). Whilst we cannot know precisely what the purpose of some of these paintings were, it does show the ability of people to record symbols and signs in order to communicate. These indeed could reasonably be described as documents (Bawden and Robinson, 2012).

There is evidence to indicate that the earliest, accurately dated collections of clay tablets inscribed with cuneiform script were found in Mesopotamia around 3300 BCE. Other examples of early writing have also been found in Egypt, but as these were written on papyrus and wood, they have not survived as well as the clay tablets (Bawden and Robinson, 2012). The earliest collections were attached to palaces and temples, and there are credible indications that the documents were separated according to their function: "religious material, government records, business and trade records, family documents […], property and inheritance matters, astrological predictions, scientific and medical texts, literary works and

correspondence of all kinds" (Bawden and Robinson, 2012, p. 23; Martin, 2007; Hedstrom and King, 2004). As this example shows, although there may have been distinctions made about the functionality of the documents, there was no distinction made with the physical location of where they were held. What would be considered archival material today (government records) was housed alongside library material (literary works), confirming evidence of an information infrastructure with early forms of classification.

However, it is perhaps the most renowned ancient library that demonstrates the connection between collecting institutions. Founded by Alexander the Great in the 4th century BCE, and developed and maintained by the Ptolemaic dynasty in approximately the third century BCE, the Library of Alexandria was merely one part of what was essentially a research institute known as the Museum of Alexandria (Argyle, 1974). It is not known whether the library was a separate building to the museum, but it was a distinct entity, holding more than 500,000 items (Argyle, 1974).

The etymology of the word 'museum' is derived from both Latin and Greek. The Latin *museum* refers to places of philosophical discussion, particularly in Roman times (Lewis, 2012). The Greek word *mouseion*, translates as 'the seat of the Muses' (Lewis, 2012), a "philosophical institution or place for contemplation" (Lewis, 2012, para. 2). The Muses were the Greek goddesses who presided over the arts and sciences. It is from this word that we also have the modern words 'muse' and 'amusement' that "reflect pondering and deep thought as well as diversion and entertainment" (Alexander, 2008, p. 4), suggesting museums to be "places of study as well as repositories of collections" (Alexander, 2008, p. 4). Accordingly, the Museum of Alexandria is said to have had collections of "objects, including statues of thinkers, astronomical and surgical instruments, elephant trunks and animal hides, and [both] a botanical and zoological park" (Alexander, 2008, p. 4). Interestingly, neither the Greek nor Latin origins of 'museum' make any reference

to the act of preservation, arguably one of the fundamental functions of museums today.

The Museum of Alexandria has also been referred to as a university (Lewis, 2012; Alexander, 2008; Argyle, 1974), as it was the intention of the Ptolemaic dynasty to create a community of scholars engaged with both intellectual pursuits and teaching in the areas of medicine, mathematics and astronomy (Erskine, 1995). Indeed, some of history's greatest scholars have been associated with the Museum: Euclid was in charge of the mathematics faculty and wrote *Elements of Geometry* there. Other notable scholars included Archimedes (mathematics, physics, astronomy); Apollonius of Perga (geometry, astronomy) and Eratosthenes (mathematics, geography, astronomy, poetry) (Alexander, 2008). These scholars were supported by the Ptolemaic dynasty, not only in terms of food, lodgings and payment, but with "the necessary facilities" for their work, which included the Library (Erskine, 1995, p. 40).

Importantly for librarianship, Callimachus compiled his *Tables of persons eminent in every branch of learning, together with a list of their writings*, (also referred to as the *Pinakes*, or simply 'Tables') at the Library of Alexandria. It is considered to be the first recognisable form of a bibliographic tool, forming the foundations of cataloguing and classification. This was a considerable undertaking resulting in a catalogue of 120 books that organised and classified works according to genre. The practice until that time had been to arrange items according to the geographic location of origin, such as 'Athenian' or 'Theban' (Erskine, 1995). Callimachus' Tables included sections on philosophy, law, medicine, history, natural history and miscellanea. Literature was divided into rhetoric, lyric, comedy, tragedy and epic works (Bawden and Robinson, 2012). It was also around this time that other forms of information representation were emerging, including maps, musical notation and mathematical symbols (Bawden and Robinson, 2012).

A further function of the Museum and Library of Alexandria was "the production of definitive editions of the great works of literature, especially Homer" (Erskine, 1995, p. 45), but also Hesiod, Pindar and Aristophanes (Erskine, 1995). In order to build the library collection, it has been suggested, although not proven, that every ship that docked at Alexandria's port had their books seized. The scholars at the Museum and Library then made copies, and these copies (rather than the originals) were returned to the owners (Erskine, 1995).

The museum concept struggled in Europe throughout the Middle Ages, although the treasures obtained as a result of The Crusades were often added to the collections held in churches and monasteries. These collections consisted of religious artefacts "embellished with gold, silver and jewels, manuscripts in sumptuous metal bindings and rich oriental fabrics" (Alexander, 2008, p. 5). It was not until the second half of the 15th century that the word 'museum' came into usage again with reference to the vast collection of Lorenzo de' Medici in Florence, but it was used to convey "the concept of comprehensiveness rather than denoting a building" (Lewis, 2012, para. 2). In the 16th century, the Italian word *galleria* – 'gallery' in English - appeared in connection with museums to describe a "long, grand hall lighted from the side" used as an exhibition space for paintings and sculpture (Alexander, 2008, p. 5). It was also at this time that informal, private collections began to be known as *Wunderkammer* in German (which literally translated means 'wonder chamber'), *gabinetto* in Italian and 'cabinet' in English. The cabinet was often a square shaped room, "filled with stuffed animals, botanical rarities, small works of art […], artefacts and curios" (Alexander, 2008, p.5). This gave rise to the name 'cabinets of curiosities' (Impey and MacGregor, 1995), providing gentleman scholars with an outlet to satisfy their growing interest in knowing the world around them. The objects in the collection were not arranged into what today might be considered museum objects, library books and archival papers (Waibel and Erway, 2009) – instead, art objects, books, maps, and specimens were all displayed together. These cabinets of curiosities continued to

be popular throughout the 17th and 18th centuries, although as might be expected, access to them was reserved for the "exclusive pleasure of the leisure class" (Waibel and Erway, 2009, p. 325).

The increase in the number of texts due to the invention of printing and movable type led to distinctions in collections of objects (museums) and collection of texts – or documents (libraries). Differences surrounding the separation of "official records from other kinds of documents" (archives) (Martin, 2007, p. 81) also started to emerge at this time as governments established official procedures. Two of today's most distinguished museums in the United Kingdom - the British Museum and the Ashmolean Museum – can both trace their origins to personal cabinets of curiosities. A father and son team, the John Tradescants (Elder and Younger), started the collection that became the core of the Ashmolean Museum. After the death of the father, the son continued the collection, which was bequeathed to Elias Ashmole on the death of John Tradescant (the Younger). Ashmole gave the collection to Oxford University in 1677, requiring it to be housed in a purpose-built museum. The Ashmolean museum, with the Tradescant's cabinet of curiosities at its core, first opened in 1683.

Similarly, the British Museum was established in 1753 with the collections of three private collectors: Sir Hans Sloane - approximately 71,000 objects, including a library and herbarium; Sir Robert Bruce Cotton's library of books and manuscripts; and the collection of manuscripts owned by Robert Harley, 1st Earl of Oxford and Mortimer (Smith, 2006). By 1756, the British Museum had established three departments:

- Printed Books (= library)
- Manuscripts (= archive)
- Natural and artificial productions (= museum)

These departments demonstrated that a previously integrated collection could become separated based on the type of document rather than the type (or topic) of information contained therein. This idea continued throughout the 19th and 20th centuries as "new ideas [emerged] about how information should be collected, managed and shared" (Waibel and Erway, 2009, p. 325). In 1973, the library of the British Museum – founded in part by those cabinets of curiosities of Sloan, Cotton and Harley referred to above – was one of three libraries to form the inaugural collection of the new British Library.

With the separation of institutions came the development of individual institutional guidelines in order to determine where each type of cultural artefact belonged: "works of art belonged in art galleries, three-dimensional objects belonged in museums, books belonged in libraries and unpublished, original documents belong in archives" (Hedstrom and King, 2004, p. 22). This also assisted people to determine which institution they should visit, depending on their information needs and interests (Hedstrom and King, 2004). Institutional practices also developed along different pathways in order to contend with the new collecting domain of each institution. Additionally, in the early 20th century, "the roles of librarian and museum curator were being more rigidly defined" (Given and McTavish, 2010, p. 16) from their usage in the 19th century, where "curator" included the tasks of "taxidermy, mopping the floor, cleaning the exhibition cases and staffing the museum when it was open to the public" (Given and McTavish, 2010, p. 16).

However, the new forms of analogue documents that emerged in the 20th century started to impact these institutional distinctions. Photographs, sound recordings, microforms and eventually audio and videotape (Bawden and Robinson, 2012) did not fit neatly into these institutional boundaries. Collecting documents according to format alone was becoming untenable, and it was the content – or the information contained therein – that was becoming the defining feature (a more detailed discussion of documents and information is provided in Section 2.6). Towards the

end of the 20th century, an entirely new format would emerge that would further diminish these boundaries. The digital format, whether born digital or digitised, removes any "physical distinction between the types of records" (Rayward and Miller, 1998, p. 210). Rayward and Miller (1998) suggest that therefore, the "institutional distinctions in the management of […] these records" (p. 210) is also diminished. Martin (2007) concurs, saying that these distinctions "are predicated on outmoded concepts of uniqueness" (p. 87).

Today's end-users have little concern "for where the assets [documents] are housed or what institutional unit oversees them" (Zorich, Waibel and Erway, 2008, p. 13), which has led Waibel and Erway (2009) to liken an Internet search to entering the cabinet of curiosities. It could be argued then, that the cabinets of curiosities have set an historical precedent for a convergence of Galleries, Libraries, Archives and Museums. Or, as Given and McTavish (2010) prefer, and has been shown through this historical overview, a re-convergence.

2.3 Literature review

In order to provide further context for this study, the following literature review addresses the multiple lines of enquiry covering the roles, knowledge, skills and qualities of information professionals in the cultural heritage sector. The role that these institutions have played in society throughout history is included. The literature review serves to highlight the gaps in the body of research, which provides justification for the current study.

2.4 The role of Galleries, Libraries, Archives and Museums in society

Throughout history, galleries, libraries, archives and museums have played integral roles as educational, social and recreational places, and tourist destinations. Speaking of cultural heritage in its broadest sense (refer to Definitions, Chapter 1, Section 1.7), Holtorf (2011) states that cultural heritage developed alongside the emerging nation-states of Europe in the 19th century. It supported "an exclusive, collective identity for each nation, [establishing a] strong collective identity for […] those belonging to the clearly defined nation" (Holtorf, 2011, p. 10; Ovenden, 2004). The very things that contributed to a national cultural identity, such as a national language, a national religion, a national flag and a national government, themselves became a part of that heritage (Holtorf, 2011). However, the rise of emigration and immigration that continues to this day has led to a decline in cultural homogeneity (Holtorf, 2011). Nevertheless, galleries, libraries, archives and museums continue to play an important role in the social, economic and educational fabric of society.

Positive social benefits gained from interacting with galleries, libraries, archives and museums include the acquisition of skills; increased confidence and self-esteem; greater cultural awareness; and social cohesion and community empowerment by providing meeting places and a sense of equity and access (Audunson, 2005a; Black and Crann, 2002; Wavell, Baxter, Johnson and Williams, 2002). Galleries, libraries, archives and museums often have a number of volunteers who regularly help in varying roles. Indirectly, the positive social benefits experienced by these volunteers may also contribute economically. For example, older or retired volunteers may feel that they are still a valued and contributing member of society, which may bring associated potential health benefits (perhaps resulting in a reduced need for public healthcare); and younger volunteers gain valuable

experience and transferable skills which may lead to better employment opportunities.

The cultural heritage sector provides increased economic benefit in both direct and indirect ways. Firstly, there are the direct benefits obtained from the institutions themselves employing a large number of people (Bryan, Hill, Munday, and Roberts, 2000). The rise in the popularity of cultural tourism also brings direct benefits, particularly if celebrated works of art are being exhibited, such as *Fashion Icons* at the Art Gallery of South Australia in 2014-15; the *Valentino, Retrospective: Past/Present/Future* exhibition at Brisbane's Gallery of Modern Art (GoMA) in 2011, and the *Masterpieces from Paris* exhibition at the National Gallery of Australia in 2009-10. These blockbuster exhibitions have indirect economic impacts as well, with the hospitality industry and other local businesses benefiting.

In terms of educational benefits of galleries, libraries, archives and museums, they share some common attributes, but also some that are unique to each institution. Amongst the shared benefits are the acquisition of new skills (in the case of the library, information and communication technology (ICT) and information literacy skills in particular were noted); and an enjoyment in the learning experience (Leinhardt, Crowley, and Knutson, 2002; Wavell et al., 2002; Falk, Moussouri, and Coulson, 1998). For museums, other noted benefits included connections being made with existing knowledge, with the learning process being further aided by appropriate facilitation by museum professionals (Xanthoudaki, 1998). McAlpine (2002, as cited in Wavell et al., 2002) noted that the ability to see and touch primary source material greatly contributed to the learning process.

The unique contribution of archives to improved education and learning lies in the increased understanding of culture and history that is gained by users (Wavell et al., 2002). This can also be seen, though somewhat anecdotally, in the rise of interest in family history as demonstrated by the increase in websites such as Ancestry.com

and television programmes such as *Who do you think you are?* The unique benefits experienced by library users, not surprisingly, centred on activities related to reading: fostering a love of reading in younger children, reading for entertainment, and an increase in reading for learning (Baeg, 2012; Howard, 2008; Usherwood and Toyne, 2002).

It has been shown, galleries, libraries, archives and museums hold an important place in our society on more than one level. However, it is their shared role of supporting and promoting learning that could be considered the biggest contribution to the development of our society as we know it today – the so-called knowledge economy.

2.4.1 Galleries, libraries, archives and museums' contribution to today's knowledge economy

Brinkley (2006) noted that it was difficult to provide a precise definition of the knowledge economy, because 'knowledge' itself is a difficult concept to define. Nevertheless, a knowledge economy (sometimes referred to as a knowledge-based economy) can be described as an economy where knowledge, rather than natural resources, physical capital or labour, has greater importance (OECD, 1996, as cited in Brinkley, 2006). This resonates with Powell and Snellman (2004) who state that "[t]he key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources" (p. 201).

The knowledge economy can be directly linked to galleries, libraries, archives and museums and the role that they have played throughout history. These institutions – and the information professionals who work in them - by preserving human knowledge, have assisted in advancing human knowledge. Some of the more significant examples of this are discussed here, further highlighting the value of

these institutions to society and the role of the information professional in making it possible.

Hedstrom and King (2004) suggest that libraries, archives and museums are "the critical infrastructure of the knowledge–based economy" (para. 2). Their core activities of collecting, organizing, preserving and disseminating "is [at] the heart of knowledge generation, learning, sense making and commerce" (Hedstrom and King, 2006, p. 113), leading them to claim that it was this "creation and maintenance of knowledge communities [libraries, archives and museums] that enabled the Renaissance, the Enlightenment, and the Scientific Revolution" (Hedstrom and King, 2004, para. 1). The infrastructure that these institutions formed are what Hedstrom and King (2004; 2006) describe as a knowledge – or more precisely, an epistemic – infrastructure.

Being the repositories of information that they are, libraries, archives and museums have contributed greatly to the epistemic infrastructure of today's knowledge economy. From their development from the *Wunderkammer* - or cabinets of curiosity as described in Section 2.2.1 - of the 16th century and beyond, to the institutions that they are today, libraries, archives and museums contributed to the "awakening from centuries of intellectual impoverishment" (Hedstrom and King, 2006, p. 1) that coloured the Dark Ages in Europe.

According to Hedstrom and King, (2004), the *Wunderkammer* was responsible for the rise of modern science and scholarship in three domains. Firstly, moving on from the initial purpose of providing entertainment value, collecting for the *Wunderkammer* "stimulat[ed] efforts to comprehend and understand the natural world" (Hedstrom and King, 2004, p. 8) and soon became a "form of inquiry" (Hedstrom and King, 2006, p. 3). Secondly, the *Wunderkammer* had a part to play in the "rise of systematic method in the sciences […] requiring careful, repeated observation" (Hedstrom and King, 2004, p. 9). Collecting began to be much more

purposeful and orderly as opposed to the hitherto indiscriminate practices satisfying the whims of the collector (Hedstrom and King, 2004).

Contributing to this rise of systematic method was the third domain - the invention of printing and movable type that enabled catalogues of these collections to be printed and circulated, allowing scholars in different locations to compare their collections, "identifying discrepancies and questions that could be resolved through further correspondence, discussion and examination" (Hedstrom and King, 2004, p.10). This was particularly useful if the catalogues included illustrations. Eisenstein (1983) attributed the Reformation and Scientific Revolution to the printing press, noting that without it, the circulation of ideas – or the creation of knowledge – would not have been possible. Hedstrom and King (2004) support the importance of the printing press and highlight that "historians of writing and literacy have found many connections between the introduction of printing, the spread of Enlightenment thought and the Scientific Revolution" (Hedstrom and King, 2004, p. 12).

Methods for organising and managing the collection became necessary as they grew in both size and scope, facilitating the first attempts at taxonomy and classification (Hedstrom and King, 2006). This would eventually lead Carl Linnaeus to compile *Systema Naturae*, the hierarchical classification of the natural world, first published in 1738, which was to become the foundation of all future biological classification. A new way of thinking was reflected in this systematic order, and this became "the foundation of the modern world" (Hedstrom and King, 2006).

Today's digital environment places the epistemic infrastructure in unknown territory. Uncertainty abounds with the shift from physical information sources to digital sources or digital representations of information. Commercial alternatives to utilising the collections of galleries, libraries, archives and museums, such as Amazon.com and Google Books, together with economic constraints and changing

consumer expectations further add to this uncertainty. Additionally, the idea that the existence of information and communication technologies (ICTs) might negate the need for libraries, archives and museums - and their professional staff - is somewhat short-sighted (Hedstrom and King, 2004). However, these technologies must be harnessed in order to continue to disseminate information and to highlight the value of collections in order for community constructions of knowledge to continue. Hedstrom and King (2004) suggest that the way to strengthen the epistemic infrastructure in today's digital environment is for any differences between libraries, archives and museums to be minimised. In part, this may be achieved by having information professionals who can work across the cultural heritage sector's boundaries.

2.4.2 The professional landscape: History and development of the professions and professional associations of galleries, libraries, archives and museums

It could be expected that a country as relatively young as European-settled Australia might have quite a detailed history of galleries, libraries archives and museums. In the case of libraries and to a lesser extent, archives, this is indeed the case, with Biskup and Goodman (1995) providing a comprehensive account. Chapters deal with the different library sectors in turn: state, school, special, public and libraries in tertiary institutions. Further chapters provide a general overview of library development in Australia, the development of the National Library of Australia, and archival and manuscript repositories.

This is no such text for the gallery and museum sector. The work by Griffin and Paroissien (2011) does well to cover a wide range of topics related to museum and gallery development, however, this coverage begins in circa 1970, with no

significant discussion of the early history. Barrett and Millner (2014) do provide some early history of the museum sector, but relatively briefly in order to position the focus of their work, which is about artists and their relationship with museums.

The following sections aim to provide an overview of the development of the profession and professional associations of galleries, libraries, archives and museums. As the history of galleries and museums are closely intertwined, they will be discussed collectively.

2.4.2.1 Galleries and Museums

As mentioned above, there is scant published information about the early history and development of museums in Australia (Barrett and Millner, 2014), save the founding dates and basic details of Australia's first museums. The Colonial Museum in Sydney was established in 1827 (later to become the Australian Museum in 1836) in response to what were essentially cabinets of curiosity that were amassing in the official buildings of the colony (Anderson and Reeves, 1994). As the first museum in the colony, it collected "botanical specimens, flora and fauna" (Barrett and Millner, 2014, p. 41), which became important to the research of the Linnean Society (Barrett and Millner, 2014). Despite this collecting intent, many specimens and important cultural artefacts were sent to London (Healy and Witcomb, 2006). The material that did remain in Australia was – as may be expected – subjected to "collection process[es] and interpretation" (Barrett and Millner, 2014, p. 42) that largely reflected the large British institutions, such as the British Museum and the Natural History Museum in London.

As with natural history museums and art museums (galleries) in the British tradition at the time, the Colonial Museum (and others) not only collected material, but also had the additional function of educating and enlightening the public (Bennett, 1995). Along with libraries, churches and schools – mostly funded by the colonial

government – museums exercised a certain level of control over the "intellectual and moral culture [of] the working classes in the 19th century" (Barrett and Millner, p. 41). What was collected, and by whom, shaped both the social and cultural history of the new colonies. Throughout the 19th century, museums and galleries continued to be established throughout Australia. By 1891, "every capital city of each colony [had] at least one museum" (Barrett and Millner, p. 41), and by 1903, there were 39 museums and art galleries throughout Australia.

In the last decades of the twentieth century, museums began to flourish in Australia, although it was not until 1970 that a site was selected for the National Gallery of Australia in Canberra. The National Museum of Australia was established even later – formally in 1980 by an Act of Parliament, but it was not until 2001 that the permanent, current site was opened.

In 1974, the Committee of Inquiry on Museums and National Collections was established and released a report commonly known and referred to as 'the Pigott Report (1975)' (Commonwealth of Australia, 1975). This report provided an overarching view of the future – and indeed the possibilities – of museums, and is still considered to be one of the most important and significant documents ever produced about and for the museum sector in Australia (Griffin and Paroissien, 2011). One of the most noteworthy aspects of this report was the recommendation that a national museum be established in Canberra, and that it should encompass the following linked themes: the Australian environment, Aboriginal history, and the history of Europeans in Australia (Condé, 2011). Of relevance to this thesis was the proposition that museums aspire to "extend the frontlines of knowledge [that recognised] the role of informal learning [that] institutions such as museums, zoos and libraries [can have] in social development" (Griffin and Paroissien, 2011, p. 2). This is discussed in Chapter 5, Section 5.2.4 in relation to 'Social justice for transformative outcomes.'

Another major recommendation of the Pigott Report was the establishment of an Australian Museums Commission "to foster the development of museums in Australia" (Griffin and Paroissien, 2011, p. 2). Similar organisations existed in the United Kingdom, Canada and the United States. Unfortunately for this recommendation, the report, and the museum sector as a whole, the timing of the release of the Pigott Report could not have been worse – politically speaking. Just days after its release, the Whitlam Labor government – who had commissioned the report in 1974 – was removed from power by the Governor-General. Many of the recommendations from the Pigott Report remain unrealised to this day due to the turmoil of the Whitlam removal, and the inability – or unwillingness – by subsequent governments to carry them out.

However, the museum sector did not rest in seeking to establish a national body for museums. The Cultural Ministers' Council (CMC) – a group of Arts and Culture Ministers from Australia and New Zealand – established the Australian Libraries and Information Council in 1981. Various professional museum associations made several attempts to "gain[…] support for an equivalent national body for museums" (Griffin and Paroissien, 2011, p. 5), however, all were unsuccessful. In the same year (1981), the Council of Australian Museum Associations (CAMA) was formed in order to advance the idea of establishing one national body out of the approximately 22 different professional organisations that existed by 1993 (Marginson, 1993). The Pigott Report had identified and recommended that museums themselves needed to work together in order to survive, and Marginson (1993) delivered the same message in relation to professional associations. Finally, on January 1, 1994, Museums Australia was established through the amalgamation of the Council of Australian Museums Associations (CAMA), Museums Association of Australia (MAA), Art Museums Association of Australia (AMAA), and Museum Education Association of Australia (MEAA) (National Library of Australia, 2014).

2.4.2.2. Libraries

When the first fleet arrived in Australia in 1788, it not only brought with it "the treatises and manuals of the surgeons, navigators, surveyors and the judge advocate […] (Biskup and Goodman, 1995, p. 2), but also the very idea of 'libraries' as they were in England at that time. After failed attempts by both the chaplain, Rev. Samuel Marsden and Governor Macquarie to establish a library for settlers, it was not until 1821 that the first libraries were established in Sydney: the Philosophical Society Library and a Biblical Library.

The idea of the mechanics' institute library, which supported the "broad movement of popular education" (Biskup and Goodman, 1995, p. 3), arrived with the free settlers (i.e. not convicts) in New South Wales and Tasmania around the 1830s. The mechanics' institutes began in Britain with the aim of disseminating "'useful' knowledge […] for moral and social benefits" (Biskup and Goodman, 1995, p. 3). By 1900, there were approximately 1000 of these institutes across Australia.

Over the next approximately 90 years, several reports into the state of libraries in Australia were written. The first of these - "Australian Libraries: A survey of conditions and suggestions for their improvement", perhaps better known as the Munn-Pitt Report (after the authors Ralph Munn and Ernest Roland Pitt) – largely concerned public libraries. It was a scathing report noting that the general conditions of libraries in Australia "ranks below most of the other English-speaking countries" (Biskup and Goodman, 1995, p. 8). Each state was the subject of recommendations – for example, it was proposed that New South Wales (Sydney) have two libraries – one "operated by the state for reference and one by the municipality for lending" (Biskup and Goodman, 1995, p. 8). Recommendations for a combined state-municipal library were made for the other states.

Aside from suggesting changes and improvements to the libraries themselves, the Munn-Pitt Report recommended that the Australian Library Association (ALA),

founded in 1928 (albeit not the first library association in Australia), "should be replaced by a new association of librarians which would give higher status and larger representation to trained librarians" (Biskup and Goodman, 1995, p. 8). The reference to 'trained librarians' was a thinly veiled criticism that membership of the ALA included so-called 'institute librarians' (from the aforementioned mechanics' institutes) who were given equal status to 'professional' librarians. Although never formally dissolved, the ALA ceased functioning soon after the release of the Munn-Pitt Report in 1935. Subsequently, the Australian Institute of Librarians was established in 1937, where membership was limited to 'trained librarians.' This pre-requisite was removed when in 1950, a new constitution was drawn up that allowed "interested citizens, library students and library authorities […]" (Biskup and Goodman, 1995, p. 387) to become members. The new constitution also included a change of name: the Australian Institute of Librarians was to become the Library Association of Australia. A final change of name saw the inclusion of the word "information" to reflect the increasing importance of information in today's society; and so, in 1989, the Australian Library and Information Association (ALIA) – as it is still known today – was born.

2.4.2.3 Archives

Unlike the origins of the Australian library that arrived with the first fleet – both figuratively and literally – the development of any sort of archival practice in the colonies was largely overlooked throughout the 19th century. The realisation that administrative records might be of historical value at some point was slow in coming (Biskup and Goodman, 1995).

The establishment of archives in Australia occurred under the agency of the state libraries. The Public Library of New South Wales (later the State Library of New South Wales) had collected "printed Australiana […], manuscripts, maps, pictorial material as well as non-current government records" (Biskup and Goodman, 1995,

p. 328) from 1869. However, it was not until 1911 that a report by the Trustees of the Public Library identified the need to properly preserve public records and recommended that a Department of Archives be established (Biskup and Goodman, 1995). After several years of temporarily being located in the Mitchell Library (a part of the Public Library of New South Wales), the Archives Department was officially established in 1953. Separation from the library did not occur until the passing of the Archives Act in 1960, but because the archives remained within the library building, the two remained linked at least physically until 1978, when the archives moved into its own building. Furthermore, the Principal Librarian was also the Principal Archivist until 1976 when the first autonomous Principal Archivist was appointed.

The first official and separate archives department to be established in Australia was in the state of South Australia in 1919, but still within the auspices of the state library. The first state archivist – G.H. Pitt – was appointed from the establishment of the department, unlike the situation in New South Wales. In 1925, an amendment to the South Australian Public Library, Museum and Art Gallery Act resulted in the first archival legislation in Australia being passed.

At the national level, the first call for the Commonwealth of Australia to establish an Archives Office came from F.M. Bladen in 1902. After a period of six years with nothing more than an honorary archivist (as there were no actual archives to be managed) and a draft bill that failed to reach parliament, the prospect of the Second World War saw "historians, librarians and political scientists lobbying for material from World War II to be preserved for posterity" (National Archives of Australia, 2015a, para. 2). In 1943, the Commonwealth National Library (later to become the National Library of Australia) was tasked with overseeing all non-war related government records; the war related records were the responsibility of the War Archives Committee, established by the Prime Minister of the day, John Curtin. The first Archives Officer, Ian Maclean, was appointed in 1944.

In 1957, the National Library Inquiry Committee proposed that the archives division should secede from the National Library and "become a separate agency of Government, under the immediate control of a Director within the Prime Minister's Department" (Biskup and Goodman, 1995, p. 343). This eventuated in 1961 with the passing of the National Library Act.

The Australian Archives as it was known by 1974, looked set to gain its own legislation, with the recommendation coming from Canadian archivist, Dr. W.K. Lamb. The timing of the report again coincided with the dismissal of the Whitlam government; and again the incoming government did not place the same importance on the recommendations in the report. An Archives Bill was introduced in 1978 (which lapsed) and again in 1983, this time successfully passing into legislation. The Commonwealth Archives Act of 1983 was effective from the second half of 1984. A name change in 1998 to the National Archives of Australia remains current today.

Given that all state and national archives were established under the agency of state and national libraries as discussed above, it is understandable that they would also be connected through their professional association. The Archives Section of the Library Association of Australia was established in 1951. In 1973, Michael Saclier referred to the Archives Section as "utterly impotent" (Australian Society of Archivists, 2015, para. 3), sparking interest in the formation of a new society dedicated to archives and archivists. In 1975 "in response to the growing number of archivists in Australia and to the increasing demand for archival skills" (Australian Society of Archivists, 2015, para. 1), the Australian Society of Archivists was formed, and continues to this day under that name.

2.4.2.4 GLAM in Australia

The development of GLAM in Australia has had a somewhat erratic past, compounded by – or perhaps because of – the lack of empirical research with an Australian focus. A search of the major Library Science and Information Management databases offered by the Queensland University of Technology, including ProQuest, Informit and Emerald Management eJournals was conducted with various combinations of the following search terms:

"Galleries, libraries, archives and museums"	in Abstract	OR
"Libraries, archives and museums"	in Abstract	AND
Australia	in Abstract	

The acronyms (GLAM and LAM) were used, and terms such as "convergence" and "collaboration" were also incorporated. This strategy returned just one result, which was not relevant to the cultural heritage focus of this thesis.

Despite this apparent lack in published empirical research, some important initiatives were taking place at senior levels of the sectors. The Cultural Ministers' Council (the same group mentioned in Section 2.4.2.1 above) commissioned a study in 2001 into the needs of collecting institutions. The resulting study highlighted significant agreement between the sectors regarding their current and future needs (Deakin University, 2002), and that "leadership and national coordination of strategic initiatives were essential to the longer term development of the sector" (Cultural Ministers' Council, 2001, para. 1). In turn, this led to the formation of the National Collections Advisory Forum (NCAF) in 2002, with members having expertise in galleries, libraries, archives, museums, education and information technology. Their remit was to provide the CMC with strategic advice regarding the cultural sector's ongoing needs. Perhaps the most significant recommendation of the NCAF was that a single, national industry body that represented the "shared interest of galleries, libraries, archives and museums" (Cultural Ministers' Council, 2011, para. 6) be established. This recommendation was endorsed by the CMC, and

in late 2004 the Collections Council of Australia (CCA) became a reality, mirroring developments in the United States and United Kingdom with the establishment of the Institute of Museum and Library Services (IMLS) and the Museums, Libraries and Archives Council (MLA) respectively.

In 2003, the theme for the annual conference of the Australian Society of Archivists (ASA) was GLAM. A number of papers were presented on GLAM issues and concerns, although it is unclear whether any of these had collaborative involvement with GLAM professionals other than archivists. Although these papers are available from the Australian Society of Archivists on a CD-ROM, it is unfortunate that none of the papers appear to have been published in academic journals.

A dearth of activity and development is evident in the years following the ASA annual conference. An examination of the archived 'Events' page of the CCA shows annual conferences of the ASA, Museums Australia national conferences, various library-focussed conferences and symposia about digital heritage and copyright law occurring between 2005 and 2012. Whilst the conferences may have had tracks or papers that addressed various aspects of GLAM, on the whole, they remained within their institutional and disciplinary boundaries. The symposia were perhaps more encouraging towards a GLAM audience, but they addressed issues of concern to GLAM institutions and professionals, not GLAM in and of itself.

Some GLAM related reports became more frequent between 2007 and 2008 (Birtley, 2008; Johnson, 2008; Brennand, 2007; Cathro, 2007; National Archives of Australia, 2007), suggesting that GLAM was once again becoming a more prevalent consideration in the cultural heritage sector. But again, these reports are focussed on a single aspect of GLAM, such as digital preservation (National Archives of Australia, 2007) and federated discovery (Cathro, 2007). Cathro (2007) explicitly states in the NAA staff paper that it is "not a theoretical paper" but that he is "interested in […] the practical steps that we can take to improve working

interoperability […]" (p. 9). The CCA also continued producing reports and documentation, but it too was largely of a practical nature and advice to practitioners in the field, such as fact sheets on *Collections and Sustainability*, or advice to government in the form of submissions. However, this was the intended role of the CCA – it was not established as a research institute. It is acknowledged that these papers serve an important purpose, written by people with significant experience and knowledge in their fields. However, a lack of empirical research into any aspect of GLAM convergence in Australia serves to confirm Myburgh's (2011) observation that there is a lack of theoretical development in the GLAM sector.

A decision by the CMC in 2009 to cease funding the Collections Council of Australia was followed by a decision of the CCA Board to cease operations completely. The CCA received funding until August 2010. It was also during 2009 that consultation began on a new national cultural policy, the first in Australia since the '*Creative Nation'* policy from 1994. The second phase of this consultation was the release of a discussion paper in August 2011 (Department of the Prime Minister and Cabinet, 2011), with organisations and individuals encouraged to submit feedback. Two major points that are relevant to this thesis were highlighted. Firstly, that the cultural heritage sector, specifically collecting institutions, has very different needs to 'the arts', which incorporates performing arts, film, animation, media and digital arts. The overwhelming suggestion was that the cultural heritage sector needed to be treated quite separately from the other sectors. Secondly, and somewhat ironically, given the closure of the CCA, it was suggested that a national coordinating body – or peak body – be established for cultural heritage. A discussion of the potential role of this body is provided in Section 2.5 below.

The national cultural policy called Creative Australia (Commonwealth of Australia, 2013) was released in March 2013. However, by early September, Australia had a new federal government with the previous opposition party gaining power. Since that time, the Australia Council has released a new strategic plan with no reference

to or use of the words 'Creative Australia' or 'national cultural policy' (Australia Council, 2014). Further, it does not mention any of the four cultural institutions that are the focus of this thesis, instead focusing on the performing arts. This is counter to the point in the August 2011 discussion paper mentioned above that the cultural heritage sector has different needs to those of the performing arts. Although there has been no official word from the current government, it seems that the Creative Australia policy, for the present time at least, has been put on the shelf. Despite this, however, it is worth pursuing research in this area, as a cultural policy is not the only driver for collaboration and convergence.

In September 2014, the report of an Innovation Study undertaken by the Smart Services Co-operative Research Centre (CRC) and funded by the Australian Centre for Broadband Innovation, part of the Commonwealth Science and Industrial Research Organisation (CSIRO) was released. The report, titled "Challenges and opportunities for Australia's galleries, libraries, archives and museums" (Mansfield, Winter, Griffith, Dockerty and Brown, 2014), noted that the way people now "access, share and engage with digital services and social media enabled by broadband and mobile networks" (Mansfield et al., 2014, p. vi, Executive Summary) was leading to changes in how people interacted with the GLAM sector and its collections. The authors suggested that a "profound shift" (Mansfield et al., 2014, p. vi, Executive Summary) was occurring within the sector, but that very few organisations had made significant changes to prepare for or accommodate this shift.

The report also identified that there were a number of innovative examples of GLAM initiatives, notably the National Library of Australia's Trove, and the Atlas of Living Australia. However, whilst these are indeed collaborative projects in the sense of organisations sharing data, they are not collaborations between institutions themselves. Trove for example aggregates data from "libraries, museums, archives and other research organisations…" (National Library of

Australia, 2015), but it was created and is maintained by the National Library of Australia, with no direct input from other GLAM organisations (except for the aforementioned sharing of data). Similarly, the Atlas of Living Australia "contains information on all the known species in Australia aggregated from a wide range of data providers: museums, herbaria, community groups, government departments, individuals and universities" (Atlas of Living Australia, 2015), but that also is not a collaboration amongst GLAM institutions per se. This is not intended as a criticism of these initiatives – they fulfil the role they were designed and developed for, and they highlight what can be achieved in the digital space – particularly the Atlas of Living Australia. However as discussed in Chapter 1, Section 1.2, a major vision of the current researcher about how Australia's cultural collections can be utilised to their best advantage is by including material from galleries, libraries, archives and museums collectively, based on topic or informational content. Frank Howarth echoes this view in his capacity of Museums Australia President, when he writes in the Foreword to the Mansfield et al. (2014) report:

> Let's say I'm passionate about the photographer Frank Hurley. I want to build my own picture of the man and his work, and I know the originals of his photographs and much of his equipment is held in many cultural institutions, including major galleries, libraries, archives and museums […]. I want copies of his photographs, excerpts from his notebooks, and 3D images and some 3D prints of his equipment, and I want them without leaving my own house, now (Mansfield et al., 2014, p. iv, Foreword)

Howarth goes on to acknowledge that the technology to do this is available, "but the capacity of the GLAM sector to meet this request, in human and technology terms, is patchy indeed" (Mansfield et al., 2014, p. iv, Foreword). How that capacity can be built and improved on is reflected in the report's three recommendations. The first recommendation is 'Four Strategic Initiatives', which includes making the public part of what we do; becoming central to community wellbeing; beyond digitisation - creative re-use, and developing funding for strategic initiatives. 'Creating a National Framework for Collaboration' is the second recommendation, and incorporates digitisation and access; digital preservation; national approaches

to rights [e.g. copyright]; skills and organisational change; shared infrastructure, and trans-disciplinary collaboration and research.

Recommendation three is 'National leadership and collaboration, which advocates for a "common forum for conversation" (Mansfield et al., 2014, p. viii, Executive Summary) in which to move these ideas forward. The similarity of this third recommendation to the CMC's observation referred to earlier in this section that "leadership and national coordination of strategic initiatives [are] essential to the longer term development of the sector" (Cultural Ministers Council, 2001) is somewhat ironic. It was the CMC's report that led to the formation of the National Collections Advisory Forum (NCAF) in 2002, and in turn, the establishment of the CCA in 2004. However, the existence of this report could signal the beginnings of renewed interest in what started with the GLAM-themed ASA national conference in 2003 mentioned earlier in this section.

2.5 Why (re)converge? Or why not?

The discussion in Section 2.2.1 demonstrated that galleries, libraries, archives and museums share the same historical beginnings, which led Given and McTavish (2010) to use the term 're-convergence' to describe the current convergence movement. Developments in technology have seen a blurring of boundaries in the roles of our cultural heritage institutions. In the digital environment, end users have little concern where their information comes from, so long as their information need is satisfied (Zorich, Waibel and Erway, 2008; Dempsey, 2000). Whilst this is certainly a viable reason for entertaining the convergence idea, it is by no means the sole advantage. Before discussing further benefits of convergence, it is useful to consider convergence along a continuum as proposed by Zorich, Waibel and Erway (2008), in order to more clearly define the scope of this discussion.

As can be seen in Figure 1 below, the Collaboration Continuum model starts with Contact – the first step that needs to be taken in order to form relationships, identify commonalities "in activities and needs" (Zorich, Waibel and Erway, 2008, p. 10) and open discussions about potential joint activities (Zorich, Waibel and Erway, 2008). The following two steps, Cooperation and Coordination, "rely on informal or formal agreements between groups to achieve a common end" (Zorich, Waibel and Erway, 2008, p. 11). Cooperation often results in a "small, yet tangible benefit" (Zorich, Waibel and Erway, 2008, p. 11), and could in fact be a one-way activity, such as an archive assisting a museum exhibition by providing historical documents for background research. The Coordination stage is when activities start to become more formalised with the personnel concerned being aware of "who does what, when and where" (Zorich, Waibel and Erway, 2008, p. 11), meetings become formalised and documented, and agendas are often drawn up in order to keep track of accountability. Zorich, Waibel and Erway, (2008) suggest that the Cooperation and Coordination stages are "additive" in nature, meaning that there are benefits to be had for all concerned, but the transformational benefits of Collaboration and Convergence are not realized.

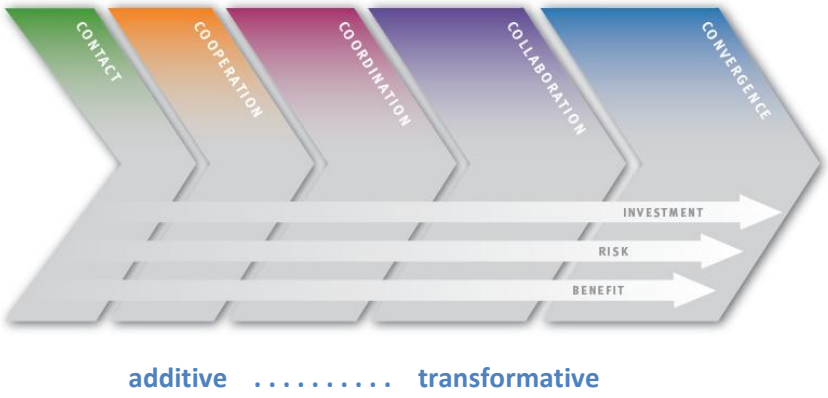

Figure 1: The Collaboration Continuum (Zorich, Waibel and Erway, 2008, p. 11)

Collaboration in this continuum model is defined as "a process of shared creation […] to create a shared understanding" (Schrage, 1990 as cited in Zorich, Waibel and Erway, 2008, p. 11). It is more than an exchange of information or the formation of a new idea, but an opportunity to create something new together – something that would not have been created had each institution acted in isolation (Zorich, Waibel and Erway, 2008). This is reflective of the current researcher's definition of 'GLAM' as an entity in and of itself, and not simply an acronym.

The final stage of the collaboration continuum is Convergence, where the previously collaborative undertaking is now fully enmeshed within the organisations that it is incorporated into their day-to-day functions. It is no longer identifiable as a separate activity or an isolated project. To reach this fully transformational stage has been described as "akin to letting go of one trapeze in midair before a new one swings into view" (Soehner, 2005, as cited in Zorich, Waibel and Erway, 2008, p. 5). The further along the continuum towards convergence, the greater the risks with increased complexity and effort required, but the rewards of transformational services and functions serve to alleviate those risks (Zorich, Waibel and Erway, 2008). Having considered the collaboration continuum, attention can now turn to reasons why pursuing such convergence may be advantageous.

There are many possible advantages to be had from a convergence of GLAM institutions, particularly in the digital environment, and these can be examined from four perspectives: economic, political, technological and social. From an economic perspective, many authors – predominantly from North America and the UK - have commented on decreasing government funding and have argued for the 'economies of scale' that collaboration and convergence may bring (Given and McTavish, 2010; Waibel and Erway, 2009; Waibel, Zorich and Erway, 2009; Marty 2008; Zorich, Waibel and Erway, 2008; Gibson, Morris and Cleeve, 2007; Hedstrom and King, 2006; Hedstrom and King, 2004; Dempsey, 2000). Given and McTavish (2010) make the point that government funding can be tied to achieving certain

objectives, such as making information available to a wider audience. This is supported by Fox (2005) who suggests that cultural institutions need to "make the case that we provide compelling, essential and unique value to a significant public" (Fox, 2005, p. 4). He goes on to propose that this can be achieved by working with other cultural institutions and utilising combined resources to deliver "services that are organised around our patrons' needs and not our professional sensibilities" (Fox, 2005, p. 4).

Closely linked to the economic perspective is the political one. The national and state galleries, libraries, archives and museums receive a large proportion of their funding from state and federal governments, so cost-effectiveness is likely to be a consideration. These economic rationalisations have come to fruition in Canada with the amalgamation of the National Library of Canada and the National Archives of Canada under the *Library and Archives of Canada Act* (2004) to form "a new knowledge institution" known as Library and Archives Canada (LAC) (Government of Canada, 2012).

Australia was in a unique position to harness the benefits that may be obtained through GLAM convergence with the development of the first National Cultural Policy in twenty years. A particularly pertinent recommendation proposed by The Office of Senator Kate Lundy, (2011) is that the National Cultural Policy supports the creation of a national coordinating body for digital heritage. This body would

> […] ensure a coordinated strategy for [the] sector, lobby and advocate on behalf of GLAMS, support cultural institutions and organisations across Australia, to engage in cultural heritage policy development, perhaps to be a funding body for pilot partnership programs (esp wrt NBN*) and play matchmaker for collaboration projects, to track trends and allocate special funds for access/digital divide projects. (The Office of Senator Kate Lundy, 2011, p. 96).

* "especially with respect to [the] National Broadband Network"

The framework that such a coordinating body could provide to galleries, libraries, archives and museums could see Australia creating its very own *Europeana*. However, as mentioned earlier, the National Cultural Policy has now been set aside by the change in federal government. This shows the extent to which political changes can adversely affect the development and growth of cultural heritage – particularly digital cultural heritage collaboration and convergence.

Advances in technology have contributed to both the availability of information in digital form and the creation of new kinds of information (Rayward and Miller, 1998) – the so-called 'digitised' and 'born-digital.' Such advances are closely linked with the social perspective, with developments in technology being closely intertwined with user behaviour and user needs, with each informing the other (Trant, 2009; Dempsey, 2000). For example, user expectations - specifically the "desire [of users] to refer to intellectual and cultural materials flexibly and transparently, without concern for institutional or national boundaries" (Dempsey, 2000, section 2) - are one such expectation that may be met through convergence. Technology has the ability to accommodate this by providing a single access point to multiple collections, providing a converged GLAM environment at least virtually, if not physically. Indeed, this is what users have increasingly come to expect (Waibel and Erway, 2009; Martin, 2007). There are still barriers to overcome, including interoperability, shared metadata standards and common terminology, but "the desire to release the value of their collections into this space in ways that support creative use by as many users as possible" is a driving force for convergence (Dempsey, 2000, section 2).

While the above discussion highlights advantages to be gained from a convergence of cultural heritage institutions, it is perhaps the social imperatives of shared functions and mandates that provides the most compelling argument. As Martin, (2007) states:

> libraries, archives and museums are all social agencies that are collectively responsible for preserving the shared knowledge of humankind, making it available for everyone to use, and transmitting it to future generations (p. 87).

This is largely achieved by the shared functions of acquiring, organising, describing storing, preserving and making accessible those documents, objects and artefacts, whether in virtual or physical format (Myburgh, 2011; Given and McTavish, 2010; Dupont, 2006). Given and McTavish (2010) make the point that these institutions do have differences in mandates at the micro level – for example, the collections of a user-focused library as opposed to the archival directive to preserve and collect for evidentiary purposes. However, at the macro level, they acknowledge the shared "wealth of knowledge and care for cultural heritage" (Given and McTavish, 2010, p. 28). With such similar broad goals for collection and preservation, it could be argued that cultural heritage institutions continue to support the epistemic infrastructure of today's 'knowledge economy.' Collaboration and convergence of these cultural heritage institutions therefore seems logical if we are to maximise this contribution. Additionally, if we consider that the separation of libraries, archives and museums is a relatively recent development that all but disappears in the digital environment, we have further reason to explore this potential (re)convergence.

However, there are some very real barriers to convergence that need to be considered. Martin (2007) suggests that as well as asking "Are we converging?" (p.80), we also need to ask "Is that a good thing?" (p. 80). He acknowledges many similarities, starting with the recognition of a shared "common institutional ancestry" (Martin, 2007, p. 81), demonstrated in this thesis in Section 2.2.1. He also argues that all four types of institutions collect "documents" and that the distinctions that have been placed on these documents based on which institution held them, is predicated on boundaries that we have delimited ourselves. A more detailed discussion about documents and information is offered in Section 2.6

following. However, Martin (2007) also stresses the point that "[i]n spite of their similarities, and in spite of the apparent momentum toward convergence, libraries are not archives and museums are not libraries. There are very real differences between these cultural heritage agencies" (p. 83). These can broadly be classified in two areas: technical and organisational.

On the technical side are the issues concerning interoperability, not only the differing types of hardware and software that may be in use at each institution, but perhaps more importantly, the metadata schemas used. Not only did galleries, libraries, archives and museums develop processes and protocols along different paths in the analogue world, they have also developed differently in the digital world, with each developing "its own suite of standards" (Elings and Waibel, 2008, Conclusion). There is not scope in this thesis to review and discuss the various metadata schemas applicable to each sector within the cultural heritage environment, nor the attempts to create one schema that may be used by all cultural heritage institutions. Suffice to say that although there continues to be research into this area, and 'workarounds' have been possible to enable data sharing, this is a fundamental barrier that needs deep consideration when entertaining the convergence idea.

However, despite advances in interoperability, Wellington (2013) suggests that "the frameworks that underpin the differences in scholarly treatment of the collection formats […] remain firmly entrenched in GLAM institutional practice" (p. 293). In other words, even if a technical solution is found, the agency of professional identities still permeates the implementation and use of those solutions. This then, becomes an organisational barrier to convergence.

Wellington (2013) also identified several orgaisational barriers within three physically converged cultural heritage institutions in New Zealand, most of which could be traced back to professional identity and practices – or the apparent loss

thereof. For example, attempting to integrate collections in the physical environment "illuminated the differences in worldviews between the GLAM entities" (Wellington, 2013, p. 290). Differing priorities such as preservation requirements and storage space were a source of tension due to differences in the "traditional scholarly teatment of objects" (Wellington, 2013, p. 290). Wellington (2013) also noted that there was a lack of collection integration even in the digital space where 'format' becomes less relevant.

Another factor contributing to the perceived loss of professional identity was the use of generic job titles as opposed to "GLAM delineating language in job titles" (Wellington, 2013, p. 297) in an effort to create "a cohesive, organisational infrastructure" (Wellington, 2013, p. 296). Staffing, organisational structure, physical space (the implication being that the more space a GLAM entity had in the physically converged environment led to that entity being considered the dominant organisational culture) and "competing shifts in organisational priorities" (Wellington, 2013, p. 296), all led to organisational culture issues in the three institutions under investigation.

While technological issues such as interoperability can be comparitively easy to overcome (given the ongoing research in this area), organisational culture and issues of professional identity are harder to accommodate. However, Martin (2007) offers a potential solution:

> If we could posit that librarians, archivists, and museum professionals are not separate and distinct professions but, rather, different facets of a single unified profession, I believe that we would find our ability to serve the needs of our communities strengthened (p. 88).

This could in part be achieved by changes to the current education programmes where information professionals who will work in galleries, libraries, archives and museums are educated in 'silos' and in isolation from each other. This is not

conducive to Martin's (2007) vision of a unified profession. Education for GLAM professionals is discussed in Section 2.10.

2.6 What is 'information' in a GLAM context?

If information professionals deal with and manage information, what constitutes 'information' in the seemingly different collecting domains of galleries, libraries, archives and museums? The following discussion shows that despite the differences in format of what these institutions collect and manage, it can all be deemed 'information'. This in turn gives credence to the idea of a potential GLAM convergence and highlights that the differences between these institutions could be considered somewhat tenuous.

Much has been made of the term 'information' and definitions abound. Indeed, the entry in the 2010 edition of the full Oxford English Dictionary is close to 10,000 words in length (Bawden and Robinson, 2012). As Buckland (1991) identifies, it is somewhat ironic that a word concerned with "the reduction of ignorance and of uncertainty" (p. 351) is itself surrounded by ambiguity and can be used in a multitude of ways, as the aforementioned dictionary entry attests. The following discussion does not intend or attempt to provide yet another definition, but rather to put some context around what may be considered information in a GLAM environment, and how the term is being used in this thesis.

In arguing for a more encompassing conceptualisation of information, Buckland (1991) proposed three notions of the use of the term 'information':

- information-as-process
- information-as-knowledge
- information-as-thing

Although recognising that the boundaries between these three notions may not be entirely clear, he nevertheless felt that some progress could be made in providing a clearer understanding of the term within the information science field.

'Information-as-thing' is described as 'that which is informative' - Buckland (1991) contends that "objects, such as data and documents" [can be considered information] because they are regarded as being 'informative' […]" (p. 351). However, he acknowledges that the information science literature focuses on data and documents as the primary information sources, but that other objects – such as those collected by museums – should equally be considered sources of information. By doing so he carries forward Otlet's concept that 'documents' include "natural objects, artefacts […] and works of art" (Otlet, 1934, p. 217, as cited in Buckland, 1991, p. 354). The term 'document' therefore, was used "to denote informative things" (Buckland, 1991, p. 355). This is particularly relevant for the GLAM sector, for it can be inferred that each institution collects and manages 'documents', albeit in differing physical forms: galleries collect paintings and sculpture; libraries collect books, journals, maps and other published (text-based) material; archives collect unpublished material as evidence; and museums collect objects and artefacts (Martin, 2007). The distinctions between these institutions based on what they collect, therefore, become less significant if we accept both Otlet's and Buckland's (1991) premise – they all collect 'documents', and therefore 'information'.

In the digital environment, what may be left of these distinctions all but disappears, which gives rise to the question: "What is to be collected, by whom, and under what circumstances of preservation, availability and access?" (Rayward and Miller, 1998, p. 210). A converged GLAM environment may go a considerable way to responding to this challenge. What impact, if any, does this have for the information professionals who will work in this converged GLAM environment? The following sections will discuss what an information professional is in broad terms,

then turn to a discussion of the types of roles information professionals have in each of the four GLAM sectors.

2.7 What is an Information Professional (IP)?

The following section discusses what an information professional is and the various professional roles of people working with information within the GLAM environment. This provides context and scope for this research and assists in identifying where the 'panel of experts' required for the Grounded Delphi survey can be drawn.

A reasonable amount of literature that discusses 'information professionals' also invariably mentions librarians (Abels, Jones, Latham, Magnoni and Marshall, 2003; Biddiscombe, 2001; Danner, 1997; Abbott, 1988), suggesting that librarians are perhaps the leading – or the most recognisable - information professionals, at least to those writing in the field. The advent of digital technologies has seen a gradual blurring of the boundaries of what constitutes 'information' as discussed in the previous section, and the professional roles of the people who work with it. The GLAM – or cultural heritage - sector is no exception.

Defining what an information professional is has become more complex since the introduction of the Internet and World Wide Web. New roles have appeared, and existing roles have grown and changed, redefining the boundaries of what might be considered 'traditional' information professional domains. Le Coadic (1996, as cited in Ferreira et al. 2007) suggests that it is because of this "growth and diffusion" (para. 24) in the information professions that has made it difficult to precisely define what an information professional is.

Myburgh (2005) highlights the differences and similarities between the broader information professions, including records management and the more IT focussed domains such as systems analysts (Myburgh, 2005; Abbott, 1988). The differences are described in what she refers to as the "Criteria of Distinction" (p. 136). She argues that information professionals are distinguished by the client groups that they serve, which is applicable within each sector as well as between them. For example, librarians may serve academics and students in a university library; medical staff in hospital libraries; or the community at large in a public library. Similarly, archivists may work at a large institution such as a national archive, or at the local history group (Myburgh, 2005).

Several of Myburgh's (2005) distinctions can be applied exclusively to the GLAM sector. 'Differences in form' (p. 137) is one such criterion, where she asserts that information professionals are separated according to the form of the information that they manage – libraries and archives manage monographs, serials, ephemera and other documents (in both analogue and digital formats); galleries and museums manage artefacts – paintings, installations, sculpture, dinosaur bones, and taxidermy displays to name a few. The difference between these institutions, based on what they collect, is also supported by Currall and Moss (2008) and Martin (2005). However, these artefacts are increasingly in digital form – whether 'born digital' (for example, an artist creating a digital work), or made digital through a digitisation process - making the 'Differences in form' distinction less applicable and relevant in the digital environment.

Perhaps one of the clearest distinctions is that of 'place' – the physical buildings that house the collections. When a gallery, library, archive or museum is not co-located, facilitating and enabling convergence and collaboration is not always a straightforward exercise. This idea of place also becomes less relevant in the digital environment, a point that is supported by Rayward (1998).

There is a propensity for non-library focussed literature to identify aspects of archive and museum education programmes that could well be incorporated into Library and Information Science (LIS) programmes, rather than the reverse (Kim, 2012; Iyer, 2009b; Marty 2005; Gilliland-Swetland, 2000). It could be argued that this gives weight to the idea that librarians may be the most recognisable of the information professionals. Marty (2005) also notes that LIS graduates often find themselves employed in museums, despite not necessarily having studied any museum-specific subjects within their LIS qualification and/or without a museum studies background.

According to Partridge et al. (2011), the range of employment opportunities for LIS graduates has increased since the 1980s, with some going "into traditional roles (such as library-related employment) [but] an increasing number are taking up 'newer' information roles, or revamped roles in traditional contexts" (Partridge et al. 2011, p. 8). This can be attributed in part by the advent of the Internet and World Wide Web as mentioned earlier.

Although definitions for 'information professional' abound, they vary according to the standpoint from which they are made. For example, Abels et al. (2003), writing for the Special Libraries Association (SLA) in America, state that "[a]n Information Professional […] strategically uses information in his/her job to advance the mission of the organization" (p. 1). This definition is perhaps more suited to corporate business, where strategic information management has become, and continues to become, a source of competitive advantage if harnessed correctly. Whilst it could be argued that cultural heritage organisations use information to advance their missions, this is perhaps not the focal point of information for these organisations, but that the user is (or should be) their focus. Mason (1990) goes some way to supporting this by offering not so much a definition, but a description of what information professionals do, although it does not cover the archivists' role of managing information as evidence for accountability purposes:

> to get the right *information* from the right *source* to the right *client* at the right *time* in the *form* most suitable for the use to which it is to be put and at a *cost* that is justified by its use (Mason, 1990, p.122, italics in original).

He asserts that "all information professions share this common mission" (Mason, 1990, p. 125) but that each one will be aligned more closely with one of the "key dimensions" (Mason, 1990, p. 125) of the above statement (those words shown in italics). However, he also acknowledges that there will be a certain amount of overlap – the amount of which has most likely increased since this article was written due to advances in technology. Mason (1990) goes on to name seven information professions to which this applies: accountant, archivist, librarian, records manager, information systems analyst (MIS), management scientist and museum curator. It should be noted that these professions are his own determination, with no empirical evidence to support these particular classifications or professional groupings. This overlap of sectors within the information professions is reflected in Middleton's (1994) suggestion that "the term 'information professional' itself is an indicator"(p.1) of the convergence process by providing an umbrella term for the "combination of skills formerly attributed to separate sectors of the workforce" (Middleton, 1994, p.1).

The definition of an information professional that also includes a description of the information professional's role is that given in the report of the Cultural Heritage Information Professionals' (CHIPs) Workshop Report (Marty, 2008):

> The cultural heritage information professional uses or manages information technology to organize and provide access to information resources for all users of cultural heritage organizations, including libraries, museums, and archives (p. 1).

As this definition is located within the cultural heritage sector, it is the most appropriate definition that has been found to date to guide this research. Although it does not specifically mention galleries, it should be noted that 'museums' in

North America (where this workshop was held) incorporates the 'art museum', which in both Australia and Britain is more commonly known as an 'art gallery'. An 'art gallery' in North America is where one goes to purchase artworks. Hence, the omission of the word 'gallery' is in name only.

2.8 Information Professionals in galleries, libraries, archives and museums: Current Roles

The discussion in the previous section sought to establish – within a broad context – what an information professional is. As this research is considering information professionals in galleries, libraries, archives and museums, a discussion of the roles of the professionals in each of these contexts is required.

2.8.1 Information Professionals in Galleries

In attempting to identify information professionals who work in Galleries, search phrases such as "Gallery Information Professionals" (with quotes) and "Information Professionals" AND gallery (or galleries, with quotes as shown) inevitably led to resources about Art Librarianship (Krivikas, 2006; Lucker, 2003) or to professional associations who number art librarians amongst their members, such as the Art Libraries Society of North America (ARLIS/NA), of the United Kingdom and Ireland (ARLIS/UK & Ireland) and Australia and New Zealand (ARLIS/ANZ).

Each of these associations lists architecture and art librarians, visual resources professionals, artists, curators, educators and publishers among their membership base (ARLIS/UK & Ireland, 2012; ARLIS/NA, 2009; ARLIS/ANZ, n.d.). Additionally, ARLIS/UK & Ireland (2012) includes archivists in the membership cohort. Similarly,

the representative workplaces include "… libraries, higher education and training institutions, art galleries, museums and other arts organizations" (ARLIS/ANZ, n.d.).

Writing from the perspective of an art librarian, Krivikas (2006) describes what she refers to as the "art community" as consisting of the artists themselves who create the work; conservators who preserve it (no distinction is made between digital and physical works); scholars and educators who research, teach and write about it; curators who work to *meaningfully* display it (italics added); and the public who view the work (Krivikas, 2006). She sees the role of the art librarian "is to form the bridge between art information and art users" (Krivikas, 2006, p. 2). Noticeably, Krivikas (2006) refers only to "art libraries", making no specific mention of gallery libraries, or art librarians who work in a gallery. However, as mentioned previously, this can be attributed to the North American practice of referring to places where one goes to admire art as an 'art museum'.

Using "Visual Resource Professional" or "Visual Resources Professional" as search terms proved to be much more fruitful in gleaning information about this professional group. Those professionals who deal with 'art' – or visual resources – take on various titles, including 'Art Information Professional', 'Visual Resources Curator', 'Visual Resources Professional', 'Art Museum Professional' and the more customary 'Art Librarian' (ARLIS/NA, 2009; Visual Resources Association, n.d.). This by no means suggests that all roles are identical in the scope of the functions that are carried out, but there is a certain amount of overlap, particularly in 'core skills' for the visual resources field as identified by Iyer (2009a; 2009b). These core skills include collection development; classification and cataloguing (also referred to as description and access); and use and knowledge of technology, including database management and digital imaging.

In order to establish the scope of the Visual Resources Professional's role, it is prudent to start by defining what 'visual resources' are. Iyer (2009a) sees visual

resources collections as including "materials such as photographic and moving images, as well as microfilm and electronic media in all formats from analogue to digital" (Iyer, 2009a, para. 1). However, this definition makes no explicit reference to physical artwork (i.e. paintings, installations), although it is acknowledged that the definition is not stated as being exhaustive. Lucker (2003), citing an earlier version of the ARLIS/NA website suggests the scope of the Visual Resources Professionals' collection "may include the entire field of visual culture or be focused on specialized areas such as art, design, film, indigenous creations or photography" (ARLIS/NA, 2005, as cited in Lucker, 2003, p. 163). The description continues with a listing of the formats typically encountered: "printed page, slides, film, video, and electronic media" (ARLIS/NA, 2005, as cited in Lucker, 2003, p. 163). Interestingly, this last point is deemed to be the domain of the 'Art information professional'. In the paragraph written in response to "What is an Art Librarian or Visual Resources Professional?", (ARLIS/NA, 2005) the terms 'Art Librarian', 'Visual Resources Professional, and 'Art information professional' are all used, seemingly interchangeably, suggesting that perhaps there is little difference in these roles.

Despite conducting research to "improve education and training […] for visual resources professionals" (Iyer, 2009a, Abstract), Iyer does not define what a visual resources professional is in either article (Iyer, 2009a; 2009b). She does however refer to the "traditional skills needed for managing image collections" (Iyer, 2009b, para. 1) and that technological advances have added "knowledge of image databases, consortia, scanning, digital asset management and digitization projects, to name a few" (Iyer, 2009b, para. 1). Iyer (2009a; 2009b) sees the visual resources profession as being in transition. Perhaps this explains why the current websites of ARLIS/ANZ and ARLIS/NA do not have a description of the role of the Visual Resource Professional. A previous version of the ARLIS/NA website is still available, which states that

> Art Librarians and Visual Resources Professionals perform a range of activities dedicated to the organization, retrieval, and distribution of

> information on the visual arts. These activities might include the provision of specialized reference and research service, the organization and cataloging of subject-specific collections, and the acquisition of materials in support of a visual arts program (ARLIS/NA, 2005).

Despite having various titles as mentioned earlier, this definition – whilst including both Art Librarians and Visual Resources Professionals - is largely a description of what one would expect of a professional Librarian who works in the library of an art gallery. Interestingly, the ARLIS/UK and Ireland website consistently uses the term 'Art Librarian' when describing this role and the materials dealt with:

> Art librarians collect, organise and make accessible material relating to the visual arts, architecture and design. This material may include digital resources, DVDs/videos, graphic material, slides and artists books as well as the more conventional books and journals (ARLIS/UK and Ireland, 2012).

According to the Professional Status Survey undertaken by the Visual Resources Association (2008), 94% of the professionals who work with these materials belong to either the Art Libraries Society of North America (ARLIS/NA), the Visual Resources Association (VRA), or both. Although this report does not specifically state that respondents were only from North America, this appears to be the case. The other professional organisations that visual resources professionals typically belong to are the Society of American Archivists, the Museum Computer Network and the American Society of Picture Professionals (Visual Resources Association, 2008; Iyer, 2009).

So although there is a professional group known as 'Visual Resources Professionals', there appears to be a consistency of this profession to that of 'Art Librarian' due to the membership of professional organisations, education requirements and core roles of access through classification and cataloguing.

2.8.2 Information Professionals in Libraries

An early use of the term 'information professional' in relation to librarians was by Debons (1981). He surveyed a large number of professionals he considered to be connected to information provision in some way, both inside and outside of a library environment, and referred to this group as 'information professionals', believing that this group was "a real profession in the sense of a collective of mutual interest" (Debons, 1981, as cited in Brown, 1999, p. 27). Browne (1999) asserts that in Australia, Debons' study confirmed what was already known – that graduates of Library and Information Studies programmes were finding employment outside of the library sector. Browne (1999) further recalls the development of this 'new' information profession emerging alongside librarianship, with little recognition or acknowledgement of its foundation. This is highlighted by the "puzzlement [of these non-librarian information professionals] at the invitation to speak to a group of […] traditional librarians" (Browne, 1999, p. 27). The tendency for information related employment to continue to expand has not abated (Abels et al., 2003), and Library and Information Science (LIS) graduates are still well suited to many of these roles. This continues to be supported in Australia with the findings of Partridge et al. (2011), with job titles including "User/Business Analyst, Knowledge Manager, Content Manager, Content Developer, and Web Designer/Developer" identified as potential roles for LIS professionals (p. 120).

Perhaps not unexpectedly, the early use of the term information professional coincides with the development of emerging new technologies. According to Browne (1999), librarians realised the potential benefits of these technologies to their work, and "were at the forefront of innovation in the application of the new technologies" (p. 27). As these technologies developed and evolved into what we have today, the role and skill set of the librarian also changed. The ubiquitous nature of information in today's digital environment has impacted how people search for and retrieve information – no longer do they consider (or necessarily

care) where the information may have come from, so long as they get the information they were after (Rayward and Miller, 1998).

2.8.3 Information Professionals in Archives

Of all the GLAM institutions, Archives and Libraries share the closest relationship, with both professions managing predominantly printed documents – although as noted previously this is changing in the digital environment with the advent of e-books, e- journals, and digitally created records. The significant difference between the two institutions lies in their functionality. The Australian Society of Archivists (2012a) defines archives as:

> Archives are documents created or received and accumulated by a person or an organisation in the course of the conduct of affairs and preserved because of their continuing value. (The Archival Profession)

An archival collection comprises primary source material that is mostly unpublished. Depending on the archive, the evidentiary component may be required for accountability purposes, which by extension may have legal implications. The National Archives of Australia for example plays a critical role in ensuring the Australian Government is accountable to the Australian people, as well as preserving our history by maintaining family history and war service records (National Archives of Australia, 2011). These latter collections are increasingly utilised as interest in family history increases.

The fundamental difference between libraries and archives in terms of the role of the information professional is that archivists manage their information according to the principles of provenance and original order, also referred to collectively as "respect des fonds." The principle of provenance "requires that the archives of an agency or person not be mixed with the archives of another" (National Archives of Australia, 2015b). The principle of original order states that records and archives

must be maintained in "[t]he order in which [they] were kept when in active use (ie. the order of accumulation as they were created, maintained and used)" (National Archives of Australia, 2015c).

For example, an archive that may contain the personal papers of past Australian Prime Ministers will maintain the collection by creator (i.e. the author/owner), not by type (i.e. personal diaries). So if the diary of Sir Robert Menzies is needed, it will be found with the entire Menzies collection. This is antithetical to the librarianship practice of classification, where like objects (e.g. personal diaries) are grouped (and usually displayed) together. The reason for archives to operate this way lies in the need to preserve the context in order to derive meaning of individual documents – or pieces of information. Carmicheal (2012) uses a useful analogy – a reply to an email that simply says "okay" is meaningless if it is not accompanied by the original message. The importance of context in the archival domain is relevant regardless of the intended use of the information, whether for evidentiary purposes, organisational accountability or original research.

Writing from a UK perspective, Currall and Moss (2008) note that information and communication technologies (ICTs) are "transform[ing] the information landscape in which archives […] sit" (p. 69). They also pose the question as to how much the impacts of these technologies on archivists' work "represents an epistemological shift, or […] simply an extension of existing practices in a new order" (Currall and Moss, 2008, p. 69). Although an interesting question, they do not seek to answer it, but rather use it to highlight that in the digital world, the answer becomes increasingly irrelevant. They emphasize that there is little to differentiate libraries, archives and museums in the digital environment, particularly from a users' perspective (Currall and Moss, 2008, p. 80). The situation does, however, provide an excellent opportunity to assess curricula requirements in the education of archive professionals (Currall and Moss, 2008, p. 78), a point that the current research begins to address in an Australian context.

As mentioned in Chapter 1, Section 1.8, some scoping of this thesis was based on the 'Life-cycle' model of records management. The premise of this model is that each and every record moves through various stages: a record is created and is known as an 'active record' until such time as it is no longer needed (to comply with legislation for example). A decision is made to either destroy the record, or, if it is deemed to be a 'record of continuing value', it becomes part of the archives where it will be managed and preserved accordingly. This model supports a distinction between recordkeeping professions: Records Managers deal with the active record, Archivists deal with the inactive - but continuing value - record.

However, another perspective that is recognised internationally as being unique to Australian archival thinking is the 'Continuum' model, or 'Recordkeeping continuum', as it is also known. This model brings both Records Managers and Archivists "under the recordkeeping umbrella [… focussing] on the unifying purposes shared by all recordkeeping professionals" (McKemmish, 1997, para. 6). It does this through redefining the concept of the archival document to be "inclusive of, not exclusive to records of continuing value (archives)" (McKemmish, 1997, para. 7). The archival document, in the Continuum thinkers' view, is therefore also inclusive of the 'active record', thus unifying both records and archives (McKemmish, 1997). The reason for this is to ensure that due consideration is given to the effective (continuing) management of the archival document at the point of creation. According to Continuum thinkers, this will "maintain its evidentiary quality" (McKemmish, 1997, para. 8), from which meanings and informational value may be derived (McKemmish, 1997). Managing the document from the point of creation is also a key component to digital curation, which is discussed further in Section 2.11.

Continuum thinking draws on the notion of a 'post-custodial' approach to recordkeeping (McKemmish, 1997). This approach suggests that "the archival

practices and mindsets formed in the older custodial era of paper records must change" (Cook, 2007, p. 418). This has largely been in response to the advent of digital technologies whereby electronic records lack any of the physicality of pre-digital records (whether paper- or object-based). 'Post-custodial' does not imply that archivists will no longer have physical custody of physical records – for as long as there are physical records, there will be a need to manage and maintain them. What it does imply is that this aspect will "be enhanced by a focus on the context, purpose, intent, interrelationships, functionality and accountability of the record and especially its creator and its creation process" (Cook, 2007, p. 418).

2.8.4 Information Professionals in Museums

Unlike libraries and archives, there are a variety of roles that contribute to the information dissemination within museums. Marty (2006a) argues that all museum professionals (curators, archaeologists, palaeontologists and so on) could be considered as information professionals, as "nearly all deal with some aspect of museum information on a daily basis…" (p. 130). Like galleries, museums will have librarians coordinating the museum library. However, the roles of curators and registrars in particular are becoming increasingly influenced by user needs and expectations that museum information be as accessible and available as that of their cultural heritage relatives. This has led to an increasing awareness of the relevance of LIS skills (Marty, 2007a; Marty, 2006a). Marty (2006a) suggests that there is "a 'new' museum information professional […] evolving, one that is not easily defined, yet one that is tasked with solving a wide variety of information problems" (p.128).

Again, it is highlighted that in the digital environment, users are not aware of the "historical barriers to information access that have separated libraries, museums, and archives" (Marty, 2006a, p. 129) – they expect seamless access in order to

satisfy their information need (Martin, 2007; Rayward and Miller, 1998). A number of authors have highlighted the need for research into the relationship and relevance of LIS expertise in a museum environment (Marty, 2007a; Giannini, 2006; Marty, 2006b; Jörgensen, 2004), as an understanding of information organisation and information management is becoming an increasingly important requisite for museum employees (Marty, 2007a).

Despite the acknowledged importance of these skills, most museum professionals have not received such training or education (Marty, 2007a). Wythe (2007) suggests that this may be attributed in part to museums embracing technology and its benefits "much later than libraries and archives" (p. 53). Martin (2007) suggests that it may be due to the varied educational fields from which museum professionals come, amongst them scientists or humanities scholars, both of whom could be from a variety of disciplines. He highlights that education for museum professionals is not as stringent as that of librarians and archivists, and that this may result in museum employees identifying more closely with their academic discipline rather than a professional association with their employing institution (Martin, 2007). The solution is not as simple as employing LIS graduates/professionals, as they will not have the requisite museum knowledge (Marty, 2007a), which may vary according to the type of museum (for example, a natural history museum versus a cultural history museum).

This gives rise to the possibility of a converged role of 'Cultural Heritage Information Professional,' which brings with it the question of how these professionals might be educated. The following sections investigate these potential developments.

2.9 Rise of the Cultural Heritage Information Professional

It has been established that advances in technology have been a significant factor in the blurring of boundaries between cultural heritage institutions. Further, if we accept Otlet's (1934) and Buckland's (1991) contention that non-text based objects - such as those found in museums - can also be considered 'documents', and that 'documents' are "informative things" (Buckland, 1991, p. 355), then it can be concluded that cultural heritage institutions in fact manage information.

What, then, can be said of information professionals who work in libraries? Or museums? Do they have the requisite skills and knowledge to work across these blurred boundaries? Trant (2009) predicts that in order to "meet the challenges of digital collection creation, management, use and preservation" (p. 383), library, archive and museum professionals "will increasingly need to work together" (p. 383). The changing nature of information work in galleries, libraries, archives and museums has led some authors to consider the possibility of an entirely new type of information professional (Given and McTavish, 2010; Ray, 2009; Gilliland-Swetland, 2000). These 'Cultural Heritage Information Professionals' would be "specifically trained to meet the unique needs of cultural heritage organisations" (Marty, 2008, p. 4), and be able to "interact with their counterparts in other organisations to ensure the widespread adoption of interoperability, preservation, and access to information resources (Marty, 2008, p. 4). Gilliland-Swetland (2000) has described this coming together of library, archive and museum information professionals as a 'meta-community' which must learn not only each others' vocabularies, principles and practices, but must also recognise and understand the inherent differences of each institution that "developed out of its societal role" (p. 1), despite the current blurring of their boundaries. If a new role of Cultural Heritage Information Professional is to emerge in Australia, consideration needs to be given to the current educational paths for librarians, archivists and museum information

professionals. A discussion of converged GLAM education endeavours is provided in the following section.

2.10 Professional Education for GLAM

There is scant published research that has been conducted into the needs and/or requirements of converged GLAM education on an international level, and even less in the Australian context. Efforts have been made by Australian universities to offer information/knowledge management qualifications that are recognised by the major professional associations: the Australian Library and Information Association (ALIA), RIMPA (Records and Information Management Professionals Australasia) and the Australian Society of Archivists (ASA). However, in order to gain that professional recognition upon graduation, the prescribed subjects must be taken, meaning that it is not possible to gain professional recognition from all three professional bodies with one qualification. This also indicates that whilst these qualifications may be taught in the same department or faculty and may have some overlap of core units, the students are still educated in the library and archive silos, with the museum component not being accommodated at all, as far as has been determined. Graduates of these programmes indeed go on to work across these institutional boundaries however that may be because of previous undergraduate qualifications or work experience rather than as a direct result of their information/knowledge management education. An international collaborative initiative such as the Web-based Information Science Education (WISE) – a consortium of universities from the United States, Canada, United Kingdom, Australia and New Zealand – also falls short of offering any museum related units, according to the "Sample WISE Courses" document available on their website (WISE, 2009). If we accept Trant's (2009) assertion that professionals from libraries, archives and museums will need to work together to "meet the challenges of digital

collection creation, management, use and preservation" (p. 383), then the advice from Given and McTavish (2010) is significant:

> "[a]s long as librarians, archivists, and museologists […] continue to be educated in isolation from one another, […] real boundaries to collection, management, and access of materials will remain" (p. 23).

Trant (2009) also notes that not only can collaboration become much more instinctive if students are exposed to "diverse backgrounds and viewpoints" (p. 383) throughout their education, but that cross-institution co-operation in the workplace "becomes easier when program alumnae can be found in all types of cultural heritage institutions" (Trant, 2009, p. 383).

As mentioned in Section 2.7 above, the research that has been published in the area of educational convergence tends to be from the museum perspective looking towards LIS programmes as a way to bridge the gap between Museum Studies and LIS (Kim, 2012; Iyer, 2009b; Marty, 2007a; Marty 2005; Gilliland-Swetland, 2000). This could suggest that libraries and LIS education have embraced the changes in technology more than their museum counterparts. Wythe (2007) supports this notion, with other authors calling for the need for more research into the relationship and relevance of LIS expertise in a museum environment (Marty, 2007a; Marty, 2006b; Giannini, 2006; Jörgensen, 2004), a point highlighted in Section 2.8.4 above. This appears not to have occurred in the six years since Jörgensen made this assertion in 2004, as Duff, Cherry and Sheffield (2010) claim that very little published research exists in the field of museum studies education in general.

One exception to this lack of research was the development of the Salzburg Curriculum in 2011 by an international group of library and museum educators. Named after the meeting place where the curriculum framework was initially developed (Salzburg, Austria), it arose out of seminar discussions concerned with

"skills needed by librarians and museum professionals in today's connected and participatory world" (The Salzburg Curriculum, n.d.(a), para. 1). Consequently, the framework that emerged was a "joint library/museum curriculum" (The Salzburg Curriculum, n.d.(a), para. 1). Although the framework was necessarily high-level due to time available at the seminar, many of the library and museum educators agreed to implement it in their institutions (The Salzburg Curriculum, n.d.(a)).

The following statement provides the context within which the framework was developed:

> […] the mission of librarians and museum professionals is to foster conversations that improve society through knowledge exchange and social action. One of the unique aspects of this curricular framework is that it sees the preparation of librarians and museum professionals in a unified way (The Salzburg Curriculum, n.d.(b))

This statement is reflective of two themes already discussed in this chapter – that of galleries, libraries, archives and museums' contribution to today's knowledge economy (Section 2.4.1); and the assertion of Given and McTavish (2010) that current boundaries will remain if librarians, archivists and museologists are isolated from each other in their education (this section, para. 1).

The curriculum itself consists of six Curricular Topics: Transformative Social Engagement; Technology; Management for Participation (Professional Competencies); Asset Management; Cultural Skills; Knowledge, Learning and Innovation. Within each of these topics is a list of specific skills that are considered necessary to all library and museum professionals. For example, within Transformative Social Engagement, the skills deemed to be necessary include Activism and Advocacy (including both professionals advocating for the community and professionals teaching the community to be advocates); Social responsibility; and Sustainability of societal mission (The Salzburg Curriculum, n.d.(c)).

The major departure of the Salzburg Curriculum's scope from the current study is the lack of inclusion of galleries and archives. However, as previously noted, galleries are often included within the museum component, and it is likely that this has occurred here. Archives on the other hand do not appear to be represented at all. The researcher queried this on the comments page in April 2014, however to date there has been no response (The Salzburg Curriculum, n.d.(d)).

One programme that has developed a converged GLAM education is that of the Catholic University of America (CUA). The School of Library and Information Science's (SLIS) Cultural Heritage Information Management (CHIM) master's level qualification has been described as

> a departure from traditional archives/records management tracks or specializations […] and from museum studies curricular foci […] in that it is not limited to educating in only one of these areas exclusively (Choquette, 2009, p. 3).

The CHIM programme introduces students to, and prepares them for, the cross-disciplinary environment that is increasingly the undertaking of the GLAM institutions. It deals with the acquisition, organisation, preservation and access of information resources incorporating both physical and digital formats, including video, sound recordings, maps and photographs (Choquette, 2009). In doing so, the CHIM programme appears to break down the traditional silo approach of educating cultural heritage information professionals in isolation from one another, thus avoiding Given and McTavish's (2010) concerns as quoted earlier.

One of the more significant challenges of implementing this programme was meeting the accreditation requirements of the various professional associations, including the American Library Association (ALA), the Society of American Archivists (SAA) and the Art Libraries Society of North America (ARLIS/NA) (Choquettte, 2009). This too would be a challenge in the Australian context, with accreditation requirements for the Australian Library and Information Association (ALIA) and the

Australian Society of Archivists (ASA) needing to be met. Currently, Museums Australia does not accredit any university programmes in Australia.

Choquette (2009) calls for "a more cross-disciplinary approach to curricula development" (p. 8), but warns that a consortia approach offering students a greater selection of units will not necessarily satisfy this requirement. This echoes Myburgh's (2003) concerns at the notion of 'disjointed incrementalism' that she discusses in relation to LIS, suggesting that the profession can only manage incremental change when perhaps it is more extensive and widespread change that is required. She referred to the "piecemeal way" that modules have been added to LIS programmes in response to the changes in technology. Trant (2009) shares these concerns in relation to converged education for cultural heritage information professionals, stating that it "requires more than a few shared courses [subjects] across programme streams" (p. 384). She further notes that the current curriculum (with the exception of the CUA programme examined above) continues to focus on "historic differences […] rather than their emerging similarities" (Trant, 2009, p. 376). This could be because there have been very few studies to have collected empirical data from all four GLAM institutions to determine where in fact those similarities lie, particularly at the more granular level of the knowledge, skills and attitude required, a point that the current study has rectified, at least in the Australian context.

In a paper presented at the Congress of the International Council on Archives, Pymm (2012) notes the current challenge in developing an archival curriculum is the need to

> fit in what has traditionally been seen as core archival knowledge (appraisal, arrangement and description, functional analysis etc.) as well as including generic skills covering business, project management and advocacy approaches; building a research capability and commitment; and doing all this within an umbrella of understanding the big picture and context within

> which archives operate. Oh, and ensure a considerable level of IT knowledge and understanding. ('Education' section, 2nd para.)

Pymm (2012) goes on to highlight that such a "crowded curricula […] is not unique to the archives and records fields" ('Education' section, 2nd para.), and that "any education for the [information] professions today has to […] acknowledge some core generic skills and attributes which seem common across the spectrum" ('Education' section, 3rd para.).

In order to archive this, Pymm (2012) suggests a three-tiered programme of education:

1. An intensive introductory programme, "which serves as the essential framework, but is flexible enough to enable a level of 'tailoring'" ('Education' section, 4th para.)
2. A second tier level of subjects relevant to the cultural heritage sector and the broader information disciplines (including records, archives and IT). Suggested subjects include "data curation and digital preservation; traditional preservation, access and users; metadata and descriptive standards; copyright and related legals […]; more targeted IT knowledge covering digitisation, web presence and open standards" ('Education' section, 5th para.)
3. Professional-focussed subjects. Pymm (2012) mentions records and archives specifically, but also acknowledges that this could include any information-related professional programme, provided faculty with the requisite skills and knowledge are available.

While not specifically stating that levels 1 and 2 in the above proposal are at the undergraduate level, this is implied by the reference to "the idea of shared courses across faculties […] is an established practice, particularly at the undergraduate level" ('Education' section, 4th para.). Pymm (2012) also notes the potential of the WISE consortium, particularly in relation to specialised subjects where faculty may

not be readily available at the student's home institution. A further potential of WISE is that it may continue to provide education for the information professions and their specialties in light of the current trend for Australian universities to be moving away from so-called "boutique" programmes that offer comparatively low student numbers to those that offer better economies of scale (Pymm, 2012).

2.10.1 The iSchool movement

The emergence of the 'iSchools' is one of the more recent developments in information education, the seeds of which were informally sown in 1988 in the United States (US). By 2003, ten library/information science departments from US universities were involved, and "the group's agenda became more focused on building a sense of identity and community amongst the "information schools", or "iSchools"" (iSchools, 2014a, para. 4) as they came to be known. Currently there are 59 member iSchools, with 29 (49%) coming from outside North America, including Australia, China, Japan and Portugal.

The iSchools developed in response to the "explosive growth in digital information" (iSchools, 2014b, para. 1). They identified that information could be harnessed "for the betterment of humanity" (iSchools, 2014c, para. 1). In order for society to "progress in science, business, education and culture, […] expertise in understanding […] the uses and users of information, as well as information technologies and their applications" is required (iSchools, 2014d, para. 1). To that end, the iSchools acknowledge the connection between information, technology and people, which itself can be seen as a convergence of sorts, between Library and Information Science (LIS) and Computer and Information Science (CIS).

These two disciplines (LIS and CIS) have "historically claimed distinctly separate domains" (Bonnici, Julien and Burnett, 2013, p. 912), with CIS having origins in

information systems (the technical aspect of information), while LIS has "centered on the human element in information processes …" (Bonnici, Julien and Burnett, 2013, p. 913). The failure of these two disciplines to connect in cross-disciplinary research (i.e. systems-centred and user-centred) has, according to Saracevic (1999), resulted in a lack of recognition of information science as a fully-fledged discipline. Bonnici, Julien and Burnett (2013) ask whether the iSchools may have "found common ground in the information sciences of LIS and CIS" (p. 913), which if so, could do much for the profile of the information discipline.

As a means of uniting these two disciplines in a more functional and formal way, the iSchools Caucus sought recognition of the broader information field and coined the term 'iField' (Larsen, 2009). The Caucus defined the iField as "an academic field of study and a professional career field that deals with all the issues, opportunities, and challenges we face in our emerging Information Age" (iSchools Caucus, as cited in Bonnici, Julien and Burnett, 2013, p. 913) – quite a wide remit. How a specific and relatively narrow field such as LIS fits into this broad definition is described by Bonnici, Burnett and Subramanium (2010) as an 'inverted fractal cycle' - in other words, moving from a specific disciplinary focus to a broader focus. They acknowledge this as being in direct contrast with the theoretical view that disciplines move to the more specific from the broad base (Bonnici, Burnett and Subramanium, 2010). The inverted fractal cycle is indeed the antithesis to current LIS education in Australia.

How iSchools can be involved with research and education of information professionals who will work in galleries, libraries archives and museums was the subject of a workshop at the 2013 iConference, the annual conference that is an initiative of the iSchool movement. The aim of the workshop was to explore whether iSchools could be the catalyst in creating a converged education programme for the current separate disciplines of Library Science, Archival Science and Museum Studies (Tammaro, Casarosa, Ross, Moulaison, Weech and Lugya,

2013). The reasoning behind this was because many – if not all – iSchools are connected to or include a CIS department, which offers scope for "interdisciplinary […] research in managing digital collections" (Tammaro et al., 2013, p. 1025). The preamble to the workshop identified that digital curation is a specialisation that is relevant to all three disciplines in the digital environment (remembering that as previously noted, in Europe and North America the term 'museum' is inclusive of galleries) (Tammaro et al., 2013). As the digital curation specialisation can be quite technical in nature, the workshop organisers saw the potential of the often more technical orientation of iSchools as a means to a converged education programme. However, Tammaro et al. (2013) are not the first to suggest digital curation as a potential link to convergence of galleries, libraries, archives and museums. This is discussed further in the following section.

2.11 Digital preservation, curation and stewardship

With the ability to digitise collections – and indeed for material in collections to be born digital – there comes a requirement to ensure continued access to this digital information for as long as necessary. In the mid-late 1990s various programmes such as the Task Force on Archiving of Digital Information, the Joint Information Systems Committee (JISC) Digital Preservation Focus, the Digital Preservation Coalition (DPC) and the National Digital Information Infrastructure and Preservation Program (NDIIP) (an initiative of the Library of Congress), were developed in order to "figure out how to "not lose" existing digital information …" (Lazorchak, 2011, para. 2). Higgins (2011) supports the view that the initial purview of digital preservation efforts "focussed on ensuring that material survived technical obsolescence and organisational mismanagement" (p. 79). She also noted that this approach "implied a passive state" (Higgins, 2011, p. 79), dealing as it does with documents (i.e. 'information') after the point of creation.

As the understanding of digital content began to mature, particularly in relation to "organisational activity and workflow" (Higgins, 2011, p. 78), a more active stance in the preservation of digital material emerged. Digital curation "takes a "whole life" approach to digital materials to address the selection, maintenance, collection and archiving of digital assets *in addition* to their preservation" (Lazorchak, 2011, para. 3, emphasis added). Abbott (2008) describes digital curation as "an ongoing process, not a one-off action" (p. 2). It is the "*active* management and preservation of digital resources" (Tibbo and Duff, 2008, p. 3, emphasis added), to ensure the long-term accessibility, use and re-use for future generations (Abbott, 2008; Higgins, 2011; Lazorchak, 2011).

Although the origins of digital curation may have been with the data sets of the scientific community (Lazorchak, 2011; Tibbo and Duff, 2008), it is also important for cultural heritage material, both digitised and born digital. According to Tibbo and Duff (2008)

> Successful digital curation requires not only a cadre of digital curation professionals to work in libraries, archives, museums, data centers, and information-intensive organizations […]; it requires staff with a different set of skills, especially in terms of technical expertise, than did the libraries, archives, and museums of the paper-based world (p. 2)

To this end, the School of Information and Library Science at the University of North Carolina, Chapel Hill started work on developing a Digital Curation Curriculum for libraries and archives in 2006. This project is more commonly referred to as DigCCurr, and was made possible with a grant from the Institute of Museum and Library Services (IMLS). The initial output was "a six-dimensional matrix of digital curation knowledge and competencies, […] and a 28-point, high-level categorization of digital curation functions […]" (Tibbo and Duff, 2008, p. 5).

At the time of writing their article, Tibbo and Duff (2008) noted that there were very few opportunities in digital curation education at the graduate-level in either archival, library or information science programmes, and even less in museum studies programmes. They highlighted that "[…] the increasing amount of digital content held in museums […]" (Tibbo and Duff, 2008, p. 4) could prove to be problematic for information professionals working in a museum with this apparent omission in their education programme. This led Tibbo and Duff (2008) to assess whether the developmental Digital Curation Education Framework – intended for library and archival settings – could be adapted to digital curation education for museum professionals. Initial evidence supported this assertion, and further research into comparisons with museum curricula was planned (Tibbo and Duff, 2008).

Building on this work, Tibbo and Lee (2010) suggested digital curation "as a promising area of convergence in both professional practice and professional education" (Tibbo and Lee, 2010, p. 53). They argued that while convergence between libraries, archives and museums (including galleries) might not result "in complete unification" (Tibbo and Lee, 2010, p. 53), digital curation provided a certain amount of common ground for all three institutions. All three institutions must now actively deal with the management and preservation of digital material, and while there may differences in the application and practice of digital curation tasks between galleries, libraries archives and museums, the principles remain consistent for each (Tibbo and Duff, 2008; Tibbo and Lee, 2010). As noted in Section 2.10 above, Pymm (2012) also considers digital curation and preservation relevant to the cultural heritage sector and the broader information disciplines in Australia, suggesting them in his second tier level of subjects.

Research undertaken by Madrid (2013) sought to define competencies for digital curators in the library, archive and museum context, expanding on the library and archives that was the focus of the first phase of the DigCCur project (Tibbo and Duff,

2008). Through a Delphi study, she identified "20 statements that describe what a well-prepared digital curator […] should be able to do" (Madrid, 2013, p. 149). These were separated into two categories: operational competencies and managerial competencies, each containing 10 items. That these 20 competencies gained consensus from a group of librarians, archivists and museum professionals across 11 different countries supports Tibbo and Lee's (2010) assertion that there is significant common ground in digital curation in libraries, archives and museums.

While Tibbo and Lee (2010) may have been the first to explicitly suggest digital curation as the common thread through a potentially converged GLAM education programme, Ray (2009) was one of the first to note the benefits of digital curation principles and practices "within and across disciplines" (p. 358). She noted that digital curation "can improve the ways that information is managed in cultural institutions" (Ray, 2009, p. 358), and by increasing online resources (for example through digitisation), libraries, archives and museums can "stay relevant and engage their publics in the Information Age" (Ray, 2009, p. 358).

A relatively new player on the digital curation field is 'digital stewardship'. According to Lazorchak (2011), "[s]tewardship concepts evolved out of the environmental community's idea of holding resources in trust for future generations […]" (para. 10). In the cultural heritage environment, this includes ensuring that the digital objects we create today will still exist and be usable in the future. However, it encompasses more than digital curation and/or digital preservation. The difference between digital curation and digital stewardship is clearly defined by Bradley (2007):

> Stewardship [addresses] cultural, public policy, and ethical questions about how and what we remember and forget. Curation [is about] maintaining and adding value to a trusted body of digital information for current and future use. (p. 162)

Digital stewardship takes a more holistic view of data "creation, maintenance, preservation, dissemination and exhibition" (Bastian, Cloonan and Harvey, 2011, p. 607), with the authors arguing that the digital environment requires more attention be paid to the "conditions of creation and the context in which they [data] are created" (Bastian, Cloonan and Harvey, 2011, p. 609), which is reflective of Australian archivists' continuum thinking as discussed previously in Section 2.8.3. Bastian, Cloonan and Harvey, (2011), define stewardship as encompassing technical, social, cultural, and political components (p. 619).

In response to this view, a Digital Cultural Heritage Curriculum programme incorporating a course on digital stewardship was developed at Simmons College in 2009-2010 (Bastian, Cloonan and Harvey, 2011). In acknowledging that digital issues are pervading "all aspects of LIS/IS curricula" (Bastian, Cloonan and Harvey, 2011, p. 616), they call for a new pedagogy to "accompany the many new and reconceptualized courses" (Bastian, Cloonan and Harvey, 2011, p. 616). They propose digital stewardship as a potential – albeit developing – pedagogy, because as noted above, attention to the technical, social, cultural, and political components have been lacking in the digital environment (Bastian, Cloonan and Harvey, 2011). Additionally, a digital stewardship pedagogy would enable students to consider these components in relation to collections in which they may work (Cloonan and Mahard, 2010). Although not all components are the same, the digital stewardship approach of considering technical, social, cultural, and political aspects of collections and collecting is reminiscent of the iSchools acknowledgement of the connection between information, technology and people.

2.12 Knowledge, skills and qualities of Information Professionals in galleries, libraries, archives and museums

Before implementing a programme similar to the Catholic University of America CHIM programme discussed in Section 2.10 above, it would be short-sighted to assume that such a programme is necessarily suitable for the Australian environment. For any new programme – whether that be diploma, degree or postgraduate level – it is necessary to first define the educational outcomes. Consideration needs to be given to what type of positions graduates will be able to apply for and in what type of institutions. What is it that graduates will actually be qualified for upon graduation? A logical first step then, seems to be to determine the knowledge, skills and qualities required of information professionals working in galleries, libraries, archives and museums. If considering a converged GLAM programme such as CHIM, a further step would be to identify where these knowledge, skills and attitudes overlap, in order to determine potential "core requirements." It is worth noting that in LIS circles, it has been argued that trying to determine a set of core skills and knowledge has been described as "a futile discussion" (Audunson, 2005b, p. 173) as the profession seems to be in a constant state of change, particularly as technology continues to develop. It would be fair to say that in the current technological environment, Audunson's (2005b) comment may very well apply to each of the cultural heritage institutions under discussion here. However, as no study has been found to date that considers the knowledge, skills and attitudes of information professionals in all four institutions simultaneously, this current study can be seen as a useful benchmarking exercise to determine empirically what those skills, knowledge and qualities are, and to what extent – if any – they overlap.

Despite Audunson's (2005b) concerns, studies that seek to identify core skills and knowledge are prevalent in the LIS literature, both in Australia and internationally.

These studies have been undertaken with various approaches: surveying employment agencies (Stephens and Hamblin, 2006; Hamblin, 2005; Goulding et al. 1999); surveying library directors (Bakar, 2005; Khoo, 2005; Goulding et al. 1999;); the Delphi method (Feret and Marcinek, 1999); and the most popular approach - content analysis of job advertisements (Gerolimos and Konsta, 2008; O'Connor and Li, 2008; Kennan et al., 2006a; Croneis and Henderson, 2002; Kwasik, 2002; Marion, 2001). Other Australian studies to discuss skills and knowledge requirements include the two Nexus reports by Hallam (2008a; 2008b), Partridge and Hallam (2004), and most recently, Partridge et al. (2011). The trend in these studies is for an increased propensity for generic skills and personal qualities, "particularly those associated with learning potential, flexibility, workplace communication and teamwork, and potential for personal growth, including leadership" (Partridge et al., 2011, p. 62). The relevance of learning potential as a required skill is interesting in that Tennant (1998), albeit writing in the context of a digital library, considered that it may well be a prudent management decision to employ staff with certain personality traits rather than the technical skills. For example, a person with "the capacity to learn constantly and quickly" (Tennant, 1998, p. 102) and who is flexible may well be a better alternative than someone with programming or other technical skills that may or may not be current in a few weeks' or months' time. Tennant (1998) argues that the person with the former skills will be able to learn the new technologies required. It seems that in 13 years, this requirement has not diminished. A further finding of Partridge et al. (2011) that has relevance for the current study is that "there is a demand for graduates with a knowledge base that spans the major collecting areas of libraries, archives and records" (Partridge et al., 2011, p. 62). Although gallery and museum skills are noted as being less in demand, the same study nevertheless acknowledges that convergence is "not a fad" (Partridge et al., 2011, p. 49), and that these skills will indeed be relevant for some information professionals.

The museum literature emanating from North America however, has for some time noted the relevance of and connection to LIS studies and expertise. The role of information professionals in museums has been explored extensively by Marty (2007a, 2007b, 2006a, 2006b and 2005). An online survey was used to investigate the relevance of LIS expertise for museum information professionals, specifically in the areas of information representation, information organisation and access, information management, computer technologies and digitisation technologies, interactive technologies, information policy evaluation methods and collaboration initiatives (Marty, 2007a). What Marty (2007a) is referring to as 'skills' here is more appropriately aligned with 'knowledge' in the current study, however, for museum professionals, these skills are becoming increasingly important. He found that many of the skills that are taught in LIS programmes are skills that are largely learnt on the job by museum information professionals, as these areas do not form part of the museum information professionals' formal training (Marty, 2007a). He concludes that museum professionals should be encouraged to take units from both museum studies and LIS programmes in order to produce graduates "with the diverse skills and expertise to drive ongoing convergence of libraries, archives and museums" (Marty, 2007a, p. 272). As logical as that seems, this may pose a problem in Australia as very few, if any museum studies programmes are located in the same university as an LIS programme. This is not the case with the Library, Information and Cultural Services Training package offered by Technical and Further Education (TAFE) institutions, however as discussed in Section 1.8, certificate and diploma level programmes are out of scope for the current study.

Trant (2009) also commented on the lack of overlap in formal education for library and museum information professionals, specifically referring to the Master of Information Studies and Master of Museum Studies at the University of Toronto. She suggests the following five broad areas "to form the core of common practice" (Trant, 2009, p. 378):

Organisations and Governments incorporating

- Management
- Cultural Policy

Creating effective digital representations incorporating

- Authenticity and the Digital Record
- Collections Documentation/Metadata
- Integrating the Information Landscape
- Digital Visualization and Reconstruction

Managing digital collections incorporating

- The Life-cycle of Digital Information
- Management of Digital Records
- Preservation
- The Challenge of Individual Collections
- Inter-disciplinary Teamwork

Supporting information use incorporating

- Understanding Information Users
- Information Literacy
- Collaboration with Educators
- Implications for Scholarship
- Personalization and Localization

Evaluating information services incorporating

- Technology Assessment
- Effective Presentation of Digital Information
- 'Virtual Exhibitions' (Trant, 2009, p. 378-382)

Again, these areas of common practice are more aligned with 'knowledge' in the current study, but she also acknowledges the need for what is referred to as non-disciplinary skills – also referred to as 'soft' or 'generic' skills in the literature:

> the ability to adapt and change, to grow in a job, to face challenges with enthusiasm, to continue to learn, to master new technology, to work with a

> team, and to problem solve creatively in a time of diversity and scarcity (Trant, 2009, p. 383).

She further asserts that differences between professional identities must be maintained, while offering more than "a few shared courses" (Trant, 2009, p. 384).

Finally, Duff et al. (2010) surveyed graduates of masters level museum studies programmes from the University of Toronto who graduated between 1970 and 2007. Participants were asked to rate a list of "necessary knowledge and skills" (Duff et al., 2010, p. 375) in terms of their importance for their careers. The two most highly rated as "important" were in fact the generic skills of oral communication skills and teamwork skills. The third most highly rated was computer skills. Although rated relatively highly in terms of percentage (52.6%), museum theory was ranked third lowest. Tran and King (2007) however, suggest that theory and theory building are important for the development of a profession. Sandell (2000, as cited in Duff et al., 2010) refers to the "professionalization of the field" (p. 378), a theme that is also emerging in LIS.

In August 2012, the Australian Society of Archivists (ASA) and the Records and Information Management Professionals Australasia (RIMPA) released an exposure draft of the Statement of Knowledge for the Archives, Records and Information Management Professions. This document "identifies the specialist body of theory, and the standards, principles, ethics and practices that are required by professional practitioners […]" (Australian Society of Archivists and the Records and Information Management Professionals Australasia, 2012, p. 2). The following three knowledge domains are identified:

- **Purposes and characteristics of records and systems:** understanding records and the systems in which they are created and maintained; why they are created, the information they contain and how evidence is represented in the records.

- **Context:** the broader environment that influences the creation and maintenance of records, memory and evidence, in the past, present and into the future.
- **Processes and practice:** covering recordkeeping theory, principles, frameworks and standards

  (Australian Society of Archivists and the Records and Information Management Professionals Australasia, 2012, p. 8-10)

The timing of this document for this thesis was opportune, as the identified areas of knowledge required in this sector were used to inform the data collection stage.

A study by Partridge, Menzies, Lee and Munroe (2010), looked at the knowledge, skills and attitudes needed by LIS professionals in a world of emerging and changing technologies – the so-called 'Web 2.0'. One of the key findings of this study was the suggested shift in paradigm of the Australian LIS profession, in particular the way that the "profession conceives of itself" (Partridge, Menzies, Lee and Munroe, 2010, p. 270).

It could be argued that whilst skills and knowledge will always be an important aspect of the information professionals' role, perhaps it is time that the emphasis moved away from skills and knowledge, and shifted towards what Dall'Alba (2009a) refers to as "learning to become a professional [which involves] what we know, how we act and who we are becoming" (p. 33). If the process of learning to become professional is to take hold, these aspects must also be incorporated into professional education programmes (Dall'Alba, 2009).

2.13 Conclusion

This chapter began by presenting background information in order to contextualise the apparent growing interest in convergence. An historical overview of the

development of galleries, libraries, archives and museums followed, demonstrating that the convergence of these institutions is not a new phenomenon, with all four institutions having their origins in the Museum and Library of Alexandria.

The literature review provided an overview of the role of galleries, libraries, archives and museums in society, and demonstrated how these institutions and the professionals who worked in them, as collectors and preservers of human knowledge, have contributed to the knowledge economy that we see today. This was followed by commentary on the development of the information professions and their professional associations as they relate to the cultural heritage sector leading to an overview of the development of GLAM in Australia. Advantages and disadvantages of GLAM convergence included discussion of a recent study from New Zealand, drawing attention to both technical and organisational issues that may be encountered.

It was highlighted throughout the chapter that the ubiquitous nature of ICTs has indeed had an impact on our cultural heritage institutions. The increased availability and amount of information in electronic format has changed the traditional roles of information professionals within galleries, libraries, archives and museums. Many of the Criteria of Distinction, as espoused by Myburgh (2005) and supported by Martin (2007), Marty (2007a) and Rayward (1998) become less of an issue in the digital environment, thus blurring the boundaries between institutions and also the roles of the information professionals who work there. The potential for a new kind of information professional – the cultural heritage information professional – and how this professional might be educated included a discussion of the emergence and relevance of the iSchool movement. The notion that digital preservation, digital curation and digital stewardship could provide the common ground for convergence was explored.

The section on the knowledge, skills and qualities required of information professionals in cultural heritage institutions, has highlighted that no study – either national or international - has investigated the commonality between information professionals in the different institutions, despite them all managing information. This also has implications for the education of the potential role of cultural heritage information professional, which cannot be fully investigated until there is some empirical evidence to support what it is these professionals should be learning in an educational programme. The aims and objectives of this study begin to rectify this deficiency.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter introduces and justifies the methodology used to investigate the education needs of information professionals in the cultural heritage environment. It describes how this study used the Grounded Delphi Method (GDM) to address the research gaps identified by the literature, which was discussed in the previous chapter.

First, the chapter introduces the Social Constructivist research paradigm that guided and underpinned this research. It then explains that the researcher chose this approach because the paradigm and method closely align with her own worldview, as well as being appropriate and relevant to achieving the research objectives.

Next, the chapter outlines the GDM, highlighting how it incorporates elements of the Delphi Method and Grounded Theory to form a more nuanced research approach. The researcher argues that the benefits of the GDM for this study are that it combines the structured data collection process of the Delphi method with the rigour of the Grounded Theory analysis procedures.

Then, the chapter details how the GDM was applied to this study, focussing in turn on the pilot study, the first round focus groups and the second and third online questionnaire rounds. The final section demonstrates the strength of the iterative data collection and analysis procedures that the GDM enables.

3.2 The Research Paradigm

This research was undertaken from a Constructivist, or more specifically Social Constructivist, paradigm. The concept of a research paradigm originated with Kuhn's (1962) idea of 'conceptual network,' and incorporates the questions of Ontology (what is the nature of reality?), Epistemology (how do we come to know what we know?) and Methodology (how does the researcher find out about what can be known?). These elements are collectively referred to as a paradigm and embody the set of beliefs or worldview of the researcher (Nutt Williams and Morrow, 2009), "guid[ing] research and practice in a field" (Willis, 2007b, p. 8). The paradigm then informs all aspects of the research process and guides researchers in not only the selection of method, but also the "general metaphysical principles [and] methodological prescriptions" of the paradigm (Chalmers, 1982, p. 91; Lincoln and Guba, 1994).

The overarching Constructivist paradigm of this research reflects the Interpretivist tradition. The Interpretivist approach came about as a reaction to the positivist idea that the social sciences can and should be studied in the same way, using the same paradigms and research methods as those used in the natural sciences (Spender, 2008; Willis, 2007b and 2007c; Guba and Lincoln, 1994), such as experiments conducted in order to test theories. Interpretivists, unlike Positivists, however, do not believe that there is one true, correct path to knowledge, and thus do not advocate one method over another. This should not be taken to infer that Interpretivists do not place importance on standards or quality of research – quite the contrary. Instead, it is the Interpretivists' position that standards are not universal, but are "the products of a particular group or culture" (Willis, 2007a, p. 109).

Much of the philosophical underpinning of Interpretivism can be attributed to Immanuel Kant's *Critique of Pure Reason*, in which he argued that humans "do not

directly experience the "out there" world as it is, [but instead they] interpret their sensations" (Willis, 2007b, p. 6). Interpretivists argue that meaning is constructed as a group process within each individual's social and cultural environment, using language and other traditions of that environment (Willis, 2007a) enabling each member "to share their understanding with other members of the group" (Willis, 2007a, p. 97). Some authors (Gall, Borg and Gall, 1996) place increased emphasis on the individual in this process, arguing that the individual creates their own unique meaning of reality. However, this raises the question of how two individuals are then able to communicate in any meaningful way if each has constructed their own unique meaning (Willis, 2007a). The fundamental principle of Interpretivism then, is that reality is a socially constructed one, which by extension affirms that "all research is influenced and shaped by the pre-existing theories and world views of the researchers" (Willis, 2007a, p. 96). Research itself therefore is a socially constructed reality because "the terms, procedures, and data of research have meaning because a group of scholars has agreed on that meaning" (Willis, 2007a, p. 96).

The notion of a socially constructed reality influences the purpose of research undertaken in the Interpretivist tradition, and again is in opposition to Positivist research. Towards the end of the 19th century, the German philosopher Wilhelm Dilthey distinguished between two types of knowledge: understanding (*Verstehen*) and explanation (*Erklärung*) and two types of science: the natural sciences (*Naturwissenschaften*) and the cultural, human, moral or social sciences (*Geisteswissenschaften*) (Willis, 2007a).[1] Dilthey concluded that research conducted in the positivist tradition – finding laws, generalisations and proving or disproving theories – was inherently suitable for the natural sciences whose goal it was to provide an explanation (*Erklärung*). However, he argued that this same approach was not suitable for the human or social sciences, and postulated that a

[1] Interestingly, the German word 'Geist' which forms '*Geisteswissenschaften"* translates to English as mind, spirit or ghost, depending on the context.

more fitting goal was understanding (*Verstehen*). Understanding the context or situation led to "the construction of contextual knowledge, or local knowledge, rather than laws" (Willis, 2007a, p. 99). As an overarching approach to studying the human and social sciences then, Interpretivism can be used to unite all approaches where *Verstehen* is a central objective (Schwandt, 2007).

3.2.1 Constructivism and Social Constructivism

This study is positioned to reflect the Constructivist paradigm. More specifically, this study adopts the Social Constructivist viewpoint that focuses on social processes and interactions in the construction of knowledge and reality (Schwandt, 2007), rather than individual cognitive processes.

The particular paradigmatic stance that is taken is that espoused by Guba and Lincoln (1994) and subsequently amended and updated in Lincoln and Guba (2005). According to Guba and Lincoln (1994), Constructivism is an alternative paradigm to Positivism, Postpositivism and Critical Theory. One of the major differences is that the latter three paradigms have some form of Realism guiding their ontology (naïve, critical and historical Realism respectively), whereas Constructivism moves to a Relativist ontology. This means that multiple realities are possible through "intangible mental constructions [that are both] socially and experientially based" (Guba and Lincoln, 1994, p. 110), a reflection of the Interpretivist tradition in which the Constructivist paradigm sits.

The epistemology for Constructivism is said to be transactional and subjectivist, where the researcher and the object of research are closely linked (Guba and Lincoln, 1994). Findings are not only co-created, but are created as the research progresses. These two facets greatly support the selection of the Grounded Delphi Method, as it is an inherently iterative method (the Grounded Delphi and Delphi

Methods are explored in greater detail in Section 3.3). Further, Lincoln and Guba (2005) note that the "Inquirer Posture" – or the position of the inquirer - is that of "passionate participant, as facilitator of multi-voice reconstruction" (p. 171, Table 6.4), which reflects the view of the current researcher's position in this study. It is also important that the Constructivist researcher recognises that their own reality has been constructed through their own historical, social and cultural experiences. With respect to this, the current researcher recognises her higher level of understanding of the 'Library' component of GLAM, and was mindful of not imposing library-centric views on the remaining three institutions. This was achieved by learning and using the appropriate language of each sector. For example, museums have 'visitors', and libraries have 'users' (or in some cases, 'patrons', 'customers' or 'clients').

The hermeneutical and dialectical methodology of the Constructivist paradigm aims "to distill a consensus construction that is more informed and sophisticated than any of the predecessor constructions" (Guba and Lincoln, 1994, p. 111). Again, this fits well within the consensus aims of a Grounded Delphi study. Although hermeneutics was initially concerned with the understanding of texts (initially sacred texts), it now includes "understanding [of] human action in context" (Willis, 2007a, p. 104), with an emphasis on language. Language is extremely important in the construction of knowledge, as language both allows and restricts what we can say, thereby constraining to some degree what we are able to construct as knowledge. The hermeneutical and dialectical methodology was a highly appropriate approach to take in this study as the four cultural institutions that are the subject of this research – galleries, libraries, archives and museums – each have their own 'domain-specific' language, as mentioned earlier.

Reflecting the Interpretivist tradition, Constructivists hold the belief that "the mind is active in the construction of knowledge" (Schwandt, 2007, p. 38) or, in other words, as humans, we do not "find or discover knowledge so much as construct or

make it" (Schwandt, 2007, p. 38). These constructions are tested, revised and amended as we encounter new experiences (Schwandt, 2007). Some authors claim that there are two broad strands of Constructivism (Schwandt, 2007; Talja, Tuominen and Savolainen, 2005). Schwandt (2007) refers to Radical (or psychological) and Social Constructivism, whereas Talja et al. (2005) distinguishes between Cognitive Constructivism and Social Constructivism. The Radical Constructivism of Schwandt (2007) and the Cognitive Constructivism of Talja et al. (2005) both claim influence from Jean Piaget for this position. Talja et al.'s (2005) definition of Cognitive Constructivism is actually what Gergen (1999) defined as Constructivism: "a view in which an individual mind constructs reality but within a systematic relationship to the external world" (Gergen, 1999, as cited in Talja et al., 2005, p. 81). Schwandt's (2007) view is also focused on "the individual knower and acts of cognition" (p. 38). Given the similarity of these two views, it is reasonable to suggest that Radical Constructivism and Cognitive Constructivism represent the same strand of Constructivism.

Social Constructivism on the other hand places far less emphasis on the individual construction of knowledge and reality, and instead focuses on social processes and interactions (Schwandt, 2007). Talja et al. (2005) again refer to Gergen (1999) to explain it thus:

> Social constructivism […] argues that, while the mind constructs reality in its relationship to the world, this mental process is significantly informed by influences received from societal conventions, history and interaction with significant others (Gergen, 1999, as cited in Talja et al., 2005, p. 81)

The major proponents of Social Constructivism, according to Gergen (1999, as cited in Talja et al., 20045), are Vygotsky and Jerome Bruner in his later works. Schwandt (2007) recommends Berger and Luckmann's *The Social Construction of Reality* (1996) as a seminal work in this area.

When discussing Constructivism, many authors are, however, actually discussing Social Constructivism as it has been defined here, and indeed the terms seem to be used interchangeably at times, as is the case with Bloomberg and Volpe (2008). For example, Lincoln and Guba (1985; 2000) claim that for Constructivists, reality is constructed socially, culturally and historically and not in isolation (Schwandt, 2007). Who and what we interact with, and the historical traditions associated with this, will shape what we perceive to be reality. This is reflective of the Social Constructivist strand explained previously.

In what they claim to be a way of more adequately describing Social Constructivism in the context of Information Science, Talja et al. (2005) use the term 'Collectivism' to "reorient the unit of study from the level of the individual to the level of social, organisational or disciplinary communities" (p. 81). However, in order to avoid confusion, the term 'Social Constructivism' is used consistently throughout this thesis.

Social Constructivism is inherently suitable for this study not only paradigmatically, as discussed above, but also conceptually. The institutions involved – galleries, libraries, archives and museums - are social institutions that acquire, organise, store, preserve and provide access to information, therefore playing a critical role in the construction of society's knowledge.

3.2.2 Relationship of research to practice in the Interpretivist tradition

This study embodies a research-practice relationship that brings together the researcher and information professionals within galleries, libraries, archives and museums. The research-practice relationship is important because the results may have potential application and implications to the future of how these information

professionals are educated. This supports the study's Interpretivist approach where practice activities and research inform each other (Willis, 2007a). For Interpretivists, "the thoughtful reflections of experienced practitioners are a prized source of knowledge and understanding […]. So are the stories of people with relevant experiences" (Willis, 2007a, p. 110). Using this type of data is not problematic for Interpretivists, as they view all research as being subjective at least to some degree. Because context is an important consideration for Interpretivists, data that is close to the contextual source is more valued than data obtained out of context (Willis, 2007a). By selecting working professionals from within galleries, libraries, archives and museums as participants for the current study, the Interpretivist tradition is an inherently suitable approach.

3.2.4 Summary

This section has introduced the philosophical underpinnings of the current research. A Social Constructivist paradigm within the Interpretivist tradition has been explained and discussed within the context of the current study, and was shown to be the most appropriate approach to take in order to meet the research objectives of this study. It has been demonstrated both epistemologically and methodologically that the selection of an iterative method such as the GDM is also a fitting choice for this study. The following sections address in greater detail the GDM and how it was applied to this study.

3.3 Method: The Grounded Delphi Method

The current research was undertaken using a new addition to the research methods literature called the Grounded Delphi Method (GDM) that combines elements of Delphi Method and Grounded Theory. GDM attempts to improve the theory building aspect of the Delphi method by incorporating elements of Grounded

Theory in both the data collection and data analysis phases. It should be noted here that the theory in Grounded Theory should 'emerge' rather than be 'built', but for consistency of terminology with key literature (Päivärinta, Pekkola and Moe, 2011; Okoli and Pawlowski, 2004), 'built' and 'building' will be used. Specifically, this study follows the characteristic Delphi pattern of a series of data collection rounds with purposefully selected experts from a particular field. In addition, the study adopts the Grounded Theory data analysis process that is conducted simultaneously with data collection and uses the techniques of open, axial and selective coding. Thus, after each data collection round, data analysis generates a series of categories that form the basis for the next data collection round. Before detailing the application of GDM to this study, the following sections provide an overview of both the Delphi Method and Grounded Theory, which will clarify the origins of the various elements that form the GDM.

3.3.1 The Delphi Method

Dalkey and Helmer of the RAND Corporation first documented the Delphi method in a paper in 1963 (Dalkey and Helmer, 1963) in which they described the method as it had been used approximately 10 years earlier "to forecast the impact of technology on warfare" (RAND Corporation, 2012). It is this forecasting feature that gave the method its name - after the Oracle of Delphi who, according to Greek myth, made predictions and answered questions about the future. It is possible to collect both qualitative and quantitative data with this method, and this is reflected in the current research.

The Delphi method is also known as the Delphi technique. This can lead to some confusion as to its function in the research process – is it a method or a data collection technique? The current researcher concurs with Williamson (2002) that the "Delphi [method] provides a design for undertaking research [making it] more

than just a data collection mechanism" (p. 209). Further, Mead and Moseley (2001) have suggested that due to the large number of modified applications of Delphi, that a more appropriate term might be "Delphi approach." However, as the current research falls into what de Villiers, de Villiers and Kent (2005) categorise as a "conventional Delphi" (an exploratory phase followed by at least one questionnaire round), the term "Delphi Method" will be used throughout this thesis.

Situating Delphi philosophically can be challenging, as it has no clearly defined theoretical underpinnings. According to Mitroff and Turoff (1975, as cited in McDonald, Bammer and Deane, 2009), "there is no single school of philosophy that best captures the theory underlying the Delphi technique" (para. 40), because the developers looked to several philosophers including Gottfried Leibnitz, John Locke, Immanuel Kant, Georg Hegel, and Isaac Singer for the basis of their technique. Williamson (2002) noted that Delphi "is underpinned by theoretical explanation" (p. 209), however she does not offer any suggestion as to what those theoretical underpinnings might be. This lack of specification could be interpreted as meaning that the theory will vary according to the focus of the study. In relation to the current study, it has been shown in Section 3.2.1 above that both the Constructivist epistemology (transactional and subjectivist) and methodology (hermeneutical and dialectical) support the use of an iterative method, to which both the Delphi and Grounded Delphi Methods conform.

The Delphi method is both a group communication tool and a means to achieve consensus amongst experts on a given topic (Hsu and Sandford, 2010), and is based on the idea that "the collective wisdom of a group" (Forsyth, 2010, p. 196) reduces ambiguity and increases accuracy (Forsyth, 2010). It is a highly structured approach to data collection. The most popular form of data collection used in Delphi studies – and that which is employed in the current study from the second and subsequent rounds – is the self-administered questionnaire. The process itself is iterative, involving multiple rounds of questionnaires to be completed by participants, with

the results of each round informing the next. After each round, the responses are analysed by the researcher and an anonymous summary is provided to all participants, with reasons and justifications as to why particular choices were made. This then allows participants in each subsequent round to review their own selections in light of other participants' choices. As such, the development of the questionnaire, the data collection and data analysis are intertwined throughout and between each round.

Depending on the objective of the study, individual Delphi rounds can be adapted accordingly to suit. For example, Linstone and Turoff (1975) discuss a Delphi study where "the overall objective was to obtain a rank ordered list" (p. 91). In this case, participants were presented with a list of items that they are required to 'force rank' – that is, they must place each item in an ordered list of importance. However, as Delphi has also been suggested as being "most appropriate when opinions are being sought" (Charlton, 2004, p. 245), a ranking of items may not be the most suitable course of action. In these cases – such as the current study – a study is deemed to have reached consensus once responses "reach a prescribed or a priori range" (Hsu and Sandford, 2010, p. 344). In studies that use force ranking, what constitutes consensus is at the discretion of the researcher (Hsu and Sandford, 2010).

3.3.1.1 The Panel of Experts

The selection of participants – the so-called panel of experts - is considered the most critical aspect of a Delphi study (Hsu and Sandford, 2010). Resting on Murry and Hammons' (1995) assumption "that group decisions are usually more valid than decisions made by a single person" (p. 426), they further argue that those decisions "are more valid if the group is comprised of experts" (Murry and Hammons, 1995, p. 426). Hsu and Sandford (2010) are in agreement with regards to the expert status required of panel members and suggest selecting participants who are

"highly trained and possess expertise associated with the target issues" (para. 10).

A further matter to be considered when selecting participants is that the Delphi method can be open to bias. According to Rowe, Wright and Bolger (1991), researchers often select participants because of the following reasons:

- they are easily available
- their reputations are known to the researcher
- they meet a minimal number of criteria regarding the field of the research problem
- the 'self-rating' of their expertise (p. 324)

Judd (1972), in reference to setting up a panel of experts for a Delphi study in the field of higher education, cautions about what he refers to as "inbreeding." That is, selecting participants because they are likely to share "a singular set of judgements because of background and training" (p. 181).

In order to address these issues of bias, the researcher established criteria in terms of the level of expertise required and made requests for participation based on these criteria. This aspect is discussed in detail in Section 3.4.2.1 below.

No clear consensus has been reached in the literature about the ideal number of participants for a successful Delphi study. The recommended numbers vary from 5-20 (Forsyth, 2010); 15-20 (Hsu and Sandford, 2010) and 10-15 (Delbecq, Van de Ven and Gustafson, 1975). However, a balance needs to be struck - too few members may not adequately represent the varying opinions of topic under investigation, and if a wide or divergent opinion is required, more participants will be required (Hsu and Sandford, 2010). Some authors have noted that new ideas cease to be generated once the numbers exceed 30 participants (Delbecq, et al., 1975), however Brooks (1979, as cited in Murry and Hammons, 1995) suggests that

number is twenty-five.

3.3.1.2 Delphi Rounds

The number of rounds of a Delphi study is not prescriptive. Much of the literature suggests a minimum of two rounds, more usually three or four (Charlton, 2007; Hurworth, 2005), Lang (1994, in Day and Bobeva, 2005). Errfmeyer, Erffmeyer and Lane (1986, in Day and Bobeva, 2005) deem anything between two and 10 rounds acceptable. Gottschalk (2000) on the other hand has identified Delphi studies with only one round.

In the first round, according to Hsu and Sandford (2010), two approaches can be taken, exploratory or confirmatory. The most traditional form of Delphi begins with an exploratory open-ended questionnaire designed to elicit thoughts and ideas from the participants. Similar in nature to a 'brainstorming' session, this approach is particularly suitable when there is limited empirical evidence available to be able to form a definitive questionnaire. For this reason it is also referred to as the 'exploratory' approach (Day and Bobeva, 2005). Once responses are received, the researcher collates the qualitative data into a structured questionnaire, and this is used for the second round (Hsu and Sandford, 2010). From the second round on, the data become more quantitative in nature, with the panel of experts being asked to rank or rate the responses that emerged in round one, often using a Likert scale (Murry and Hammons, 1995). Comments are also requested from the participants, which may help to understand their quantitative selections. The results of round two are then tabulated and the frequency distributions, means and standard deviations are calculated for each questionnaire item. A summary of this information and any comments given by panel members is provided as a part of round three, where participants are again asked to rank or rate items on the questionnaire. In light of the feedback and further personal reflection, participants may change the way they have rated or ranked items on the questionnaire. This

process of tabulating, giving feedback and re-surveying continues until consensus is reached "or until there is enough convergence to justify using the results without complete consensus" (Whitman, 1990, as cited in Murry and Hammons, 1995, p. 429).

The alternative first round "confirmatory" approach (Day and Bobeva, 2005) draws on an extensive review of the literature in order to circulate "a predefined list of issues to the panel" (Day and Bobeva, 2005, p. 106). It is particularly suited to follow-up studies, where sufficient empirical data exists. For both the exploratory and confirmatory approaches, the researcher collates the data from the round one responses, prepares a revised questionnaire for round two and provides the participants with a summary of the responses from round one. The same process is followed repeatedly until consensus (or a high level of convergence) is reached.

3.3.1.3 Advantages and Disadvantages of Delphi

One of the major advantages of using the Delphi method is that it preserves anonymity amongst the participants. It benefits from group decision-making, while eliminating disadvantages of face to face group interactions where members may be dominated by stronger personalities, people in positions of authority or be biased because of the 'bandwagon' or 'halo' effect. Murry and Hammons (1995) claim that the "controlled-feedback procedures are often more accurate than face-to-face discussions" and that "consensus reached by the group reflects reasoned opinions" (p. 426), as people have not only had time to reflect on their own answers, but have the advantage of insight into others' opinions and selections.

As with other research methods, the Delphi method has some limitations and disadvantages. These are discussed below, along with strategies for minimizing these issues.

Time consuming

Delphi is time consuming for researchers and participants. The researcher needs spend considerable time to design, distribute, analyse and report back to the panel of experts, and then repeat the process at least once more. This was particularly problematic in the first Delphi studies that used pen and paper questionnaires, and relied on the postal system for delivery and return of those questionnaires. However, the advent of online surveys and email has greatly reduced the time in between rounds. For this study, time delays were not a particular concern, as it was completed on a full time basis over a three year period.

Participants are required to commit time to a series of data collection rounds over an extended period. The quality of their responses will depend not only on their level of expertise, but also the time available to provide thoughtful responses, potentially on three, four or more occasions. Participants' personal and professional priorities may also change. This time commitment is one of the main causes of drop-out in Delphi studies. In order to minimize this aspect, a detailed explanation of the process was sent to potential participants to make them aware of the requirements of this type of study, enabling them to make an informed decision prior to agreeing to participate in the study.

Low response rate/dropouts

Low response and high dropout rates are quite common. This is not unique to the Delphi method, but due to its iterative nature, the risk of drop out increases with each round. Again, the comprehensive explanation provided to participants assisted in this regard. Additionally, the researcher was as succinct as possible when designing each questionnaire, so as to keep the process as focused as possible.

Participant Selection

Problems can arise in the selection of participants around their standing, with regard to determining their status as expert. As briefly mentioned in Section 3.3.1.1, claims of bias on behalf of the researcher have been made against this aspect of the Delphi method. In order to minimise such claims in this study, a set of criteria were created based on procedures established by Okoli and Pawlowski (2004). A detailed explanation can be found in Section 3.4.2.1, with supplementary material in Appendix 3.

Coding / interpretation of qualitative data

It has been noted in the literature (Brewer, n.d.) that it is possible for researchers to manipulate the direction of each of the Delphi rounds to fit with any pre-conceived notions that they may have. The interpretation and analysis of qualitative data is not a Delphi-specific problem, but an important consideration for qualitative research generally. However, the added components of the data collection rounds being iterative, the researcher providing feedback about the results of the previous rounds, and the aim to achieve consensus, all contribute to the bias claims.

Despite these disadvantages, there were many advantages to using aspects of the Delphi method for this study. Hsu and Sandford (2010) note that "common surveys try to identify what is. The Delphi method attempts to assess what could or should be" (para. 1), a point that is reflected in the aim of this study, which was to identify the future education needs of information professionals who will work in the cultural heritage environment. They also suggest that it is a suitable method for collecting data "from experts on problems or issues for which no previously researched or documented information is available" (Hsu and Sandford, 2010, para 14), a point on which Gupta and Clarke (1996) concur. As mentioned in Chapter 1, there is very little empirical research that has been undertaken in this area, and none that has been found to date with an Australian focus.

Although theory building is not its main focus, Delphi studies can nevertheless be beneficial in developing theory (Day and Bobeva, 2005; Okoli and Pawlowski, 2004), and this is further enhanced by incorporating the aspects of Grounded Theory as discussed in the following section to form the GDM that is used in this study.

3.3.2 Grounded Theory

Grounded Theory is a methodology created by sociologists, Barney Glaser and Anselm Strauss in the 1960s, specifically to guide theory building from qualitative data analysis (Päivärinta, Pekkola and Moe, 2011). The intention is that a theory 'grounded' in the data emerges "without the researcher bringing his/her theoretical ideas and forcing a certain theory to emerge" (Päivärinta, Pekkola and Moe, 2011, p. 3). The definition that the creators themselves gave to Grounded Theory is that it is "the discovery of theory from data – systematically obtained and analysed in social research" (Glaser and Strauss, 1967, p. 1).

There is very little agreement amongst Grounded Theorists as to the philosophical foundations of Grounded Theory. It has been labelled as Positivist, Interpretive and Critical (Urquhart, Lehmann and Myers, 2010). Charmaz, who has written about her own variant of Grounded Theory known as Constructivist Grounded Theory, suggests that the disagreement stems from a lack of clarity in Glaser and Strauss's book, *The Discovery of Grounded Theory* (1967) (Charmaz, 2006). Because Glaser himself describes Grounded Theory as paradigmatically neutral, Urquhart, Lehmann and Myers (2010) take the view that "a researcher's own ontological and epistemological position will impact on their coding and analysis of the data and the way in which they use grounded theory" (p. 361). In this way, it reflects the philosophical positioning of the Delphi Method, albeit for different reasons, and is therefore able to adopt the philosophical stance of this research as described in Section 3.2.

As with the Delphi Method, the data collection and data analysis processes for Grounded Theory are closely intertwined and iterative. The initial analysis process is used to generate categories - the first, or basic level of conceptual constructs - and is commenced as soon as the first set of data has been collected. Open coding (discussed in detail in Section 3.3.2.1) using the constant comparison method is often used to generate these initial categories (Urquhart, Lehmann and Myers, 2010). The benefit of using the constant comparison method is that it "helps to ensure the categories and the resulting theory are properly grounded" (Urquhart, Lehmann and Myers, 2010, p. 377). The resultant categories and concepts formed from the initial data analysis directs the researcher to where (or who) the next set of data should be collected from in a process called 'theoretical sampling' (Glaser, 1978). This is an important, foundational concept in Grounded Theory research as it "helps to ensure the comprehensive nature of the theory, and ensures that the developing theory is truly grounded in the data" (Urquhart, Lehmann and Myers, 2010, p. 369). This continues until the identified categories are 'saturated' – that is, "well represented by many instances in the data" (Urquhart, Lehmann and Myers, 2010, p. 372).

One of the key capabilities that researchers must have or must develop in order to posit a theory at the end of their study is what is known as 'theoretical sensitivity' (Glaser, 1978; Oleson, 2007). This is the ability of a researcher to not only be able to define and describe categories, but to be able to see the relationships between these categories. This has been noted as being a challenge for inexperienced researchers (Päivärinta, Pekkola and Moe, 2011). The issue is further reinforced when the researcher is required to decide which categories are more important than others and which ones will form the basis of the new theory. The GDM incorporates elements of the Delphi Method here to improve the theory building aspect, and this is discussed in Section 3.3.3 below.

One of the criticisms often levelled at Grounded Theory is that despite the method being intended to develop theories, very few studies actually propose or identify a theory (Urquhart, Lehmann and Myers, 2010). This has led to the method being viewed as only a way of coding data. However, the predominant practices that lead to the emergence of a theory – and that which is particularly relevant to the current study – were the coding procedures. Different authors have suggested different guidelines as to what coding procedures should take place and when. For example, Glaser (1978) and Urquhart, Lehmann and Myers (2010) suggest open coding, followed by selective coding and theoretical coding. Orlikowski (1993) follows the Strauss and Corbin (1990) steps of open, axial and selective coding. As the creators of the GDM have explicitly stated that they use the Straussian approach to Grounded Theory (open, axial and selective coding) (Päivärinta, Pekkola and Moe, 2011), these will be discussed in more detail below.

3.3.2.1 Open coding

The initial stage of data analysis in Grounded Theory is open coding, so named because according to Strauss and Corbin (1990), it is the process of 'opening up' the text of the collected qualitative data to identify any ideas, themes or meanings (Benaquisto, 2008a). The constant comparative method is used, and while at this stage it is recommended to code at the sentence and/or word level, it is not forbidden to code at a higher level, as the level of coding applied may depend on the context of study. The reasoning behind coding at such a low level is that aside from the insights it offers, it produces a "chain of evidence" (Urquhart, Lehmann and Myers, 2010, p. 369) from data to theory. This is a quality inherent in the Grounded Theory method. In a text-based collection of data, a label is attached to the words or phrases that best represents them. Once the researcher has identified various categories and/or concepts from the data, the theoretical sampling technique is then applied to determine where and what the next data collection should be.

3.3.2.2 Axial coding

Axial coding is the analysis process undertaken once all the categories have been identified by the initial open coding phase. It involves refining and developing individual categories, which may include documenting the characteristics of each category (Benaquisto, 2008b). Once this is done, relationships between categories can start to be identified, which may involve merging of similar categories, renaming them and broadening the scope. This is sometimes done with the use of a coding paradigm – questions regarding the different perspectives that a researcher could ask of the data in reference to the emerged categories, such as those recommended by Strauss and Corbin (1990): context, conditions, interactions and consequences. Glaser (1978) offers a coding paradigm of 18 different elements that he referred to as 'coding families' which included mutual effects and reciprocity; social control; and recruitment and isolation, to name three. However, Urquhart, Lehmann and Myers, (2010) suggest that the use of a coding paradigm "causes real difficulty for some researchers, especially novices" (p. 362), and it is perhaps for these reasons that a coding paradigm is not mandatory (Benaquisto, 2008b).

3.3.2.3 Selective coding

Once the categories have been identified through open coding, and relationships between them identified through axial coding, selective coding can take place. Benaquisto (2008c) describes selective coding as the process where a researcher identifies and selects a 'core' category from the existing categories. The core category becomes "the central category that represents the major theme or "essence" of the research (Benaquisto, 2008c, p. 806), and the remaining major categories are then related to the core category. The researcher then sets about explaining not only the relationship between the categories, but also the nature of those categories – what they mean, and the significance of them. Again, highly

developed theoretical sensitivity and "an eye for nuance" (Price, 2010, p. 158) are required on the part of the researcher.

3.3.3 Grounded Delphi Method

Both Grounded Theory and the Delphi Method are methods used for exploratory research. However, the creators of the GDM saw shortcomings in both the Delphi Method and Grounded Theory and sought to combine key elements of both, thus extending the scope of both methods.

As mentioned in Section 3.3.1, although theory building is a possible outcome of using the Delphi method, according to Päivärinta, Pekkola and Moe (2011) there are "few analytical tools […] provided for this purpose" (Abstract). In order to go beyond the forecasting abilities inherent in a Delphi study and move towards theory building, Okoli and Pawlowski (2004) suggest that "the participating experts should justify their responses in order to facilitate the observation of causal relationships between the factors identified in the study" (as cited in Päivärinta, Pekkola, and Moe, 2011, p. 2). Having an initial brainstorming round and asking participants to include "conditions for and consequences of the suggested issues" (Päivärinta, Pekkola, and Moe, 2011, p. 10), richer data that is more receptive to theory building is obtained, rather than simply providing a list of challenges to be ranked in order to gain consensus. Specifically, the researcher can carry out the coding tasks that are central to Grounded Theory, allowing for the emergence of "core conceptual categories and their relationships" (Päivärinta, Pekkola, and Moe, 2011, p. 2). By following Grounded Theory principles in the data collection (through theoretical sampling) and analysis stages (open, axial and selective coding), Päivärinta, Pekkola, and Moe, (2011) suggest that the rigour of the theory building in Delphi can be increased.

One challenge for users of Grounded Theory, particularly early career researchers as mentioned in Section 3.3.2, is the need for theoretical sensitivity to be able to define categories and their relationships. In order to move on to the theory building stage, the researcher needs to decide which categories are more important than others. The creators of the GDM suggest that the consensus and/or 'force ranking' processes of the Delphi Method were seen to be a useful addition to Grounded Theory.

The GDM has been applied to one research project (Moe and Päivärinta, 2011) and one doctoral dissertation (Hussey, 2012) to date. Hussey's dissertation used GDM in order to understand the ways in which prayer integrated intuitive and logical decision-making for the Christian business leader. The research project - the first use of GDM - dealt with the challenges associated with information technology procurement in the public sector in Norway (Moe and Päivärinta, 2011). Päivärinta, Pekkola, and Moe, (2011) provide quite a detailed, step-by-step description of their method, gained not only by this single implementation of GDM, but also by their previous experience with Delphi studies and Grounded Theory as separate methods.

From a philosophical point of view, both Delphi studies and Grounded Theory can be used within both Positivist and Interpretivist traditions, as "both share a common view of appreciation and interpretation of field data through inductive reasoning and concept development" (Päivärinta, Pekkola, and Moe, 2011, p. 11). GDM is therefore an approach that is appropriate for use in the current study, set as it is in the Interpretivist tradition.

3.3.4 Justification for using Grounded Delphi Method

Selecting a method is an important consideration in any research undertaking. Not only does the method need to be appropriate in order to answer the research questions, it also needs to harmonize with the selected philosophical tradition that is guiding the research. As discussed in Section 3.2, this research is being conducted within the Interpretivist tradition. According to Smith (1993), Interpretivists believe that "there is no particular right or correct path to knowledge, no special method that automatically leads to intellectual progress" (p. 120). This does not imply that method selection is an arbitrary decision, but rather that Interpretivists appreciate that there are many possible pathways to understanding a research problem and that one should not be restricted in the choice of method.

Using a method such as GDM directly supported another aim of this research - the development of theoretical underpinnings, as discussed in Chapter 1, Section 1.2. Further, the GDM "is recommended for exploratory research in emerging research areas" (Päivärinta, Pekkola, and Moe, 2011, Abstract). As there was no prior comparable study to this research, it can be considered an emerging area. Multiple iterations that allow time for reflection is a further benefit of the GDM, which also supported the exploratory purpose of the study.

On a logistical level, the Grounded Delphi was an appropriate method for geographically disbursed participants, saving them and the researcher valuable time and financial resources by avoiding the need for face-to-face meetings. This also avoids potential problems inherent with face-to-face methods, as discussed in Section 3.3.1.3. Further, Williamson (2002) claims that face to face meetings with large groups are largely ineffective. With an estimated forty participants for this study, face to face meetings – even if logistically possible – may very well have been difficult to facilitate. It is therefore considered that for this study, the benefits of using the GDM outweigh the potential disadvantages, especially in light of the strategies available to minimize any issues as presented in Section 3.3.1.3.

3.4 Research Design: Application of the Grounded Delphi Method

The following section discusses the application of the GDM in this study. To begin with, details of the pilot and first round focus groups using the exploratory Delphi approach are provided. This includes discussion of participant selection and the discussion guide that formed the data collection instrument. This is followed by a detailed description of how the expert panel was convened for the subsequent online questionnaire rounds, including how the criteria for selection were developed. Full ethical clearance of the data collection instruments and data collection process was obtained from the QUT Ethics Committee (QUT Ethics Approval Number 1200000614).

This study comprised three rounds of data collection and analysis. Each round involved compiling, pilot testing and implementing a separate data collection instrument and then analysing the data. Data analysis for each round identified a set of categories that were incorporated into the next round's data collection instrument. A complete discussion of this can be found in Chapter 4; however, the following Table 3.1 provides a summary.

Round 1: Focus group	**Round 2: Questionnaire**	**Round 3: Questionnaire**
i) Compile focus group questions	i) Compile questionnaire	i) Compile questionnaire
ii) Pilot focus group questions	ii) Pilot questionnaire	ii) Pilot questionnaire
iii) Analyse pilot responses - Revise focus group questions	iii) Analyse pilot responses - Revise questionnaire	iii) Analyse pilot responses - Revise questionnaire
iv) Conduct focus group	iv) Conduct questionnaire	iv) Conduct questionnaire
v) Analyse focus group	v) Analyse questionnaire	v) Analyse questionnaire

responses – Identify categories	responses – Identify categories	responses – Identify categories

Table 3.1: Summary of data collection and analysis process

3.4.1 Round 1: Exploratory Focus Groups

The first round of this study took the form of an exploratory focus group. As discussed in Section 3.3.1.2 above, the traditional, exploratory form of Delphi is suitable when very little literature exists on a given subject (Hsu and Sandford, 2010; Day and Bobeva, 2005). As there is very little empirical research done in the Australian cultural heritage field from the perspective of the current study, the study employed an exploratory Delphi approach. It resembled a 'modified Delphi' (McKenna, 1994), as it was conducted using focus groups, rather than the more usual open-ended questionnaire (Keeney, Hasson and McKenna, 2011; Carnes, Mullinger and Underwood, 2010; Boendermaker et al., 2003).

The researcher decided to hold face-to-face focus groups in preference to asynchronous online or teleconference sessions, as she sought to form a rapport with the participants. The strength of a face-to-face approach was demonstrated by Schneider, Kerwin, Frechling and Vivari (2002) who also suggested that online participants are "less likely to explain their opinions or to provide detailed insight into the thinking that led them to their conclusions" (p. 39).

In order to gain a deeper understanding of the four GLAM sectors, a separate focus group was held for each. This also ensured that the voice of each sector could be heard without fear of one sector dominating the other. The researcher created a discussion guide informed by a combination of existing literature and the research questions (see Appendix 1). She used this discussion guide for each focus group, making no distinction between the GLAM sectors. This helped to ensure that each focus group explored similar issues in relation to a potentially converged GLAM

sector; the potential roles that might arise because of this convergence (with reference to the Cultural Heritage Information Professional discussed in Section 2.9); and the knowledge, skills and attitudes that may be needed in this potential new environment.

In line with standard ethical requirements, each participant provided his or her informed consent. The focus group sessions were digitally recorded using an mp3 recorder, and each focus group commenced with the researcher advising the group that the session was about exploration, that there were no right or wrong answers, but it was their views and opinions that were of interest. Following this, the researcher provided some further context to the study, which included a brief discussion of the scope and limitations of the research, as well as definitions of importance to the research at that point in time (Terras, 2009; Cultural Heritage Information Professionals (CHIPs) Workshop Report, (Marty, 2008)). Finally, a quote from Given and McTavish (2010) that had been a stimulus for this study (refer Appendix 1, last paragraph) was read to participants in order to elicit thoughts and opinions from participants.

3.4.1.1 Participant selection

The participants for both the first round exploratory focus groups and the pilot study were sought from the researcher's professional network in the first instance. This was followed by a sampling technique known as snowball sampling, whereby an existing participant recommends other potential participants.

At this early stage of the research, and because of the exploratory nature, strict criteria regarding the participants' expert status were not imposed on the participants, as is often the case in a Delphi study. There were several reasons for this:

1. As this first round was exploratory, the researcher did not want to exclude anyone from contributing.
2. Logistically, as the focus groups were to be held in person, this inevitably limited who could be included.
3. By not imposing criteria at this stage, a better sense of what the criteria could be evolved.

3.4.1.2 Data collection instrument: Focus group discussion guide

As mentioned in Section 3.4.1, all focus groups including the pilot were conducted using both the same format and the same set of semi-structured questions as detailed in Appendix 1. This helped to ensure that each focus group discussed the same general questions before moving into specifics about their own sector.

The researcher took considerable care in compiling the focus group questions to ensure that they were meaningful to participants whilst likely to prompt full and relevant responses. She was aware, through both anecdotal means and personal discussions that the term 'information professional' was not one that was in common usage in any of the GLAM sectors except libraries, and even then it was not a universally accepted term. For this reason, she provided the Terras (2009) definition (Appendix 1) of an information professional as a starting point for discussion, with participants being asked what their reaction was to that term. Did it, in fact, describe their role to a greater or lesser extent? Further motivation for providing the definition and having the ensuing discussion was to raise participants' awareness of aspects of their job that hitherto they may not have considered as belonging to another professional domain – that domain being information management. In this way, there was potential for the term "information professional" to be viewed in a more positive light. Finally, it assisted in providing a mutual understanding of a term that the researcher anticipated would be used relatively frequently in the focus group discussion.

The questions (see Appendix 1) regarding skills, knowledge, qualities and attributes were included as a way for the researcher to gain a deeper understanding of not only the participants' role, but also of other roles within each GLAM sector that might come into the ambit of this research. They were also used to start directing participants' attention to the future - how those skills and knowledge may have changed over the years, or in fact how they may still need changing, in light of the digital world we now find ourselves in. Asking about the skills and knowledge that graduates may need continued the discussion towards the subsequent questions about potential roles for information professionals in the future (with a focus on how the digital environment might influence these), and the skills and knowledge that may be required.

The idea of a cultural heritage information professional as defined in the CHIPs Workshop Report (Marty, 2008) was introduced to participants in order to determine if this was a term and a role that might gain traction. Specifically, participants were asked whether this term meant anything different to the term 'information professional', or did it merely indicate an information professional who happened to deal with cultural heritage material? Was it a broader term or a narrower term? Is it a similar role, or something a little different, perhaps a 'meta-professional'? Again, this had the intention of directing participants' attention to the possibilities that the digital environment may offer, now and into the future.

Collectively, the questions asked in each focus group, including the pilot, were designed to give the researcher a better understanding of each sector, and to allow any similarities and/or differences amongst the sectors to emerge. This contributed to answering the two research sub-questions, which in turn informed the construction of the questionnaire for the next round of the Delphi process.

3.4.1.3 Round 1 focus group: Pilot

The pilot focus group was held in May, 2013 in Canberra during the Museums Australia National Conference, allowing for participants to be drawn from around Australia. Eight participants were sourced through a combination of professional contacts and snowball sampling. Six of the participants were working museum professionals; one was an educator at tertiary level; and one, a current graduate student in the Heritage and Museum Studies programme at the Australian National University (ANU), was also working in a part-time/casual capacity at two museums in her hometown.

The participants held a wide range of roles within their respective museums, including education, interpretation, market research and exhibition development. It was extremely valuable to have had participants from such diverse roles, as it assisted the researcher to further refine the criteria for the panel of experts to be selected for the future online questionnaire rounds. Although the participants in the pilot group were not experts according to the study's definition, their collective experience greatly assisted the researcher to more fully understand the complex environment that is a museum.

This focus group was the first ever conducted by the researcher. She followed the pre-determined discussion guide (Section 3.4.1.2) for approximately 40 minutes, however the participants appeared to be quite excited about the topic, and tended to go off on tangents about particular projects they had managed or been involved in. Whist this did not achieve the aim of having all questions in the discussion guide answered, it was nevertheless insightful for the researcher to hear about these projects first hand, so she allowed the discussion to continue along its own course. Although valuable information was gained from allowing this to happen, it highlighted a potential problem that would need to be avoided with the Round 1 focus groups – that of time management. The pilot focus group ran approximately 25 minutes over the time participants had been advised, and while most

participants seemed like they could have continued discussions for another hour or two, some appeared to be pleased when it was wrapped up. The researcher noted that for future focus groups she would need to be much stricter on the time management aspect, as participants would be attending during working hours or at the end of the working day.

3.4.1.4 Round 1 focus group: Galleries

The focus group held for galleries was somewhat smaller, with four participants of the six invited able to attend on the day due to organisational operational requirements. In a similar vein to the pilot museum focus group, and despite the small number, this focus group highlighted the various roles in galleries. One participant was a curator, another a graduate student with experience working in galleries in curatorial-type roles, and a registrar. The final participant has a somewhat unique role for Australian galleries, so for reasons of confidentiality, that participant's role will be referred to as a project officer. The common qualification amongst these participants was Art History at undergraduate, honours or postgraduate level (or combination of levels). At the time of the focus group, all participants were both based and working in the same city.

A valuable discovery from this focus group was learning more about the role of a gallery curator. Specifically, the curator's role has a research component, which involves many interactions with published information, whether digital or physical. This aspect of their role fits within the remit of an information professional's role. However, this component, albeit important, is a relatively small element of the curator's role. Therefore this role was not targeted for inclusion in the subsequent online questionnaire rounds. The role of registrar does however have many commonalities with that of qualified information professional, and the researcher could see the potential benefits that information education could bring to this role.

3.4.1.5 Round 1 focus group: Libraries

A total of eight participants attended the libraries' focus group, which brought together an interesting mix of sectors. Three participants were from a State Library; three were from other (non-library) state-based cultural institutions; and one each from a public library and university library, where both of these institutions have cultural heritage material in their collections, such as artwork, historical artefacts and archival material relevant to their location (in respect of the public library) and institution (in respect of the university).

All except one participant had Library/Information Management qualifications at a postgraduate level or equivalent (one participant had the 'Library Registration' qualification from the 1970s, but also held a Bachelor of Arts). Undergraduate degrees were predominately Arts degrees with varying majors, including philosophy and visual art. The participant without Library/Information Management qualifications had a background in museums, having worked in a London museum for several years. Despite working in various roles in the same library institution for the past 15 years, this participant saw their role as "very much like a museum role within a library," but that it has also become much more integrated over time (Participant L1). As with the gallery focus group, all participants were from the same city at the time the focus group was held.

3.4.1.6 Round 1 focus group: Archives

Nine participants were confirmed for the archive focus group, however due to operational needs on the day, one was unable to attend. The remaining eight participants represented a range of archival workplaces: University Records/Archives departments, State Records, a corporate archive and a cultural institution's archive.

All but one participant had formal qualifications in either Library/Information Management or Archives, or a combination of the two. The non-formally qualified participant was in a managerial role, but had extensive experience of archives/records management gained from fifteen years with the same organisation (state government) in various roles. This participant proved to be invaluable in the focus group as they were able to provide a unique perspective on the opportunities and future roles for archivists. Similarly for the gallery and library focus group, all archives participants were from the same state.

3.4.1.7 Round 1 focus group: Museums

Despite having collected useful data in the pilot focus group with museum professionals, as noted in Section 3.4.1.4 not all questions from the focus group discussion guide were asked. For this reason, the researcher decided that another focus group with museum professionals would be held. She considered that it would also be interesting to compare the data from both focus groups.

As mentioned in Section 3.4.1.4, the pilot focus group highlighted the many diverse roles within the museum environment. This enabled the researcher to approach museum professionals for the Round 1 focus group who were more aligned to an 'information professional' role.

Six professionals (none of whom had participated in the pilot group) attended the Round 1 focus group after an initial confirmation of eight attendees. This group represented university collections (3 participants), and state-based institutions (3 participants). As with the pilot focus group, not all of these professionals had formal museum qualifications. This is not completely surprising, as formal qualifications in museum studies is a relatively recent development in Australian higher education (when compared to disciplines like medicine and law for example), with the first postgraduate courses emerging in the 1970s (Barrett, 2001). In each

case, it was the younger members of the focus group who had formal museum qualifications, suggesting perhaps an increasing importance of such qualifications.

3.4.2 Online Questionnaire Rounds 2 and 3

Despite concerns about online participants being "less likely to explain their opinions" (Schneider, Kerwin, Frechling and Vivari, 2002, p. 39) mentioned in Section 3.4.1, this was not deemed to be problematic for the online questionnaires. Firstly, although the research was still deemed to be 'exploratory' in nature, the questionnaires would be exploring the themes generated by the focus groups. Secondly, wherever possible, the researcher included free-text comments boxes within the questionnaire, and specifically asked participants to elaborate on their response. This is discussed further in Chapter 4.

The researcher decided to have one questionnaire for all GLAM sector representatives. It was an option to have separate questionnaires for each sector in order to accommodate slight variations in terminology between sectors. However, that then introduces an irregularity in that the respondents would not be answering exactly the same question. Uncertainties then arise as to how the respondent may have interpreted the question, particularly if the response is incongruent with the question and/or other responses, and may work against the study's goal to reach consensus.

Moving from the exploratory focus groups in Round 1 one to the questionnaire Rounds 2 and 3 required a reasonable amount of preparation, particularly in relation to selecting the panel of experts to participate, the development of the questionnaires themselves and setting the consensus level in order to conform to this component of a Delphi study. The following sections discuss the process of

creating criteria to enable the selection of a panel of experts and the 'a priori' consensus level.

3.4.2.1 Selecting the Panel of Experts

The researcher identified the panel of experts following an established GDM pattern. As mentioned in Section 3.3.1.1, selecting the panel of experts is one of the most important aspects of the Delphi method. Paradoxically, however, the definition of what constitutes an "expert" in relation to a Delphi study has remained ambiguous, with the literature providing very little guidance or criteria in this area (Hsu and Sandford, 2007; Judd, 1972).

Whilst not providing a definition of an expert, Okoli and Pawlowski (2004), do provide quite detailed procedures for selecting experts. As Moe and Päivärinta (2011) and Päivärinta, Pekkola and Moe (2011) employed these procedures in their Grounded Delphi study, it was appropriate to use them for the current research.

The first step that Okoli and Pawlowski (2004) use in identifying experts is to prepare a Knowledge Resource Nomination Worksheet (KRNW) (see Appendix 2). This enables the researcher to "help categorize the experts before identifying them" (Okoli and Pawlowski, 2004, p. 20), and also avoids potentially omitting categories of experts. Additionally, it could be considered that this also assists in reducing bias, as the researcher is not merely selecting known associates in familiar disciplines or organisations.

The KRNW consists of three categories from which potential experts may be drawn: Disciplines, Organisations and Literature. 'Disciplines' does not necessarily refer to academic disciplines such as Engineering or Arts, but rather areas or sectors where potential experts may be located, for example 'public sector' or 'not-for-profit' organisations. The Organisations category refers to specific organisations where

experts may be found, for example, the United Nations and the World Health Organisation. The final category, Literature, is used to help identify areas where experts may have published. Again, this is not specifically limited to academic literature, although in many instances (including this research), this was the case.

A total of five KRNWs were developed for this study. The first was at the highest level of abstraction, incorporating all four of the GLAM sectors. This is shown in Appendix 2. A more specific KRNW was developed for each of the four GLAM sectors individually, however these are not included as appendices in order to protect the anonymity of the participants. The second step of the KRNW is "to populate the categories with actual names of potential experts" (Okoli and Pawlowski, 2004, p. 20) starting with personal contacts. In this way, the researcher identified approximately ten people across all four GLAM sectors. The researcher acknowledged that selecting participants from personal contacts introduces a level of bias, as discussed in Section 3.3.1.1, however of the ten identified, only one was considered by the researcher to be a close contact. The remaining nine included round one focus group participants, many of whom the researcher met for the first time at the focus group, and with whom she has maintained a professional level of contact through conference attendance, email and Twitter.

The following shows the approaches taken in order to further populate the KRNW categories:

Disciplines

Academics (incorporating both researchers and lecturers) were identified via:

- Websites of universities offering degree programmes in curatorial, museum, library and/or archival studies
- A review of the literature provided in the "Literature" category

Practitioners were identified via:

- Websites of organisations listed in the "Organisations" category. Organisational Charts were consulted to identify people in positions of leadership and people in departments more closely aligned to the topic of study. For example, an Organisational Chart may include Finance department personnel, but as that is not aligned with the current research topic they were therefore excluded from the potential list of experts.

Organisations

The researcher compiled the Organisations list, firstly based on her existing knowledge of organisations, such as national and state-based cultural heritage institutions and professional associations. Other organisations' websites, such as the Australia Council and Museums and Galleries NSW, were instrumental in identifying further potential inclusions to the Organisations list.

Literature

With the Literature list, the researcher began by identifying the academic journals and professional publications of each professional association (Australian Registrars Committee (ARC); Australian Library and Information Association (ALIA); Australian Society of Archivists (ASA); and Museums Australia (MA)). Although no longer in use, she consulted the list of ranked journals created by the Australian Research Council for a comprehensive list of academic journals in the museum, curatorial, archives and library disciplines. Additionally, academic databases were searched for "museum" in the "Publication title" (or "Source", depending on the database used) and to further limit to potential Australian authors, "Australia" was added to the "Abstract" field.

The researcher added one final criterion to Okoli and Pawlowski's (2004) process for identifying experts. This was as a result of both the focus groups and informal interviews and conversations the researcher had with various professionals: the people who seemed to fully understand the essence of what this research is about –

and its potential significance - often had experience of at least two of the GLAM sectors. This usually took the form of either a combination of qualifications and workplace experience, for example having library qualifications but working in a museum; or having worked in two (or more) of the sectors.

After completing this process, a total of 108 potential participants were identified: 24 in Galleries; 32 in Libraries; 22 in Archives and 30 in Museums. In order to be able to refine this number down to a manageable cohort to participate in the questionnaire rounds, each potential participant was mapped against the four criteria in a table (see Appendix 3). Rather than expecting each participant to meet every criterion, the researcher decided that the pool as a whole should be representative of all criteria requirements. Further, if potential participants were ranked in terms of the number of criteria they met, there was the possibility that one criterion may not be represented at all in one or more of the pools.

As mentioned in Section 3.3.1.1, there is no clear consensus in the literature about the ideal number of participants for a successful Delphi study, although the recommended numbers vary between 5-20 (Forsyth, 2010), 15-20 (Hsu and Sandford, 2010) and 10-15 (Delbecq, Van de Ven and Gustafson, 1975). As there is no firm guiding principle in regards to numbers of participants, it comes down to the researchers discretion to make an informed decision. The researcher decided to include ten participants from each of the four GLAM sectors, making a total of forty participants. Although this is in excess of the maximum 25-30 suggested by Delbecq, et al., (1975) and Brooks (1979, as cited in Murry and Hammons, 1995), all four sectors of GLAM needed reasonable representation, and it was preferable to determine the numbers on the individual sectors rather than the overall total.

As highlighted in Section 3.3.1.3, one of the potential disadvantages of the iterative element of a Delphi study is the participants dropping out between rounds. To minimise this, the researcher's email requesting participation included detailed

information about this aspect of the process (refer Appendix 4), an approach supported by Pollard and Pollard (2004). Although difficult to advise with any certainty, the number of rounds and the anticipated time frames of those rounds were included in the email as an indication to allow people to make an informed decision as to whether the request could be accommodated within their schedule. The following table (Table 3.2) shows the number of people invited to participate, the number of people accepting this invitation and the number who actually participated by completing the questionnaire in the second round:

	Invited	Accepted	Participated/ Completed
Gallery	16	9	6
Library	12	11	8
Archive	11	9	9
Museum	14	9	8
TOTAL:	**53**	**38**	**31**

Table 3.2: Participant invitations, acceptances and actual participation numbers

In keeping with Delphi and Grounded Delphi procedures, the participants remained the same for each of the online questionnaire rounds.

3.4.2.2 Setting the a priori consensus level

As with a number of other aspects of the Delphi method that are incorporated into the GDM, there are no set criteria to determine what constitutes consensus. In a comprehensive literature review, Gracht (2012) examined 15 types of consensus measurement, one of which is defining a level of agreement prior to the data collection rounds. This level "can be based on accepted standards, such as political voting systems (e.g. simple majority, two-thirds majority, absolute majority)"

(Gracht, p. 1530). Based on this, the researcher determined that a three-quarters majority – or 75% - consensus, would be acceptable.

3.5 Conclusion

This chapter has provided a detailed discussion of the methodology used in this research, including the overall research paradigm. The Delphi Method and Grounded Theory were then discussed in order to explain the relationship of these two methods in forming the GDM. The application of the GDM to this study was then described. Throughout the chapter, justifications for the choices made concerning the methodology for this research were provided.

Chapter 4: DATA ANALYSIS PROCEDURES AND DATA COLLECTION INSTRUMENT DEVELOPMENT

4.1 Introduction

This chapter outlines the application of the previously described GDM. It demonstrates the iterative process of collecting and analysing data in the form of participants' responses through the three rounds of the study. In particular, it highlights how the findings of Rounds 1 and 2 respectively informed the data collection instruments for Rounds 2 and 3.

The chapter is in 3 main parts. Section 4.2 describes the data collection and analysis procedures of the Round 1 focus groups, showing how they were intrinsically linked to the development of the questionnaire for Round 2. Section 4.3 describes the development and analysis of the Round 2 questionnaire, while Section 4.4 describes the subsequent development and analysis of the Round 3 questionnaire. In this way, the chapter shows that the analysis of each set of data informs the collection of the following set of data.

4.2 Round 1: Exploratory Focus Groups

This section outlines the implementation of data collection and analysis procedures for five focus groups – one pilot group with museum professionals, and one for each of the four GLAM sectors.

4.2.1 Analysis Procedures

The Discussion Guide created by the researcher was used for all focus groups, including the pilot group. Responses from the pilot study were not analysed prior to the main focus group rounds and are thus included in the main focus group data analysis, which then informed the Round 2 questionnaire.

The purpose of this first round of analysis was to identify any common themes and/or issues that may have emerged. The data from the focus groups were subjected to both inductive and deductive coding techniques. After transcribing each focus group, including the pilot session, the transcripts were analysed for repeated phrases and/or words via open coding, in order to identify concepts, commensurate with the grounded theory aspect of this study discussed in Sections 3.3.2 and 3.3.3 above. This was achieved by highlighting the transcript text (done on-screen), followed by writing these up in a grid-style on a whiteboard (see Appendix 5). Concepts that appeared at least twice – that is, in at least two of the GLAM sectors – were circled in red, as this indicated potential commonality. Not all highlighted words and phrases from the transcripts could fit on the whiteboard at once, so this process was repeated, with a photograph taken of the whiteboard prior to any text being erased.

This process identified 49 high level concepts, which when further analysed were reduced to 25 concepts that represented the specific knowledge required of information professionals working in galleries, libraries, archives and museums. Additionally, a further 15 generic – or transferable – skills and attributes were identified. A list of these 25 knowledge concepts and 15 generic concepts can be found in Appendix 7.

Rather than creating what could be seen as an arbitrary list of skills and knowledge that just happened to coincide in some areas, the concepts identified in the focus group analysis were cross-referenced with core knowledge statements from each

professional association. A common skill and knowledge matrix was created using the following documents: the "Core Knowledge, Skills and Attributes" from ALIA (2012) and the draft "Statement of Knowledge for the Archives, Records and Information Management professions (working title)" of the ASA (2012). Although neither museums nor galleries have any true equivalent to these statements, they do have the National Standards for Australian Museums and Galleries, version 1.3 (2013), but this lists the activities that must be performed in order for the museum or gallery to be considered as "meeting the standard." It does not specifically refer to the knowledge, skills or qualities that one should possess in order to work in a museum or gallery. However, in many instances it was possible to take these activities and determine what skills and/or knowledge would be required in order to carry them out. For example, the National Standards state that the museum or gallery should "abide by international, national, and state/territory protocols relating to museum practice" including as they relate to Indigenous arts and cultures (Standard A1.5, p. 20). This is consistent with ALIA and ASA statements that advise that professionals should be aware of various standards as set by Australian Standards (AS) and the International Standards Organisation (ISO), and awareness of legal issues such as privacy and copyright. It can also be deduced from Standard A1.5 that museum and gallery professionals should also possess cultural awareness and cultural sensitivity.

The common skill and knowledge matrix was then used as an a priori list of categories to which the 25 knowledge concepts and 15 generic skills and attributes were mapped, thus applying deductive coding techniques. This resulted in the creation of five broad categories that related to the skills and knowledge statements (see Appendix 6):

1. Broad context of the information environment
2. Users/visitors
3. Systems/technology

4. Information organisation and Access
5. Collections

Two remaining skills that were identified in the focus group analysis – Research skills (consisting of finding, analysing evaluating and citing information resources) and Financial management skills were later included in the generic skills and attributes list.

These five categories and their related concepts formed the basis for Part 2, questions 1-5 on the Round 2 questionnaire, with the 15 generic skills and attributes forming question 6 (refer Appendix 8). A full discussion of the development of the Round 2 online questionnaire follows.

4.3 Round 2: Online questionnaire

Moving from the exploratory focus groups in Round 1 to developing the Round 2 questionnaire required a significant amount of preparation. The following sections discuss the process of creating and administering the Round 2 questionnaire, including details of the pilot study and actions taken as a consequence of the feedback gained from it. The discussion then explains the systematic processes undertaken in order to collate, analyse and make sense of the data collected.

4.3.1 Development of Round 2 questionnaire

The questionnaire for the second round of the study aimed to validate the 25 knowledge concepts and 15 generic concepts identified by the focus groups and discussed above in Section 4.1.1. Additionally, it sought to further investigate future roles of information professionals and the GLAM concept itself. The following sections show how the data from the focus groups were used to inform

the development of the Round 2 questionnaire. A copy of the Round 2 questionnaire can be found in Appendix 8.

4.3.1.1 Part 1: Demographics

Three demographic questions comprised Part 1 of the Round 2 questionnaire. This section was deliberately kept to a minimum, as conventional demographic questions such as location and gender, would not provide statistically significant results, given the nature of the method used and the total number of participants. However, an age range was requested (question 1) as it may have provided insights regarding how certain aspects of GLAM convergence were viewed – were the responses and opinions of people in a similar age group comparable? Although this too could not be considered statistically significant in a quantitative sense, it may have revealed some potential trends.

The specific sector/s of involvement were considered an important aspect, particularly in terms of the researcher's observations mentioned in Section 3.4.2.1 – that those who seemed to fully understand the essence of this research often had experience in more than one GLAM sector. Similarly, participants were asked to provide all qualifications they held, as the sector they currently work in may not reflect the qualifications held. Additionally, responses would provide an insight into the level of qualifications held (certificate, undergraduate or postgraduate); the disciplines (humanities or sciences) and combination of qualifications, for example, a generalist undergraduate degree with information management postgraduate qualifications or a specialist undergraduate degree – or indeed other possible combinations. The request to include qualifications regardless of whether the participant thought they were relevant or not was included to ensure the fullest picture of the participants' education was achieved. This was important because if a participant had an undergraduate degree in museum studies, but omits including the Master of Business Administration (MBA) they also have, it could skew the

results regarding the level of qualification held. Knowing a participant has such a qualification could potentially explain why they answered questions in a certain way, or why they raised certain issues.

4.3.1.2 Part 2: Validating information gathered from Round 1 Focus Groups

The list of knowledge, skills and attributes that formed questions 1-5 in Part 2 of the questionnaire did not purport to be exhaustive of the role of the archivist, librarian, registrar, or any other information professional role in galleries, libraries, archives or museums. Rather, they were the common concepts identified via the procedures described in Section 4.1.1 in order to determine where a common core, if any, exists.

Question 6 relates to 15 generic skills and qualities. These can also be referred to as transferable skills as they are not seen to be specific to any one profession or sector. These skills and qualities are not necessarily limited to the cultural heritage sector, but may be as relevant to a health care professional as they are to a financial analyst. The researcher generated the list predominantly through the analysis of the focus groups, although there is a strong correlation with the statements of knowledge from ALIA, ASA and the Museums and Gallery National Standards.

Every question in Part 2 of the questionnaire gave participants the opportunity to add further skills and knowledge, or a free text comment, and also asked them to provide reasons for their suggested inclusion/s. This helped to explain the additional concepts to other participants when providing feedback in the next round.

4.3.1.3 Part 3: Future roles and responsibilities of information professionals

Part 3 of the questionnaire was included in order to get a better understanding of the future roles and responsibilities of information professionals who work with cultural heritage material in galleries, libraries, archives and museums. The questions acknowledge that digital technology has created - and continues to create - opportunities for galleries, libraries, archives and museums to reach out to users and visitors in different ways and different means than ever before. Whilst the questions in Part 3 were largely speculative, they provided a valuable opportunity to seek ideas from experts while reflecting the forecasting feature that is inherent in the Delphi method.

4.3.1.4 Part 4: GLAM convergence and the information professional's role

The questions in Part 4 were also somewhat speculative, with participants being asked about GLAM convergence (e.g. if it will happen) and the impact that may have on future roles of information professionals and the education that may then be required. This was intended to assist in gauging sentiments about GLAM convergence in Australia, albeit from a select group of experts. Nevertheless, the responses would start to build an evidence base for GLAM in Australia, which until now has not existed.

The questions were then entered into Key Survey, Queensland University of Technology's (QUT's) official web-based survey creation and management system. The questionnaire was then distributed in accordance with QUT's Key Survey policies and guidelines. Use of this university-supported survey platform ensured reliability for the data collection process and security of the data.

4.3.2 Pilot of Round 2 questionnaire

Once entered into Key Survey, the questionnaire was piloted with representatives of each of the four GLAM sectors, including two Library and Information Science academics, one of whom has researched and published in the GLAM area, the other who has expertise in archives. These representatives had not had any previous involvement with this study until the request to pilot was made. The pilot questionnaire included asking for feedback not only on the questions themselves (i.e. for comprehension), but also on the order of questions (was it a logical progression?); the suitability of answer choices where applicable; the presentation, and the length of time taken to complete the questionnaire.

Overall, the feedback from all four pilot participants was quite similar, with the biggest criticism being the amount of explanatory text that was provided at the beginning of each section. One pilot participant (Pilot Participant 3) suggested including only what was necessary in order for participants to answer the question, and the remainder could be included in the email sent to participants with the link to the questionnaire. As the researcher was already concerned about the amount of text in the questionnaire, but also reluctant to delete it completely, she determined that this option was a fitting solution.

The second area that generated feedback from the pilot participants was in relation to Part 2 – the Skills and Knowledge lists. The general impression can be summarised by the response given by one of the participants: "I think they need knowledge of all of these – but not the same amount of knowledge. Detailed? In depth? Good overview? I mean, there's lots of levels of knowledge. Do you want them ranked?" (Pilot Participant 1). Similarly, another pilot participant stated:

> I thought that at least some professionals needed skills and knowledge in ALL the areas. But no individual could have knowledge of every single one. But I felt that to not check a question was to imply that it's not important at all (Pilot Participant 2).

A total of 46 items were listed where the participants were given a check box to indicate whether the item was an important skill or knowledge to have. The pilot participants found it was unclear how such a response could provide useful data – hence the suggestion that perhaps the answer choices should provide options for them to be ranked, or "to answer whether it's important for "some" "most" or "all" professionals working in cultural heritage to have knowledge in each particular area" (Pilot Participant 2). The researcher considered these suggestions carefully, but decided to leave the answer option as a check box for the following reasons. Firstly, the intention of Part 2 was to validate the information gathered in the Focus Groups. By introducing a ranking-type response, this validation would be more difficult to determine. For example, if the response options given were "Important / Neither important nor Unimportant / Unimportant", how would a response of "Neither important nor Unimportant" be counted? Secondly, as both Parts 3 and 4 consisted entirely of open-ended questions, the researcher was mindful not to get too detailed in the questions and risk making the questionnaire too time consuming for participants. As the intended outcome of the questions was to validate rather than determine relative importance or rank, it was superfluous to request anything other than agreement or disagreement through the use of a check box. Despite the pilot participants' comments regarding the need for "knowledge of all these [skills]", not all participants in the actual Round 2 questionnaire ticked all boxes. These results are discussed in detail in Chapter 5, Section 5.2.3. In addition to posing the question about the new skills and knowledge required of information professionals, Pilot Participant 4 suggested including a question about potential skills and knowledge that will not be required. The researcher considered this idea and decided to include the extra question.

The final aspect that concerned two pilot participants (Pilot Participant 1 and Pilot Participant 4) was the apparent length of the instrument, although one comment was more about the formatting of the text-box provided (Pilot Participant 4). Pilot Participant 3 also noted that the actual size of the text boxes was rather large, and

suggested that they be made smaller. After some experimentation with the formatting of Key Survey, this was achieved, and did in fact make these questions appear less daunting. However, the more concerning comment was from Pilot Participant 1, who stated: "… it's too ambitious for a survey. Some big questions require an essay-like response and are compulsory. It's a big ask." The researcher did not disagree with this comment, but this was not a survey in the conventional sense of the word, in that it would not be sent to hundreds of people to complete. Rather, it was a tailored instrument drawing on invited expert participation. Additionally, participants would be given a detailed explanation of the process at the point of invitation, allowing them to make an informed decision about the time it would require of them.

With these considerations and amendments complete, the Round 2 questionnaire was distributed via the Key Survey tool to 38 participants (refer Table 3.2). The original email containing the link to the questionnaire and two reminder emails were sent, with the date for completion extended by three days. A total of 31 participants completed the Round 2 questionnaire, giving an 81.6% response rate.

4.3.3 Analysis procedures for Round 2 questionnaire

Once the Round 2 questionnaire was closed, the researcher set about generating various reports of the data collected. This exposed some shortcomings of the Key Survey software, which are discussed below.

Whilst it was possible to generate a report in several different formats, such as pdf, Excel, CSV, SPSS and XML, the content could only be presented 'by participant.' It was useful to see each participant's answer in the context of the entire questionnaire, but as the analysis would need to be on a 'by question' basis, the researcher cut and pasted each participant's response to each question into a Word

document, thus enabling a comparison of answers. Anything that stood out as particularly interesting, controversial or related in some way to the focus groups was highlighted during this process. Once this master document was completed, a further four documents were created by compiling responses into their respective GLAM groups – one document each for galleries, libraries, archives and museums.

4.3.3.1 Part 1: Demographics and Part 2: Validating information gathered from Round 1 Focus Groups

A Summary Report was available via the Key Survey software, and for most statistical data, this was adequate. However, there were some questions that required manual calculations. For example, the Summary Report merely stated the number of people who had completed Questions 2 and 3 in the Demographics section – there was no statistical information provided at all. Consequently, responses from these questions were entered into an Excel spreadsheet, which made for easier calculations of the quantitative data generated. Additionally, only the total responses were provided in the Summary Report – it was not possible to generate a report for each of the GLAM sectors individually, so the data for each sector group were manually extracted and entered into Excel. The results of this statistical analysis of both Parts 1 and 2 can be found in Section 5.2.2.

As discussed in Section 4.3.1.1 above, Part 1 consisted of demographic questions including age range, length of involvement in the cultural heritage sector, and which sectors within cultural heritage participants had been involved with. The final question of Part 1 asked participants to list all qualifications they hold. Part 2 consisted of six questions - the list of 25 knowledge concepts arranged into five broad categories (forming one question each), plus the 15 generic skills list, forming question 6.

4.3.3.2 Part 3: Future roles and responsibilities

Question 1: What do you see as the emerging roles and responsibilities – or future possibilities – of information professionals employed in your sector?

Question 2: What new skills, knowledge and qualities might these emerging roles need? (i.e. other than those identified in Part 2)

Question 3: What knowledge and skills might no longer be needed?

Part 3 consisted of three questions, and grounded theory techniques were used to a greater or lesser degree to analyse the responses to the open-ended questions. Specifically, open, axial and selective coding techniques were used. The initial process of open coding was done on-screen, and included highlighting the text of each sector's document in different colours that represented the conceptual labels that had been assigned to them. Additionally, making use of the 'Insert Comment' function in Word helped to keep track of the categories that were emerging (see Appendix 11). For example, two phrases that were given in response to Question 1 - "ability to provide authoritative information and with conviction" (Participant G16) and "[we will be] commentators oral and written on Cultural Collections" (Participant G23) - were both given the label of 'Communication'. This process of open coding of Question 1 responses revealed 17 first-level categories, which are shown in Appendix 12.

The next step in the process was axial coding. In order to get a better sense of the 17 first-level categories and the types of concepts that belonged in each, large sheets of brown paper with the 17 categories written on them were taped to a wall. 'Sticky notes' with phrases taken from the responses were attached under each relevant category (see Appendix 13). Each sticky note had a participant code written on it, consisting of the first letter of the participant's sector, and a number corresponding to the order in which the participant completed the first questionnaire, derived from the Key Survey data. For example, the 23rd person to

complete the Round 2 questionnaire identified themselves in the Demographic data as belonging to the gallery sector, was coded G23. This provided a visual aid to the researcher that greatly assisted in the axial and selective coding process, which eventually led to the identification of ten categories. These are discussed in Chapter 5, Section 5.2.4

Question 2 followed the same three-step coding process just described. Initially, the following ten broad categories were identified:

- Legal Issues
- High-level/increased IT skills
- Business skills
- Working with collections
- Ethics
- Digital humanities
- Generic competencies
- Understand, evaluate and exploit technology
- Innovation
- (skills and knowledge related to) Users

On further analysis, the category of '(skills and knowledge related to) Users' was not particularly useful, given that it could be argued that much of what information professionals in cultural heritage organisations do relate to their users (whether that be the public or internal stakeholders). The concepts representing this category were re-assigned to other categories. For example, 'interface design' and 'human computer interaction' were moved to the category of 'High-level/increased IT skills.'

Further analysis also saw some categories re-named, such as 'High-level/increased IT skills,' which became 'Advanced IT skills' as it described a more indicative level of

IT skills than “increased” IT skills, which raises the question: “Increased from what?” Although “advanced” also does not provide an absolute level, it at least implies some level of hierarchy, in terms of Basic, Intermediate and Advanced.

Two more categories were not only re-named, but were essentially re-defined. The concepts included in the category ‘Understand, evaluate and exploit technology’ along with some concepts in the ‘Advanced IT skills’ were often about the relationship of technology to the user – for example, ‘interface design’ and ‘human computer interaction’ that were both mentioned earlier. This led the researcher to revisit a discipline that holds potential opportunities for information education – that of Informatics.

> Informatics is the science of information. It studies the representation, processing, and communication of information in natural and artificial systems. Since computers, individuals and organisations all process information, informatics has computational, cognitive and social aspects. (Fourman, 2003, p. 1)

The definition provided by Fourman (2003) more accurately captured what the researcher believed was the intent of the concepts in the ‘Understand, evaluate and exploit technology’ category. Further, the field of informatics has wide ranging applications, such as health informatics, environmental informatics, urban informatics, and relevant to this thesis, museum informatics. Marty and Twidale (2011) define museum informatics as “the socio-technical interactions between people, information and technology in museums” (p. 9), which matches the iSchool philosophy (Chapter 2, Section 2.10.1) and is also reflective of the digital stewardship approach of considering technical, social, cultural, and political aspects of collections and collecting, discussed in Chapter 2, Section 2.11.

The second category to be re-defined was that of ‘Innovation’. The researcher was not completely satisfied with this label from the beginning, given the concepts forming this category included ‘open to challenging existing ways of doing things’

(Participant A6); 'try new things, do things differently' (Participant M2) and having 'an attitude of "Let's give it a go." Experiment' (Participant L18). In addition to these concepts, some of the concepts included in the 'Generic capabilities' category – particularly creativity and imagination – implied something more than a generic capability. The researcher recalled the work of Dall'Alba (2009a; 2009b) who puts forward the idea that "[l]earning to become a professional involves not only what we know and can do, but also who we are (becoming)" (Dall'Alba, 2009b, p. 34). Reflecting on this with reference to the aforementioned concepts, the category was conceptualized as 'Ways of thinking about professional practice.'

The responses to Question 3 – the skills and knowledge that may no longer be needed - showed far less variation, and the relevant themes were identified through the initial open coding process. Apart from a few specific suggestions, the majority of participants noted that most skills and knowledge would still be needed in order to care for the extant analogue collections. A more detailed discussion of the findings of this question can be found in Chapter 5, Section 5.2.4.

4.3.3.3 Part 4: GLAM convergence and the information professional's role

Question 1: How likely do you think it is that convergence between galleries, libraries, archives and museums in Australia will increase?

Question 2: How might the roles of information professionals be impacted, if at all, if some level of convergence were to occur?

Question 3: How might the education for these information professionals need to change, if at all, if some level of convergence was to occur?

Question 4: Are there any particular aspects of Museum, Library or Archive Studies programmes that would be beneficial to one or more of the other programmes?

This part in particular highlights the forecasting characteristics of the Delphi method, as the questions were posed, in essence, as hypothetical. The questions in this section dealt with convergence: how likely it was to occur, and how any convergence might impact the role of the information professional and by extension, their professional education.

The analysis procedures for the first question were essentially numerical description, with the reasons supporting the participant's choice collated and analysed for recurring themes. The analysis was again carried out on the total responses and on a by sector basis. These themes and the numerical description results are discussed in more detail in Chapter 5, Section 5.2.5.

The responses to Questions 2, 3 and 4 – like that of Question 3 in the previous section – all showed much less variation, and only open coding procedures were applied. Like previous procedures, large sheets of brown paper were taped to a wall and sticky notes with phrases written on them were grouped together in relevant themes. Having this visual aid for the questions in Sections 3 and 4 of the Round 2 questionnaire not only assisted with the analysis of these questions, but also in developing and preparing the questionnaire for Round 3, which is described next.

4.4 Round 3: Online questionnaire

The purpose of the Round 3 questionnaire was to move towards consensus. Therefore, the open-ended questions that were a feature of Parts 3 and 4 in the previous questionnaire – once analysed – were reworked into closed questions. The following sections explain how the Round 3 questionnaire was developed after the analysis procedures as discussed throughout Section 4.2.3 above were completed.

4.4.1 Development of the Round 3 questionnaire

The third round questionnaire was developed entirely from responses to the open ended questions in Parts 3 and 4 of the Round 2 questionnaire. As the aim was to move towards consensus, the Round 3 questionnaire consisted of closed questions, with the option for participants to provide reasons for their choices when desired. The relationship between questions from the Round 2 and the Round 3 questionnaires can be seen in the table in Appendix 10, while the Round 3 questionnaire can be seen in its entirety in Appendix 9. Although it is usual practice in a Delphi study to include a feedback document for participants, much of the feedback was incorporated into the Round 3 questionnaire itself, by means of prefacing individual questions. This is discussed in more detail in the following sections, where applicable.

4.4.1.1 Part 1: Emerging roles and responsibilities (10 questions)

As discussed in Section 4.3.3.2 above, ten categories of emerging roles and responsibilities were identified from the responses to Question 1, Part 3 of the Round 2 questionnaire. These ten categories became ten individual questions and were presented in the Round 3 questionnaire with supporting statements exemplifying the essence of the category. These statements were taken from participants' responses in the Round 2 questionnaire and largely quoted verbatim, with only minor amendments made for clarity. These amendments are shown in square brackets in the Round 3 questionnaire (for example, see Appendix 9, Part 1, Questions 1-10). Although these statements exemplified the category, it was stressed to participants that it was not an exhaustive list of what could be included in the category, and should not be taken as such.

When compiling the questionnaire, the answer choice initially selected was a tick-box style, with the options of Agree, Disagree or Neutral/unsure, with the ability to add comments if desired. However, after discussion with the supervisory team, this

was amended to Agree, Disagree or Partly agree/disagree with participants asked to elaborate if selecting the latter option. The reason for the change was to more accurately reflect the participants' intentions, and therefore obtain more useful data. Firstly, the Neutral/unsure option would not tell the researcher much at all, and participants may be less inclined to elaborate on why they selected this option in the comment field provided. Secondly, if a participant only agreed with some of the supporting statements but not all, they may feel the only option is to select Disagree, as opposed to Neutral/unsure. Having the 'Partly agree/disagree' option largely remedied this, and for the most part, those who selected 'Partly agree/disagree' did in fact provide comments to support their choice. It was also possible to glean from these comments whether the participant was closer to the agree or disagree end of the spectrum.

4.4.1.2 Part 2: New skills and knowledge (9 questions)

The nine questions comprising Part 2 were created in the same way as for Part 1, above, in that the nine categories identified by the coding process described in Section 4.3.3.2 (above) became nine individual questions. Although some skills could not necessarily be considered new skills per se, they did represent a change in focus or importance in some areas. For example, Legal issues, incorporating knowledge of copyright legislation and licensing provisions has always been a concern for information professionals, particularly in archives and libraries, so it could hardly be considered a new skill. However, it might have a more intense focus in the digital environment, due to the relative ease with which digital documents (text, images and so on) can be used, manipulated and copied.

The decision to include Question 8 was somewhat challenging in that whilst only two participants noted the need for 'Digital Humanities skills', neither provided any details as to what this might specifically include. As the researcher had observed a connection between digital humanities, libraries and digital cultural heritage

throughout the duration of this research, these responses prompted the decision to pursue expert opinion by including digital humanities skills in the questionnaire. In order to determine what might constitute 'Digital Humanities skills', the researcher carried out an environmental scan of university websites internationally that offered a track in digital humanities. The initial list of digital humanities skills was drawn from the University of California, Los Angeles (UCLA) (n.d.), and was triangulated by looking at several other university sites. As with all questions in this section of the questionnaire, the list was not intended to be definitive, but rather indicative of what is likely to be included in this category.

The nine categories were presented with supporting statements representative, but not exhaustive, of each category. As with the previous section, these statements were derived from participants' comments. Again the answer choices were Agree, Disagree or Partly agree/disagree, with the request to elaborate on a Partly agree/disagree response (refer Appendix 9, Part 2, Questions 1-9).

4.4.1.3 Part 3: Skills and knowledge no longer needed (6 questions)

Part 3 comprised six questions about specific skills and knowledge. These were presented as individual questions with Agree, Disagree or Partly agree/disagree offered as the answer choices, along with the request to elaborate on a Partly agree/disagree response. These six questions can be found in Appendix 9, Part 3, questions 1-6. As mentioned above in Section 4.3.3.2, the majority of participants noted that most skills and knowledge would still be needed in order to care for the extant analogue collections.

4.4.1.4 Part 4: Likelihood of GLAM convergence in Australia (1 question)

The format of this question remained unchanged from the second round questionnaire. However, it was presented with the numerical descriptions of the Round 2 responses as feedback (a standard Delphi practice), along with the reasons

participants gave for their answer choice in that round. The question was included in the Round 3 questionnaire because although responses favoured the Very likely/Likely end of the scale (discussed in detail in Chapter 5, Section 5.2.5), the individual ratings were relatively low (29% and 39% respectively). By asking the question in the same format, it was possible to gauge whether participants changed their answer in light of the feedback provided.

4.4.1.5 Part 5: How might the roles of information professionals be impacted if some level of convergence were to occur (7 questions)

Like Part 4 (above), the first question in Part 5 was also prefaced with feedback based on the responses from Round 2. These responses were somewhat conflicting in that many participants saw the role of the information professional becoming more generalist, with specialist skills diminishing; whereas others saw that specialisations would remain, with only some information professionals' roles becoming more generalist.

This reminded the researcher of the literature about the emergence of the Cultural Heritage Information Professional, (Chapter 2, Section 2.9), so this concept was introduced to the participants in the preface. The question was then asked if there might be a potential role for a Cultural Heritage Information Professional, with the answer choices again being Agree, Disagree or Unsure, with a free-text option to elaborate on the response.

Questions 2 and 3 were presented as broad categories ('Increased information technology skills' and the need to 'Collaborate' respectively) that included examples of what may be represented by those categories, reflecting the format of earlier Round 3 questions. The remaining four questions (questions 2-7) were specific items identified by the coding process and were presented as individual questions.

Answer choices were once again Agree, Disagree or Unsure, along with the opportunity to elaborate on the selection in need.

4.4.1.6 Part 6: How might the education be impacted/changes that might be needed (8 questions)

Prefatory material to Part 6 provided a summary of how participants had answered this question in Round 2, and a possible solution as to how any education programme may accommodate both broader and more diverse skills without losing specialist knowledge was offered. The answer choices of Agree, Disagree or Unsure were again offered, along with the opportunity to elaborate on the selection.

4.4.1.7 Part 7: Aspects of gallery/museum, library or archival studies that would be beneficial … (etc.) (4 questions)

In developing this part of the questionnaire, statements gleaned from participants' responses from Round 2 were presented in their relevant sector groups (i.e. elements noted as belonging to Museum and Gallery studies were listed together). Participants were given answer choices of Agree, Disagree, or Unsure, with an optional free-text comment option. Unsure was used in this instance rather than Partially agree/disagree used in previous answer choices, as participants were being asked to make a selection for each statement, as opposed to making a selection on a broad category with selected examples of what that category might entail. A further ten elements that were suggested by participants could be argued as not inherently belonging to GLAM - but still relevant to the GLAM sector - were included in the final question (question 4) of this section.

4.4.1.8 Part 8: Aspects of gallery/museum, library or archival studies not relevant in the future (6 questions)

The final section of the Round 3 questionnaire (Part 8) consisted of six questions concerning aspects of Museum, Library or Archive Studies that participants thought may not be relevant in the future. This section was included in order to ascertain if there may be areas in current educational programmes that could be omitted in the future. As with the questions in Part 7, participants were given answer choices of Agree, Disagree, or Unsure, with an optional free-text comment option.

4.4.2 Pilot of Round 3 questionnaire

Once the Round 3 questionnaire was finalised on paper, it was input into Key Survey. Three people were asked to pilot the questionnaire – one person each representing Galleries/Museums, Libraries and Archives. These people were drawn from the researcher's professional network and had not been directly involved with this research previously, although the library representative was aware of the overall scope and topic of the project. Aside from some minor typographical errors, all pilot participants found the Round 3 questionnaire straightforward and unambiguous.

4.4.3 Analysis procedures for Round 3 questionnaire

The analysis procedures for the third round were less complex than either the first or second round as very little coding of qualitative data was required. The results were downloaded from Key Survey in '.pdf' format, which as previously noted, was presented 'by participant.' In order to view responses on a 'by question' basis, the results were downloaded in Excel format, which also allowed the researcher to sort the data into the sector groups relatively easily. The qualitative comments

justifying and/or clarifying participants' answer choices were cut and pasted into a Word document. While completing this task, the researcher highlighted interesting and potentially relevant comments for later reflection.

The Summary report available from Key Survey was downloaded, and this provided the aggregated data from all participants, including the number of responses and percentages. As the a priori consensus level was set at 75% or higher as discussed in Chapter 3, Section 3.4.2.2, any response falling below this was highlighted and noted as "consensus not achieved." Of these, it was also noted which did not meet at least 51% - the number at which a majority is achieved and arguably a "consensus" (Gracht, 2012). The items gaining consensus or not are elaborated on in Chapter 5, Section 5.3.

4.5 Adherence to and departure from Grounded Delphi Method

The GDM research approach adopted for this study varies in some respects from the more positivist approach of Päivärinta, Pekkola and Moe, (2011) and Moe and Päivärinta (2011) in the Information Systems domain. This section will explicitly identify the areas of adherence to and departure from GDM as described by its creators.

As selecting the panel of experts in the current study followed an established GDM pattern as previously discussed in Chapter 3, Sections 3.3.1.1 and 3.4.2.1, the current discussion will focus on the corresponding rounds and analysis procedures followed. Päivärinta, Pekkola and Moe, (2011) suggest four "roughly divided" (p. 5) phases – data collection; concept discovery; concept prioritisation, and theory development. How these phases fit within each round is included in the following discussion. As the purpose of this section is to compare the overall GDM process

between two studies, it will take a relatively broad view of that process. Table 4.1 provides a visual summary of the process followed, and is based on Figure 1 in Päivärinta, Pekkola and Moe (2011, p. 5).

Round 1: Data collection phase

As with the current study, Päivärinta, Pekkola and Moe's (2011) first round was a brainstorming round. This is considered to be the data collection phase, which they conducted via email. After sending participation invitations to their selected experts, they asked each expert to list at least six challenges or dilemmas they have with public sector Information Systems (IS) procurement.

Once the responses were received, the researchers set about consolidating the data. After a process of open coding, 13 higher-level categories were developed, which included a total of 96 challenges dispersed across the 13 categories. This is referred to as the concept discovery phase.

Round 2:

Still in the concept discovery phase, the consolidated list was returned to all experts for validation, a process known as "member validation and check" or simply "member check/ing" (Bryman, 2004). Respondents validated all 96 items, and a further two were added. Once this consolidated list had been validated, no new challenges were allowed to be added. On return of the validated lists to the researchers, further open coding was conducted in order to discover "concept properties and dimensions" (Päivärinta, Pekkola and Moe, 2011, p. 5).

Round 3:

The experts were now divided into three panels consisting of: (1) Chief Information Officers; (2) procurement managers and (3) vendors. This is the beginning of the concept prioritisation stage. In order to get the list to a manageable size in preparation for ranking in subsequent rounds, the consolidated and validated list of

98 items was sent to the experts with the instructions to select the 20 most important issues. The items were randomised for each panel member in order to minimise any potential bias by selecting items that appeared at the top of the list. This resulted in a refined list of 19 challenges within the 13 broad categories identified in the concept discovery phase.

The next step was for the panels to begin ranking the challenges "into a relative order of importance" (Päivärinta, Pekkola and Moe, 2011, p. 9). These ranking rounds stop when there is a strong level of consensus between the three panels, or alternatively, "when additional ranking rounds would not be practical: for example, when experts stop changing their rankings" (Päivärinta, Pekkola and Moe, 2011, p. 9). The number of ranking rounds undertaken in the study was not disclosed.

The theory development phase follows the concept prioritisation phase. The tasks undertaken here are iterative between the two phases, and consist of selective coding to discover core categories and to confirm initial theory and relationships; and axial coding to suggest relationships between categories and sub-categories (Päivärinta, Pekkola and Moe, 2011).

Phase	Task	Round number
1. Data collection	1.1: Select expert panel 1.2: Brainstorming via email	 1
2. Concept discovery	2.1: Forming the consolidated list via open coding to identify concepts 2.2: Validating the consolidated list 2.3: Analysis of Round 2 data via open coding to discover concept priorities	 2
3. Concept Prioritisation	3.1: Checking the panel division 3.2: Narrowing down the list 3.3: Ranking the challenges and using selective coding to discover core categories	 3 (potentially Round 4 +)

4. Theory development	4.1: Axial coding to suggest relationships 4.2: Selective coding to confirm initial theory	

Table 4.1: Grounded Delphi process as used by Päivärinta, Pekkola and Moe (2011) (based on Figure 1 in Päivärinta, Pekkola and Moe (2011, p. 5).

Grounded Delphi as applied in the current study

As a detailed discussion of the processes and procedures has been provided throughout this chapter, those points will not be repeated here. Rather, this section will draw attention to the differences in the GDM process between the two studies. As for the Päivärinta, Pekkola and Moe (2011) process, a visual summary is provided in Table 4.2 below.

Both studies employed the 'exploratory' approach of a Delphi study by conducting brainstorming rounds, albeit using different data collection techniques (via email in the case of Päivärinta, Pekkola and Moe (2011); face-to-face focus groups for the current study). In the concept discovery phase, both studies had a validation component. For Päivärinta, Pekkola and Moe (2011), this comprised the entirety of their Round 2. For the current study, further investigation of firstly the roles and responsibilities of information professionals, and secondly of GLAM convergence were included in addition to the validation component.

Perhaps the biggest difference between the studies is the inversion of how the panel of experts were used. The current study had sector-specific focus groups followed by a combined sector - albeit with representation of four sectors - in Rounds 2 and 3. However, Päivärinta, Pekkola and Moe (2011) had a general brainstorming and validation round, followed by a separation of respondents into three panels in the third and any subsequent rounds. Although this is a difference, it is not specifically a departure from GDM per se. As the creators of the method, Päivärinta, Pekkola and Moe (2011) do not expressly say that panels must be

separated. Indeed, for some studies, this may neither be possible nor desirable, depending on the topic under investigation. Reasons why the current study elected to have the panel combined in the questionnaire rounds are discussed in Chapter 3, Section 3.4.2.

The major point of departure from Päivärinta, Pekkola and Moe's (2011) GDM process is in part 3.2 of the concept prioritisation phase (refer Tables 4.1 and 4.2). The creators of GDM take the path of ranking the challenges in order to determine which are the most important, whereas the aim of the current study was an *understanding* of what is needed in the future education requirements of information professionals who will work in galleries, libraries, archives and museums. Hence, an a priori level of agreement was better suited to the aims and objectives of this study. Although this is a departure from GDM as proposed by Päivärinta, Pekkola and Moe's (2011), it is not a departure from standard Delphi studies as discussed in Chapter 3, Sections 3.3.1 and 3.4.2.2. As such, the process followed in the current study may be viewed as an alternative to the ranking procedure, enhancing the GDM by offering a level of flexibility. Whilst an explicit theory has not been developed in the current study, it has provided the first empirical evidence base from which a theory – or theories – may be established.

Phase	Task	Round number
1. Data collection	1.1: Select expert panel 1.2: Brainstorming via sector-specific focus groups	1
2. Concept discovery	2.1: Forming the Round 2 questionnaire via open coding to identify skills and knowledge items; cross-referenced with core knowledge statements 2.2 (a): Validating the consolidated list of skills and knowledge 2.2 (b): Further investigation of (1) roles and responsibilities of information professionals; (2)	2

	GLAM convergence 2.3: Analysis of Round 2 data via open, axial and selective coding	
3. Concept Prioritisation	3.1: Closed questions created from Round 2 data analysis 3.2: Move towards consensus 3.3: Determine if 'a priori' consensus level was met	3
4. Theory development		

Table 4.2: Grounded Delphi process as used in current study

4.6 Conclusion

This chapter has discussed the procedures used to gather and analyse data in the Round 1 Focus Groups, and the Round 2 and 3 online questionnaires. Additionally, the development of each instrument – the focus group discussion guide and the two online questionnaires – have been discussed, with particular reference to how the analysis of one round of data collection informed the development of the subsequent round's instrument. The next chapter discusses the findings of each of the three rounds.

Chapter 5: FINDINGS

This chapter presents the findings of the data collection and analysis process described previously. It illustrates the process of building upon participants' responses in moving towards consensus through the study's three rounds.

The chapter is in 3 main parts. Section 5.1 discusses the outcomes of the five focus groups - one for each GLAM sector and the pilot focus group that consisted of museum representatives. Sections 5.2 and 5.3 present the data from the Round 2 and Round 3 questionnaires respectively, relating the findings to previous data collection rounds where relevant. These sections are also presented in a format that corresponds to the respective data collection instrument, so for ease of reading, the questions that are addressed in each section are provided.

5.1 Round 1: Exploratory Focus Groups

The following sections discuss the findings of the four main focus groups and the pilot. These are discussed as a whole, rather than providing an account of each individual focus group. However, specific reference is made to the individual sectors/focus groups when necessary. Additionally, the participant codes indicate whether they belonged to the pilot group (prefix of 'PM' standing for 'Pilot Museum') or the main focus group (prefix of 'FG' for 'Focus Group').

5.1.2 Skills, knowledge and attitudes: current and future

This section discusses the collective responses as to what focus group participants saw as being the skills and knowledge required to carry out their roles, followed by

what they saw as being required into the future. The section concludes with commentary about the skills required of their co-workers.

5.1.2.1 Current requirements

A number of skills common to all four sectors emerged from the focus groups. These included problem solving, critical thinking and critical analysis, written and oral communication, adaptability and leadership. The ability to research - knowing what to access; how to access it; and assessing the results for authority and relevance – was also mentioned in all focus groups. In the case of libraries, archives and to a certain extent museums, this was referred to in such a way as to imply that this skill is an elementary aspect of the role. That is, if one were unable to research to a high level, one would not make a very good librarian, archivist or museum professional. The galleries (specifically curators), however, stated that this was a skill that they certainly required, but that it was also "the most difficult and time consuming" aspect of their role (Participant FG-G1). When asked if any research training or instruction had been provided, participants advised that they had received some basic training in the library during their undergraduate degrees (for curators this is most often in Art History), and some refresher training had been provided by the various galleries they had worked in, but it was still an element of their role that was difficult. An interesting correlation to this is discussed in Section 5.1.2.3 below.

In terms of knowledge, all four sectors recognized the need to have an understanding of systems, including databases (the KE Emu database for example is used by registrars in galleries and by many museums) and other content management systems. This understanding is from an "end user" perspective - understanding how metadata and cataloguing can affect a search for example, rather than highly technical coding skills. An understanding of information

architecture – or how information is presented in an online environment - was also discussed in relation to understanding systems.

Two attributes that were emphatically endorsed by all focus group participants was the need to have a passion for and an understanding of the sector – an understanding of 'why we do what we do.' For the galleries, libraries and museums, the answer to this question could be traced to their need to understand the audience. A library participant (Participant FG-L4) and a pilot participant (Participant PM2), both gave examples of situations when it was better to have someone develop management or technical skills (respectively) who already understood the library/museum environment, as opposed to employing someone with the requisite management or technical skills, but no understanding of the environment that they would work in. Similarly, the archive participants saw that having a deep understanding of archival theory would assist in understanding the environment in which archivists operate. Museum participants in the main focus group also mentioned the need for understanding the theory that underpins museum practice – again, the 'why we do what we do.'

The need to have a passion for the sector was a feature of each focus group, with the pilot group noting – perhaps somewhat facetiously - that this may be in part because of the pay level (Participant PM4). However, one member of that group advised that they had in fact taken a pay-cut of significant proportions in order to take up their current role - they also very quickly added that they had no regrets in doing so. This group also noted that loyalty to an organisation appeared to be quite high in the museum sector, which may be a reflection of the passion held by most employees. Conversely, this could also be as a result of minimal movement between jobs in the sector and there being more people applying than jobs available, as supported by Participant PM3's comment that "huge numbers of people apply for museum jobs." The museum focus group took the need for

passion a step further, with Participant FG-M1 suggesting that a role in the cultural heritage sector should be a 'whole of life' approach, and not just a 9am-5pm job.

Skills and knowledge that were common in at least two sectors included cataloguing (galleries and libraries, albeit by using different metadata schemas); and archives and libraries both discussed the need for knowledge of policies and adherence to standards (library standards included AACR2, LCSH whereas archives have ISO standards and legislation). Knowledge and application of the respective professional association's Code of Practice was also important for libraries and archives.

5.1.2.2 Future requirements

For the most part, focus group members believed that all skills and knowledge currently required would continue to be required. In particular, Participant FG-M1 felt that there would be an increasing need for leadership, as there was currently "a real lack of both leadership and vision at the senior management levels."

The increasing importance of skills related to the digital environment, including digital preservation and digital curation, were highlighted as skills that would be increasingly obligatory in the cultural heritage environment. With the exception of these two relatively specialised domains, the only point of agreement with regards to future skill requirements occurred between just two sectors – archives and museums. Both sectors felt the need for a broad range of transferable – or generalist - skills. The researcher understood generalist skills in this context to mean such things as teamwork, communication skills, IT skills and so on. Participant FG-M4 felt that "generalist skills have been undervalued in the past in favour of subject knowledge," however this participant believed this was changing. Participant PM4 considered that museums are at an evolutionary point where "the mix of skills have [*sic*] to change across the organisation […] you've got to probably

let go of some skills." This participant further commented that knowing what skills to "let go of and what to grab on to" is a difficult - but important – aspect (Participant PM4).

The growing need for cross-disciplinary skills (particularly across the GLAM sectors, although not limited to this) was mentioned in the main museum focus group. The example given was that in the university environment where they worked, there is a Marketing department, however it has no understanding of the museum sector or the specific collection that they need to promote. As mentioned in Section 5.1.2.1, participants consider it is better for the museum professional to obtain some basic marketing skills rather than expect the marketing specialist to gain an understanding of a unique sector. Participant FG-M1 believes that having cross-disciplinary skills will also assist in breaking down the silos that divide the GLAM sectors.

5.1.2.3 Skills and knowledge required of co-workers

As mentioned in Section 5.1.2.1, many curators in particular recognised the need for high-level research skills, especially around the ability to find and evaluate information. The participants acknowledged that this was an area that would benefit from a better understanding of the search process and information literacy/information management principles in general. The co-workers of the curators (in separate focus groups) also highlighted that this was a skill that the curators were lacking. Knowledge of information management principles was also deemed to be deficient amongst the scientists within the museums. One (non-scientist) museum employee explained that many scientists do not understand the need for consistent terminology, or the benefits that may bring. This may point to a need for a tailored information literacy/information management component within science undergraduate degrees, and is discussed in more detail in Chapter 6, Section 6.3.3.

5.1.3 Thoughts on "information professional" and "cultural heritage information professional"

For the most part, there was a general level of agreement from all sectors that the Terras (2009) definition of "information professional" that was provided did in fact describe much of what the participants' roles entailed, despite some participants not liking the term very much. The two notable exceptions were the curators and the archivists. Curators acknowledged that the definition very much described an *aspect* of their role, but that their role relied on much more specialised knowledge. The researcher agreed with the curators, and for this reason decided not to target curators in the subsequent rounds of the Delphi study.

The archive focus group did not agree that it described their role at all, as archives until now have not been driven by access (the principle theme of the Terras (2009) definition) but rather by their legislated requirements (in terms of the records initially kept) and the need to preserve the material that they manage. Although they conceded that the archive is moving towards a more access-focussed model, they see their role as more specialised, and in some cases more crucial, as archivists manage the only copies of specific information that exists.

The reaction to the term and definition of 'cultural heritage information professional' ranged from "don't they already exist?" (Participant FG-L1) and "Isn't the name for that person a librarian?" (Participant PM8), to an archive participant not seeing the need for any distinction to be made between 'cultural heritage' information and any other information that an archivist may manage (Participant FG-A3). This interpretation has helped the researcher to realise that – in her perception at least - the role of a cultural heritage information professional is not just about the types of material they manage (i.e. cultural heritage material), but that it is about being an information professional who can work flexibly across the sectors that make up the cultural heritage sector – that is: galleries, libraries,

archives and museums. It is perhaps best explained by Participant FG-G1: that a cultural heritage information professional will have a broad understanding of all sectors and why and how they do what they do; they will have a broad understanding and knowledge of the collections (what is in the collection and why); and they will understand how to collate and present it.

5.1.4 A case for converged education?

The quote by Given and McTavish (refer Appendix 1) drew participant responses at opposite ends of the scale. Both the library and museum focus group participants agreed that librarians, archivists and museologists should be educated together, and for similar reasons. The librarians thought that it would help to reduce the silos, while the museum professionals felt that it would assist in developing the cross-disciplinary skills as discussed in Section 5.1.2.2.

The gallery focus group was divided in their reaction to the quote, although on reflection there may have been a misunderstanding with some participants. Participant FG-G3 did not believe that students were "educated in isolation," however the researcher senses this may have been interpreted to mean the students are isolated from the profession – that is, the people who are already working in professional roles. This participant had a unique role in the gallery that was further removed from any information management practices than any other participant, which may partially account for the misunderstanding. This also highlighted to the researcher the need for clearer explanations and to not assume that everyone has understood the intent in a quote.

The archivists however strongly disagreed, noting that "there are too many differences between libraries and archives" and that "funding is the driver [for collaboration]. Education is not the driver" (Participant FG-A1). There was concern

that in order to educate students in all four GLAM sectors that the current archival qualification would need to be "dumbed down," when in many cases students were already graduating with a minimum of skills and knowledge. It must be stressed here that this was not a criticism of any institution or archival programme offered in Australia, but rather a comment that there is now so much to learn (both analogue and digital processes) just to become an archivist that it would be difficult to achieve multiple qualifications with the same length of programme (currently 1.5 – 2 years of postgraduate study).

5.2 Round 2 questionnaire: Examination and discussion of results

The results of the Round 2 questionnaire are discussed here. Each section of the questionnaire is addressed in a new section so that appropriate attention is given to each.

5.2.2 Part 1: Demographics

A total of 31 completed responses were received from the Round 2 questionnaire, equivalent to an 81.6% response rate. This is above the response rate of 70% suggested by Sumison (1998, as cited in Hasson, Keeney and McKenna, 2000, p. 1012) as necessary to maintain rigour.

The predominant age group of participants was 45-54 years of age (11 responses, 35.48%), closely followed by 55+ (10 responses, 32.26%) and 35-44 (8 responses, 25.81%). Two participants in the 25-34 age group (6.45%) participated, and there were no participants under 25.

Length of involvement in the cultural heritage sector had nine participants in each of the 15-19 and 30-34 year groups (29.03% of participants for each). Five people had been involved for between 5-9 years (16.13%); three had been involved between 25-29 years and 35+ years (9.68% each), and one person in each of the 10-14 years and 20-24 years (3.23%).

The library sector was identified as that with the most participants having some involvement during their career (19 people), closely followed by museums and archives (17 and 16 people respectively). The figure for archives includes one participant who identified as a 'recordkeeper', a role that incorporates dealing with both current records and archival documents, reflecting the continuum thinking discussed in Chapter 1, Section 1.8. A total of 8 participants advised they had been involved with galleries. The number of people in each sector totals more than the number of participants because the participants were asked to include all sectors where they have had some involvement, and many of the participants have been involved in more than one sector. Some of the other sectors that participants mentioned included the built environment, government policy/programmes, and academic and heritage management sectors. While these sectors are not specifically galleries, libraries, archives or museums, they are in some ways related to cultural heritage.

In terms of qualifications amongst participants, there were 27 Bachelor level degrees; 19 'other' postgraduate qualifications (for example Graduate Diplomas and Graduate Certificates, but not including Masters or Doctors of Philosophy (PhDs)); 16 Masters degrees; 10 Certificate level; seven Diploma level and six PhD qualifications. Again, this represents the total number of qualifications held, as most participants (29, or 93.54%) held multiple qualifications.

Of these qualifications, the following table (Table 5.1) shows the number of qualifications obtained in a discipline specifically relevant to galleries, libraries,

archives and/or museums, such as Library and Information Management, Museum Studies, and Archives Administration: 13 'other' postgraduate qualifications; six Bachelor degrees; five each of both Masters and Certificate level qualifications; three Diploma level and 2 PhDs. As can be seen from this, there are a high number (20) of postgraduate qualifications (inclusive of 'other' postgraduate (13), Masters (5) and PhD qualifications (2)). These figures can be seen as a comparison in Table 5.1 below.

Qualification level	Any discipline	Specific to GLAM sectors
Certificate	10	5
Diploma	7	3
Bachelor	27	6
Masters	16	5
'Other' postgraduate	19	13
PhD	6	2

Table 5.1: Qualifications held: Total number and discipline specific to GLAM

Of the non-GLAM related qualifications, the most highly represented was a Bachelor of Arts degree. Not all participants specified a major in their answers (indeed, some may not have undertaken a major), however, History, Art History and Literature were popular. These disciplines were also popular choices for Masters and 'Other' postgraduate degrees.

5.2.3 Part 2: Validating information gathered from Round 1 Focus Groups

The responses to the six questions in Part 2 are summarised in a table in Appendix 14. They could be considered to validate quite strongly the information gleaned from the focus groups, because in terms of total responses (i.e. not sector specific),

only one item was rated below 55%. That was the concept "Use technology languages including xml, html and java (this is not exhaustive)", which received an overall rating of 39%. Both libraries and museums rated it at 50%, which was higher than galleries and archives at 17% and 33% respectively. Many participants provided comments to clarify their decision not to select this concept, which largely revolved around *knowing* about the technology languages in order "to know what you want to have happen, and be able to articulate that effectively to a technologist" (Participant L14). It was acknowledged that in order to do this, it "*might* [*sic*] mean some knowledge of programming languages and software development, but doesn't not [*sic*] mean you have to be able to programme for a living" (Participant L14). One participant was more emphatic, noting that "[…] programming within a cultural heritage organisation is a specialist discipline all of its own and deserves to be treated separately" (Participant M9).

Although achieving total responses of 55% or over, the Generic skills and attributes of Marketing (55%), Financial planning/budgeting (65%), Human Resource management (55%) and Leadership (55%) were the lowest rated overall. The result for Leadership in particular was surprising, given that this was something to emerge from each focus group, and quite ardently in the main (non-pilot) museum focus group. In this group, participant FG-M1 noted that people in leadership positions "don't actually participate [in conferences] to foster the upcoming professionals." Additionally, the lack of leadership amongst and between sectors was also highlighted as an issue by this participant: "There isn't the leadership between these four silos to talk to each other and actually bring their sectors together – they don't support it in their own sector, let alone across sectors" (Participant FG-M1). Additionally, 'leadership' is not mentioned in either professional skill and knowledge statements from ALIA, the ASA or the National Standards for Australian Museums and Galleries.

5.2.4 Part 3: Emerging roles and responsibilities of information professionals

This section reports findings related to the following three questions:

Question 1: What do you see as the emerging roles and responsibilities – or future possibilities – of information professionals employed in your sector?

Question 2: What new skills, knowledge and qualities might these emerging roles need? (i.e. other than those identified in Part 2)

Question 3: What knowledge and skills might no longer be needed?

Question 1: Emerging roles and responsibilities

As mentioned in Section 4.3.3.2, the coding process established ten broad categories from the open-ended, qualitative responses to the questions related to the future roles and responsibilities that participants envisaged for information professionals in their sector. Summaries of those categories are given below.

Understand the broad purpose of the information professional's role

This category emerged from some of the answers participants gave that focused on "the bigger picture" of why information professionals exist in the first place. Comments regarding the significance of the need to preserve collections, both physical and digital, for future generations reflected the attitude of the focus groups that information professionals in cultural heritage organisations need to have an understanding of 'why we do what we do.' Preservation was not merely recognised as something that information professionals *do*, but the *reason* they do it was acknowledged.

Utilise technology in a highly skilled way

Despite the low response rate to "Use technology languages including xml, html and Java…" discussed in Section 5.2.3, many participants noted the need to not only use technology, but to be more proactive with the use of technology to "find new ways

of presenting information and collections …" (Participant L3) and to "make more of the data generated by collection description and management" (Participant L13). The need to know "enough about code to know what is possible with code" (Participant M8) was also mentioned.

Apply digital curation principles

Participants noted the many facets involved with possessing and caring for digital assets, "including born digital, and especially digital works of art" (Participant G20). The need to manage digital obsolescence, manage risk, and issues of storing, lending and copyright as they pertain to digital assets were prominent amongst participants' answers.

Provide wider access to data and collections

Responses that formed this category suggested that at least some information professionals are starting to embrace the idea of opening up data that has previously been unavailable to all but those who work with it. A gallery participant used the collection database as an example, but also noted the need for security, privacy and cultural sensitivity issues to be considered. For example, a gallery's collection database may include details of donors who wish to remain anonymous, so any access provided to people external to the gallery would need to be aware of this. Part of the reasoning for opening up collections that became evident through participants' answers was related to the use and re-use of data (for example in "mash-ups"), subject to any copyright and/or usage restrictions; and the potential for new ways of engagement that an open collection could provide.

Develop a user focus

This category was formed by the amalgamation of three first level categories (see Appendix 12): User focussed/understanding users; Provide services and Engagement/participation/interaction. The rationale behind the amalgamation was that all categories had users as their focus. A user in this instance is not only the

public, but can include any member of any community served by the institution/collection, including various internal and external stakeholders.

Aside from the more usual user focussed comments such as the need to "have a deep understanding of user needs and potential user needs" (Participant L3), Participant A19 suggested the idea of

> […] participatory systems and processes where the subjects of cultural heritage materials or the communities for which they are significant can be directly involved in the co-creation of knowledge (including metadata, catalogue descriptions etc.) about those materials, and the maintenance of that knowledge over time.

This is already happening at Culture Victoria, an organisation supported by the Victorian Government through Arts Victoria and the Community Support Fund (Culture Victoria, 2010). Briefly, Culture Victoria instructs communities how to photograph, describe (catalogue) and upload content onto their organisation's database. If the organisation has a website, that is hosted on a Culture Victoria server. The Culture Victoria website is then able to link to the content of these organisations, which is accessed by a basic search function. Content can be browsed or searched by "Stories", "Collections" or "Organisations." The researcher was not aware whether the participant knew of the existence of Culture Victoria when making his comment; nevertheless, it is an interesting concept that could easily be replicated in other states in Australia.

Advocate

The comments that led to the creation of this category showed great diversity in the areas that participants consider need greater awareness, in terms of people both internal and external to the organisation. For example, participants noted the need to not only advocate for the collection/s (including advocating for open collections), but also the need to "market and publicise the work that information professionals do" (Participant A30) which may include promoting the importance of quality

information management (Participant A30). A much broader view was taken by two participants, who noted the need to "demonstrate the ongoing relevance of cultural institutions" (Participant G26), and to "articulate about the impact and value of the organisation's work to a variety of stakeholders and supporters" (Participant L21).

Social justice principles and learning for transformative outcomes

This category was initially termed "Social Justice", however the comments of predominantly one participant, Participant L31, made it clear that while social justice may have been the motivator, the comments went further than merely suggesting ways in which social justice principles could be enacted. Participant L31 saw that improved social and economic outcomes (transformations) could be achieved by better articulating the profession's existence and its role in "social capacity building" (Participant L31). The link to the previous category, Advocate, and particularly the comments of Participant G26 and Participant L21 are evident here. In what could be seen as a significant change in outlook, this participant proposed that "the collection isn't the outcome anymore … it's a tool of social outcome." In other words, the collection itself should be utilized "to publicly leverage literacies [reading, writing, digital, financial, social, etc] into the service experience of clients" (Participant L31, square brackets in original). Although public and school libraries have been doing this for quite a long time, it is an important concept to consider in other (non-library) collection environments.

The same participant again inspired the inclusion of "Learning" in the category name. In addition to the learning that would take place in the client service experience mentioned above, this participant believed that 'life long learning' should be proactively embedded into the client service experience, and that clients (the participant's preferred term) should be taken on "learning journeys" rather than just be 'trained.' All of this is within the context of improved social and economic outcomes through the profession's ability for social capacity building.

Add value

The Add value category was perhaps the one where the different influences and emphases of each sector could be most clearly seen. Interpretation was mentioned twice: first, in conjunction with and in addition to providing access (Participant A1); and secondly "to improve knowledge sharing and understanding" (Participant L10) by "adding layers of information via tags, descriptions and interpretation" (Participant L10). None of the museum-based participants mentioned interpretation, despite it being a fundamental role of museums. However from demographic information it can be seen that Participants A1 and L10 both have significant connections to museums. Other Add value ideas included "making more of the data generated by collection description and management" (Participant L13), and "becoming written and oral commentators on cultural collections" (Participant G23).

Innovate/Find better ways of doing things

Several comments related to this category were about individuals and organisations taking risks – not to 'be risky', but to embrace the element of risk that often comes with successful innovation. Another suggestion linked to innovation is being agile to allow for "rapid prototyping of solutions" (Participant A7). Although in response to a different question (see Section 5.2.5), the idea of finding better ways of doing things was foremost in some participants' minds. "Trying new things, and doing old things differently" (Participant M2) may prove to be challenging for what is sometimes viewed as a conservative profession, particularly when referring to libraries and archives. A possible way to counteract this is to "becom[e] more responsive to changing trends and [foci]" (Participant G16).

Build relationships

Although it could be argued that information professionals in the cultural heritage sector have always built relationships with clients/visitors/users, the responses to this question suggested the need to broaden this, partly for the organisation as a

whole in order to "improve organisational objectives" (Participant L21), but also in order to achieve more specific goals such as "large digitisation outcomes" (Participant L3). It was noted that the future may bring "greater liaison with a more diverse set of clients" (Participant A30), perhaps in acknowledgement of increased collaboration between galleries, libraries, archives and museums. As this participant works in an organisation that incorporates a gallery, an archive and a museum, s/he has possibly experienced the need to interact with a diverse range of clients already, and can comment with a certain level of authority here. This same participant also noted that these relationships need to be managed in what can sometimes be a "contestable environment" (Participant A30), suggesting a certain amount of professional tension, perhaps due to professional identity and boundaries.

Question 2: New skills, knowledge and qualities

Question 2 of Part 3 asked participants what new skills and knowledge might be needed for the new roles and responsibilities identified in the previous question. As mentioned in the analysis procedures Section 4.3.3.2, ten broad categories were initially identified, which were subsequently reduced to nine. In many cases the skills may not be considered as 'brand new', but perhaps these could have been more appropriately referred to as "New considerations for the digital environment." A summary of each broad category follows.

<u>Legal issues</u>

While issues of copyright, legislation and various AS/ISO standards are not new to many information professionals, particularly in libraries and government archives, as suggested in Section 4.3.1.2 they may be a renewed focus in the digital environment. Similarly, licensing agreements, for example of artworks made available online, may now be affecting galleries and museums more than has previously been the case.

Advanced IT skills

Many participants noted the need for quite specific IT skills, including knowledge of the semantic web protocols. The W3C-approved standards of XML, RDF and OWL form the basis of these protocols. Multiple participants noted the need for information professionals to understand code and coding, but stressed that it wasn't their role to do the coding. It was, however, their role to know enough about code to know what was possible with code. Knowing about the creation and management of images and multimedia also emerged as a new skill, although again, to a certain extent, this is not new to some information professionals, particularly those in specialist libraries. However, it may be a new or relatively new skill for gallery or museum information professionals.

Business skills

Although most, if not all, of the examples in the broad category of Business skills could be considered as quite generic, it is interesting that business skills have emerged as important in the cultural heritage environment. Some of these skills may be more appropriate at more senior management levels (such as negotiation skills and the ability to argue for funding), but none of the participants indicated that position level was a consideration in their responses. A gallery participant suggested the need for research skills, which may indicate that this is a relatively new area for gallery information professionals. This is supported by comments made in the Round 1 gallery focus group, discussed in Sections 5.1.2.1 and 5.1.2.3 above.

Working with collections and content

Working with collections seems an unlikely new skill for information professionals. However, many of the responses that generated this category made specific mention of the digital component: the new skills needed around collecting born digital documents of all kinds, for example images, and not just text. Using newer technologies such as the web and social media to promote the collection was also

seen to require new skills. An *understanding* of the content of the collection – not just *knowing* the content was also identified as a new skill.

Ethics

While ethics may not be considered new for information professionals, it was mentioned by participants as a requirement for new roles or responsibilities that may emerge. As one participant noted the need for clarity regarding ethics across the GLAM sector, it could be surmised that it is the change of focus that is new, rather than the skill or knowledge itself.

Digital Humanities skills

The need to incorporate digital humanities skills and digital humanities thinking into the information professional's skill-set was stated by two participants, but what these skills specifically included was not revealed. As mentioned in Section 4.4.1.2, an environmental scan was conducted to enable the researcher to provide examples in the Round 3 questionnaire of what might be included in this category.

Generic capabilities

Several skills that could be considered generic or transferable skills were mentioned as being required with the emerging roles and responsibilities. The intention may not have been to suggest that these are brand new skills that are required, but that they are skills that are currently important to information professionals and they may need some modification and/or clarification as we move forward into the world of online exhibitions and more collaboration.

Informatics

Many of the skills mentioned by participants fitted well into the broader category of Informatics. These skills perhaps more than any other could be considered new, for even though skills such as 'scoping, selection and implementation of technology' may have been amongst the information professional's abilities already, the rate

that technology changes means that the skill set is continually evolving. Each skill that was included as an example here was related to technology and how to best utilise it.

Ways of thinking about professional practice

Rather than being considered skills or knowledge, the items that make up this category are more about attitudes and qualities that information professionals should possess. These included "being open to challenging existing ways of doing things" (Participant A6); "try new things" (Participant L18) and "do things differently" (Participant M2).

Question 3: Knowledge and skills no longer needed

The responses to the question regarding the skills and knowledge no longer needed (Question 3, Part 3) were fairly consistent. All current skills and knowledge will continue to be required as collections are still made up of analogue/physical items that will remain in the collection. Further, while digital holdings may be increasing, one participant noted that was very little – if any – decline in physical items coming into the collection (Participant L18).

Some participants included some quite specific suggestions as to what may no longer be required: skills related to particular computer programmes/software (Participant M22); highly specialised subject expertise (Participant M25); less focus on face to face interactions (Participant L18) and a diminishing need for traditional reference skills (Participant L3).

5.2.5 Part 4: GLAM convergence and the information professional's role

Question 1: How likely do you think it is that convergence between galleries, libraries, archives and museums in Australia will increase?

Question 2: How might the roles of information professionals be impacted, if at all, if some level of convergence were to occur?

Question 3: How might the education for these information professionals need to change, if at all, if some level of convergence was to occur?

Question 4: Are there any particular aspects of Museum, Library or Archive Studies programmes that would be beneficial to one or more of the other programmes?

The responses to Question 1 indicated that the majority of participants (68%) believed that increasing convergence was either Likely or Very likely. A total of 32% were either Unsure, or thought that increasing convergence was Unlikely or Very unlikely. More Library participants than any other sector thought that increasing convergence was either Likely or Very likely (75%), whereas 60% of Gallery participants thought this. Archives and Museum participants were in agreement at 67%.

Popular reasons given in support of a Likely or Very likely response included financial/economic reasons, such as increasing costs, and increased competition for decreasing resources. Some participants suggested that budget cuts might lead to mergers, or mergers may be the result of assumptions that "efficiencies to be made from particularly in back of house processes" (Participant L24). Others cited the need to break down "artificial distinctions between the same types of collections" (Participant M9) as an impetus for convergence, while others took a user/client focus noting that there was now an "expectation of integrated online services"

(Participant A19). The opportunities afforded by technology to work across boundaries were also suggested as a catalyst to convergence.

The reasons given in support of an Unsure, Unlikely or Very unlikely response were less diverse than the reasons given above. Convergence was mentioned as being political – "there might be government prompts for the different cultural institutions to converge" (Participant G29). It was also noted that "[in political circles] there is a non-sophisticated understanding of the differences" (Participant M5) between the work of the institutions and the professionals within them, and "it is likely this [misunderstanding] will continue" (Participant M5). The only participant to refer specifically to the physical environment thought convergence was Unlikely because "audiences expect different experiences in these places" (Participant L3).

At the extremes, two participants selected Very unlikely, while nine selected Very likely. However, despite selecting Very unlikely, one participant did acknowledge that "convergence of shared online services (so the distinctions are not there for information seekers or cultural citizens) is very likely" (Participant L14). The reason for selecting the Very unlikely option was that "Institutional change is very unlikely" (Participant L14). The comment of the second participant who selected Very unlikely suggests that perhaps the wrong option was selected in the survey, as it seems to support a Likely or Very likely response: "pragmatic matters such as decreased funding will precipitate the pooling and sharing of resources" (Participant G26).

The responses to Question 2 showed a dichotomy between the need to retain specialist knowledge, yet the apparent need to acquire a wider, cross-disciplinary set of skills if some level of convergence were to occur. There was great concern that if convergence were to occur, that professional skills would become undervalued and "specialism and subject knowledge may suffer in light of a focus

on cross-disciplinary 'skills'" (Participant G26). Other participants noted the need for increased cross-disciplinary skills in order to "develop [a] better understanding of other types of collections and how they might compliment [*sic*] each other" (Participant A30), and that having a broader skill set may lead to "more well-rounded professionals with up-to-date skills" (Participant A30).

In addition to the specialist/generalist responses discussed above, some participants also provided more specific ideas about how information professionals' roles may be impacted if some level of convergence was to occur. This included IT skills, such as ensuring "tools and systems that interface with each other is possible" (Participant G23) and "Semantic web capabilities for greater access beyond the walls of each institution" (Participant L13). Both of these statements also link to the identified need to collaborate more. Participants saw the need to share data and collections, potentially via "federated access solutions for end users […] of which linked open data is a part […]" (Participant A7). Further specific thoughts, often mentioned by a single participant included "the need to understand different ethical and governance frameworks" (Participant G29); the need for "greater flexibility […] also greater innovation and creative problem-solving" (Participant M22), and that the sector specific "modes of cataloguing will need to change" (Participant M9).

Like Question 2, the responses to Question 3 provided a similar dichotomy. Some participants saw value in a wider skill set and greater cross-disciplinary knowledge, whereas others – whilst acknowledging the need for this – were emphatic about the need to protect specialisations. For example, Participant G26 believed that merging Information Sciences, Archival Studies and Museum Studies programmes into a general "Cultural institution" training is not "necessarily a positive thing", acknowledging that "while there are certainly areas of intersections amonsgt [*sic*] the current education programmes offered in these areas there is enough uniquness [*sic*] to warrant differentiation" (Participant G26). Participant A27

offered a potential solution to this: “Information professionals need to develop courses that protect their special areas of expertise but run them within trans-disciplinary course structures […].” In a similar vein, Participant A19 suggested that “[t]here will be significant benefit in starting with a broad GLAM education, with specialisation occurring much later than it currently does.” Some participants noted that current education programmes solidify the differences between galleries, libraries, archives and museums (Participants M2; A12; L14), and suggested offering a “common core of education in the professional theories and values which all GLAM work shares, starting with preservation and metadata and ethics” (Participant A4).

In another similarity to Question 2, responses to Question 3 also identified several specific ideas as to what should be incorporated into information professionals’ education, if the level of convergence were to increase. There should be more emphasis on:

- legislative/legal environments
- global information management
- understanding the business and different business models
- understanding the bigger issues facing the industry
- developing advanced IT skills – understanding the possibilities that technology provides

In contrast, looking at the big picture, Participant M2 suggested the following: “Teaching the capacity and benefits for galleries, libraries, archives and museums to bring together their information and collections for the betterment of enrichment, greater understanding and an improved end-product for the consumer.” This concept could provide a solid foundation for all sectors to grasp the notion of ‘why we do what we do’, a point that was seen by focus group participants in particular as being fundamental to an information professional’s role.

Question 4: Are there any particular aspects of Museum, Library or Archive Studies programmes that would be beneficial to one or more of the other programmes?

Responses to Question 4 revealed not only sector specific skills and knowledge that could be transferred, but also identified several areas where it was considered GLAM information professionals needed proficiency. In many instances, these corroborate the findings of Part 2: Validating information gathered from the Round 1 Focus Groups discussed in Section 5.2.3. For example, project management skills, communication skills, and knowledge of copyright were all areas suggested by participants. These skills and knowledge did not necessarily belong to any one GLAM sector, and in the case of project management and communication skills, would not even be considered 'native' to GLAM at all.

Aspects of Library Studies programmes seen to be beneficial to the other GLAM sectors included 'how information is stored and used'; the 'knowledge and use of controlled languages and vocabulary', and 'Information Theory'. 'Virtual communities and how they behave' and 'how to design digital content' are two aspects of 'modern librarianship' that were seen to be pertinent to other programmes.

Two elements of Archival Studies deemed to be beneficial to other sectors were could be considered the cornerstones of archival practice: 'understand how archivists capture and manage context' and 'understand provenance.' The creative aspects of Gallery and Museum studies programmes - particularly sharing, displaying and promoting parts of the collection - were highlighted as an area that librarians and archivists could learn from. As noted by Participant M2 "[m]useums take a very active approach [to sharing, displaying and promoting parts of the collection] while libraries and archives tend to be more passive and depend upon patrons undertaking 'discovery'."

Two other areas of Museum and Gallery studies that were seen to be beneficial to other GLAM programmes were: 'Object bibliography' (a bibliography referencing works in all formats about a particular object in the gallery or museum collection); and 'significance studies' (a paper by a curator that contextualises, describes and establishes an object's significance to our society) (National Museum of Australia, 2010). In order to be able to compile these documents, a certain level of research skill would be required. However, Participant M2 noted: "A regular gap in Museum Studies programmes is a lack of tuition on how to undertake historical research and find required or complimenting [*sic*] information." This was supported by Participant M17 who observed that "[m]any [students] are not currently taught how to develop research skills," although this observation was in relation to all GLAM sectors, not only museums, as Participant M2 suggested. Nevertheless, the link to 'how information is stored and used' from Library Studies and context and provenance from Archival Studies and how these could all be mutually beneficial is evident.

5.3 Round 3 questionnaire: Examination and discussion of results

This section focuses on Round 3 of the study, where participants responded to a second questionnaire that was informed by analysis of the Round 2 responses. The aim of this final questionnaire was to establish consensus on the questions of emerging roles of information professionals; the skills and knowledge they will need to carry out these emerging roles, and how future education programmes might best support them.

Of the 31 participants who were sent details of the Round 3 questionnaire (i.e. all of those who completed the Round 2 questionnaire), 27 people (87%) completed it. In comparison, the Round 2 questionnaire achieved an 82% response rate. An

increase in response rate is quite unusual for Delphi studies, with most recording a decline in participants, some with as much as a 40% decrease recorded each round (Day and Bobeva, 2005). Even when calculated with the original numbers of invitations sent in Round 2 (38 invitations), the response rate is still a very healthy 71%. This high response rate is perhaps an indication of the commitment of participants to this research topic. Conveniently, each sector was diminished by one participant, meaning the relative numbers between sectors remained consistent. As already noted in Section 5.2.2 above, Sumison (1998, as cited in Hasson, Keeney and McKenna, 2000, p. 1012) suggests a minimum response rate of 70% in order to maintain rigour.

As discussed in Chapter 3, Section 3.4.2.2, the a priori consensus level was set at a minimum of 75%. Of the 74 selections that participants had to make (noting that some questions required multiple selections), 17 did not reach the 75% cut off. However, of these 17, 11 reached at least 51%. This is relevant because if taking the word "consensus" in its literal meaning of "majority of opinion" (Macquarie Dictionary online, 2014), it could be argued that in fact only six selections out of a possible 74 did not achieve a "consensus." Translated, this could be interpreted as 68 out of 74 selections achieved consensus – or the equivalent to 92%. However, taking the 'a priori' measurement, 57 selections met the 75% consensus mark, giving a 77% consensus achievement overall. As this figure itself reached the 'a priori' measurement, and for reasons of time constraints and potential psychological factors (potential survey fatigue) (Gracht, 2012) amongst the expert participants, it was decided that a fourth round would not be undertaken.

5.3.1 Part 1: Emerging roles and responsibilities

The first section of the Round 3 questionnaire asked participants to consider 10 broad categories related to the emerging roles and responsibilities of information professionals. Their responses to each category met the 75% consensus measurement. Three categories achieved 100% acceptance: 'Understand the Broad Purpose of the role'; the need to 'Advocate'; and 'Build relationships'. The need to 'Add value' was the lowest ranked at just 78%; however, this lower ranking was due to participants selecting Partly agree/disagree (22%), as no participant actually disagreed. Although the information to participants indicated that the list should not be considered exhaustive, comments associated with this question predominantly suggest other roles and responsibilities. For example, Participant M5 suggested that "… semantic markup, entity identification and extraction are going to be much more important in terms of adding value than just […] add[ing] layers of information." Similarly, Participant A5 thought the list also needed to include the "ability to inherit and exploit existing metadata," rather than recreate it. Participant L31 highlighted the need for information professionals to "communicate to their intended cohorts the BENEFITS and not the FEATURES of the value add" (capitals in original), suggesting that we need to look beyond the 'what' we do to the 'why' we do, supporting once again the prime finding of the focus groups about the need for understanding the sector.

5.3.2 Part 2: New skills, knowledge and qualities required

As with Part 1, a high level of consensus was achieved overall in Part 2, with regard to new skills, knowledge and qualities information professionals need. All items except one achieved a rating of 82% or higher. The exception was the need for 'Advanced IT skills', which achieved 67% agreement; 30% 'Partly agree/disagree' and 4% (one participant) who disagreed. The participant who disagreed appeared to do so on the basis that the skills presented were not "new skills," and selected

this option for every question in this section. It was acknowledged in Chapter 4, Section 4.4.1.2 that many of the responses given by participants in the Round 2 questionnaire could not be considered new; however, that is how participants answered that question in that round. As the question in the Round 3 questionnaire was developed from Round 2 data, it was decided to phrase it in the same way. Although the preamble to the question states that the categories were developed from participants' own responses from the previous round, in hindsight, some words to acknowledge that some or all of the following content may not be considered new and explaining why may have been appropriate. Other participants also made comment that some of what was proposed was not new; however, they opted to select 'Agree' in the majority of cases.

A common theme as to why participants selected 'Partly agree/disagree' for this question was that it would depend on the role and environment. This was well summarised by Participant M22:

> I think that the level of knowledge required will depend greatly on the role of the IP [Information Professional] and a range of other factors including how large the IT area is and what other technical expertise is available, how large an/or complex the organisation is and what level of service needs to be delivered by the IP both internally and externally.

However, one participant repeated their comment from the previous round regarding coding – that "coding [HTML, XML] skills are needed across the board at a generalist level to enable the understanding of what can be done" (Participant L14). As this was actually included in the examples that formed part of the question, it is puzzling as to why this participant selected the 'Partly agree/disagree' option while not offering a reason why, indicating that perhaps the incorrect option may have been selected.

5.3.3 Part 3: Skills and knowledge no longer required

Together with Part 8 (discussed below), Part 3 gained the least amount of consensus, with only one question of the six exceeding the a priori measure. The lowest rated was the statement: "There will be less focus on face-to-face interactions," which received scores of 37% Agree; 33% Disagree and 30% Partly agree/disagree. Those who disagreed both mentioned the importance of face-to-face interactions: "face to face matters hugely" (Participant G29) and "face to face will always be important" (Participant M9). Participant G29 also noted that "it's never an either/or proposition," (face-to-face versus virtual) while Participant M9 highlighted that "… face to face no longer necessarily means 'in the same room as.'" The necessity to "connect the onsite engagement with the online engagement in some way" (Participant L14) supports Participant 29's assertion that face-to-face versus digital/online is not an either/or proposition.

From a different perspective, Participant L13 who selected Partly agree/disagree, intimated that if people wanted to see the vast majority of the collection s/he works with, they would need to visit in person as "although we have close to 2 million pages of our most iconic material online, this is a tear drop in the ocean compared to what we have in analogue." These two million pages represented approximately 1% of the collection, and funding was not available to digitise the entire collection.

On the question of 'Subject expertise may become less important', the majority of responses were either Disagree (37%) or Partly agree/disagree (44%), with only 19% selecting Agree. Rather than take the view that specialist knowledge will be usurped by generalist knowledge and skill, two participants suggested that it will be those subject specialists whose role "will be expanded to incorporate new knowledge and skills" (Participant G26) and that "these specialist will need to incorporate greater diversity of skills than at present" (Participant A19). This

supports the idea of 'meta-knowledge' (Bos, 2012) that is discussed in the next chapter, Section 6.3.3.

Participant L14 noted that the need for specialist knowledge (or not) is "predicated on the focus of the collection and how it meets the educational, social and cultural needs of the community …". However, as can often be the case with cultural heritage organisations, what can be done and what staff can be hired comes down to a question of finances and funding. As Participant L21 stated: "Economic constraints will drive this – if resourcing were adequate I would happily retain several specialised roles." The reality of the economic constraints may indeed be more of a driving factor in future convergence.

5.3.4 Part 4: The likelihood of convergence between galleries, libraries, archives and museums in Australia

Despite an increase of 20% in the 'Very likely' and 'Likely' selections from Round 2 to Round 3, the experts did not reach a consensus about the likelihood of convergence. However, it was only narrowly missed, with an overall agreement of 74%.

Some participants specifically noted the digital environment as a point of convergence for GLAM institutions. Participant M9 made the point that "convergence doesn't mean 'merge'" suggesting that "digital offerings and collection data aggregation" (Participant M9) will merge, but the "different visitor experiences onsite" (Participant M9) will not merge. Finally, technological and economic efficiencies "regardless of the actual or perceived similarities and differences within the GLAM sector" (Participant A19) were highlighted as a driver for increased convergence.

The responses to Part 4 were compared to the responses to the same question in Round 2, both in total and by sector. As it was possible to calculate the mean and standard deviation for this question, as per traditional, quantitative Delphi studies, this was also completed and is shown in Appendix 15. The mean in this case refers to what is sometimes referred to as the average, or specifically, the sum of the values divided by the number of values. The standard deviation measures the amount of variation from that mean (average). A standard deviation number close to zero indicates less variance in the extremes of the data; the higher the number, the more variance in the data. In the Combined totals shown in Appendix 15, it can be seen that the variance between Round 2 and 3 of the 'Neutral/unsure' and the 'Unlikely' responses was low, at just 0.70 percentage points each – meaning there was a relatively high level of stability in these responses between rounds. The 'Likely' response, however, showed the greatest standard deviation, of 9.19 percentage points, indicating a greater change in the way participants responded between rounds. This is borne out by comparing the percentages of the 'Likely' response: Round 2 received a 39% response, whereas Round 3 received a 52% response.

5.3.5 Part 5: The impact on the roles of information professionals

Consensus was achieved on all but two questions in this section, albeit very narrowly, by just 1%. One of those was the need for 'Advanced IT skills.' This echoed the results in Part 2, discussed in Section 5.3.2 above, where the need for "Advanced IT skills" also did not meet the consensus measure. This result was puzzling for the researcher, as it was considered there were enough comments in response to the question in Round 2 to warrant inclusion in the Round 3 questionnaire.

Although not given as part of the examples of what might exemplify the 'Advanced IT skills' category, Participant M9 commented that these information professionals "still don't actually need to be the coders – they need to understand what the coders are doing." This reflects the comments of Participant L14, discussed in Section 5.3.2 that a generalist understanding of coding is required in order to understand what can be done with code.

Participant A5 raised concerns regarding the need to ensure that tools and systems are able to interface with each other. Whilst acknowledging that interoperability was a good thing, it should not be "at the cost of homogenisation and lowest common denominator, or biggest institution rules decision making approaches." It was important "that different professional data models […] in various sectors are understood and respected" (Participant A5). The participant asked the question "[…] how much of the IT skills are about IT or about being able to strategically understand IT?" (Participant A5). The coding comments by Participants M9 and L14 discussed above could be seen as examples of the need to strategically understand IT as opposed to actually having the skills to code. However, the question remains – to what level do information professionals need to be able to ***do*** the skill in order to understand the skill as it may be used by others?

5.3.6 Part 6: Changes that might be needed in education for information professionals

The principal question in this section asked whether a broader, cross-disciplinary undergraduate degree followed by a specialist, professional postgraduate qualification might be a way of accommodating the wider, more generalist skills and knowledge needed if an information professional is going to work in or with multiple GLAM sectors. This achieved consensus, with a rating of 89% agreement. There was no disagreement. Those who answered Partly agree/disagree

commented that "[t]his structure already exists …" (Participant M2) and "[t]his is the current model" (Participant A5). In retrospect, it seems that the question and information to participants was not specific enough in explaining that the researcher sought participants' views about whether the undergraduate degree should be focussed on Information Management, or encompass Informatics, which would incorporate broad, cross-disciplinary skills, and provide students with some understanding of the similarities and differences in each of the GLAM sectors. However, as there was a high level of agreement, it could be concluded that most participants understood the implication.

Of the remaining seven questions in this section, two did not achieve consensus. The first of these – 'More emphasis on legislative/legal environments' reached 67% agreement; 15% disagreed and 19% were unsure. Participant M25 suggested that "this can be an awful web of confusion […]particularly at a time when people are learning the trade … more work later[,] post degree or on the job may be a better option." This could perhaps be an area for continued professional development, complemented by providing at least an introduction in formal education, thus creating an awareness of potential legal issues in the cultural heritage environment.

The second area to not reach consensus – although by only 1% - again relates to IT skills. The comments given reflect those mentioned previously, such as the question regarding having the skills themselves or knowing enough about IT to understand it strategically. For example, Participant M22 suggested that "the key here is developing flexibility, not necessarily IT skills as such. IPs should be equipped with enough knowledge to be able to make decisions, including technological and adaptive decisions without necessarily being the expert themselves." This stance is supported by Participant L13 who selected agree, but clarified the selection by adding "[it is] less how to do it more how to imagine it – & then take on consultants/contractors and/or staff to build. You don't have to make everything yourself." However, this is in direct contrast to comments made in the

Pilot Focus Group, where it was felt that knowing the sector – the 'why we do what we do' – was more important, and that it was often better for museum staff to learn the IT skills rather than contract an IT specialist who knows nothing about museums.

5.3.7 Part 7: Aspects of Museum, Library or Archival studies programmes that would be beneficial to one or more of the other programmes

This question sought participants' views about which particular aspects of current Museum, Library or Archival studies programmes might benefit courses in the other sectors. The Museum and Gallery studies achieved the least consensus overall, with only two of the four elements achieving consensus. One of those however – 'Object bibliography and significance studies' fell short by just 1%. Participant L14 offered comments as to why object bibliography and significance studies might be beneficial for libraries: "Libraries have traditionally not […] explained the significance of an illuminated manuscript. Perhaps there might be a stronger appreciation of the rare works in libraries, if this information was formally conveyed as part of a collection level description by libraries."

All of the elements from Archival Studies programmes (six items) and those that did not belong to a specific sector (ten items) all achieved consensus. Of the elements from Library Studies programmes, two did not achieve consensus: 'Information theory' (67% agreement; 7% disagreement; 26% unsure) and 'Knowledge management' (70% agreement; 7% disagreement and 22% unsure). The comments provided very little insight as to why the ratings were relatively low, only that "[m]any of the library focussed areas are already present in combined library and archive course [*sic*], as they go across professions. KM, information theory and the

storage of information" (Participant A1). Although some library and archive courses are combined, not all are. This is discussed further in Chapter 6, Section 6.4.2.1.

5.3.8 Part 8: Aspects of Museum, Library or Archival studies programmes that may not be relevant in the future

Part 8, which considered aspects of Museum, Library or Archival studies programmes that may not be relevant in the future, had the least amount of consensus, with only one question of the six exceeding the a priori measure. The one area that gained consensus was that many of the principles taught in GLAM will remain the same, but it will be the application of the skills that will change (81% agreement; 11% disagreement; 7% unsure).

The lowest rated was the statement: "The traditional reference function of librarians may not be relevant in the future", with just 41% agreement; 30% disagreement and 30% unsure. However, the comment from Participant M8 does well to give some context which may explain the low agreement rate: "The traditional approach to reference work is essentially to try to work out what people are looking for, and help them find it. You don't have to be with a person in the same room to do that." On the contrary, Participant L31 selected 'agree', and commented that "virtual reference is here now … tradition out the window", showing that perhaps the wording of the question could have been improved.

5.4 Conclusion

This chapter has reported the findings of the Round 1 Focus Groups, including the pilot focus group, and the Round 2 and 3 online Questionnaires. Where relevant, comparisons have been made of participants' comments. The next chapter will

discuss these findings and their implications, with reference to the literature presented in Chapter 2.

Chapter 6: Discussion

This chapter discusses the significance and relevance of the findings, focusing on points of consensus, as discussed in Chapter 5. Throughout this discussion, consensus is understood to represent at least 75% agreement among the panel of experts. The chapter is in six main sections. The first section addresses the likelihood of convergence between galleries, libraries, archives and museums in Australia. The next three sections provide a discussion that reflects the research questions. The overarching research question was:

What are the future education needs of information professionals in a potentially converged cultural heritage environment?

In order to answer this question, the following two sub-questions were posed:

- What are the current and potential roles and responsibilities of information professionals who deal with cultural heritage material in galleries, libraries, archives and museums?
- What are the knowledge, skills, and qualities they need to carry out their jobs now and into the future?

Firstly, the two sub-questions will be addressed. Section 6.2, which relates to the first sub-question, discusses the participants' responses to the roles and responsibilities of information professionals who work with cultural heritage materials in galleries, libraries, archives and museums. The discussion includes potential impact on the role of the information professional if some level of convergence were to occur.

Section 6.3, which relates to the second sub-question, addresses the knowledge, skills and qualities required of information professionals to carry out these roles, now and into the future. The participants' responses about skills and knowledge that may no longer be required in the future are also discussed here.

This consideration of the two sub-questions then facilitates a discussion in Section 6.4 about the future education needs of information professionals in a converged cultural heritage environment, should it occur. Section 6.5 addresses the need for ontological and epistemological dimensions to be considered when developing a framework for the education of cultural heritage information professionals.

Finally, the chapter concludes with a set of empirically based key recommendations. The chapter is supported throughout with reference to existing literature, and for ease of reference, tables are provided showing both the items that gained consensus in the Round 3 questionnaire and those that did not.

6.1 The GLAM Convergence in Australia: Likely or unlikely?

According to the panel of experts, convergence between galleries, libraries, archives and museums in Australia is unlikely. However, consensus was only narrowly eluded, falling short by 1%. The 20% increase in the Very likely and Likely responses, coupled with the decrease in the Neutral/unsure (16% to 15%) and the Very unlikely (6% to 0%) when compared to the Round 2 responses (see Appendix 15), may indicate that if a subsequent round was held, the a priori measure may be met.

Three participants (L13, G26 and M9) highlighted the digital environment as a point where galleries, libraries, archives and museums could converge more readily than

the physical environment. Participant M9 expressly noted that "visitor experiences onsite" will remain separate to and distinct from "digital offerings and collection data" that may be made available online. The distinction between digital and analogue is an important one, as it is this that could very well refine what is meant by the term 'GLAM Convergence' – that it perhaps refers to the online, digital environment only. Indeed Marty (2014; 2009) has used the term "digital convergence" when discussing information professionals in galleries, libraries, archives and museums.

The idea of digital convergence emerged with Rayward and Miller's (1998) examination of electronic information and the effect it would have on the information professions within galleries, libraries, archives and museums. While not specifically using the word "convergence", Rayward and Miller's (1998) work was foundational for "an entire research agenda" (Marty, 2014, p. 613) on the subject. Rayward and Miller (1998) argued – as the current researcher does – that the concept of managing information according to form or format (i.e. published text vs. legal record vs. object) is a "relatively recent phenomenon" (p. 213; also Bates, 2015). Further, they contend that it "does not reflect the needs of the individual scholar or even the member of the educated public" (Rayward and Miller, 1998, p. 213). Rayward and Miller (1998) also cite Buckland's (1991) concept of "information-as-thing", and that "physical distinctions between types of records and thus, presumably, the need for institutional distinctions in the management of […] these records" is removed in a digital environment.

The physical/digital distinction could also be the point at which the specialist/generalist dichotomy is solved. It has been noted previously (Chapter 5, Section 5.2.5) that it is essential that the specialisations that make up GLAM are not lost in favour of a broader, more generic information professional that may result if convergence were to occur. Perhaps the meta-professional role – first introduced as the Cultural Heritage Information Professional in Chapter 2, Section 2.9 and

discussed further in this chapter, Section 6.2.2.1 – is one that may be focussed on providing "digital offerings and collection data" (Participant M9) in the online environment only.

It was not possible to determine from participants' comments whether convergence in and of itself is a good idea or not. What did emerge from these comments, however, was that financial and economic pressures would be a prime impetus for potential convergence. Participant A19 stated: "The cultural heritage sector, as with many others, continues to be dominated by cost-cutting activities, reductions in funding and measures of organisational worth based on capitalist/financial criteria." Much of the cost-cutting activities in Australia – as perhaps with many other countries – is associated with the Global Financial Crisis (GFC). While the effects of the GFC on Australia have been described as "considerably less than in many other countries" (Reserve Bank of Australia, 2013, para. 6), Australia was not immune, and both state- and federal- level governments have been seeking cost efficiencies wherever possible. Further, the current political situation in Australia may also have an indirect impact on convergence. As mentioned in Chapter 2, Section 2.4.2, the first cultural policy since 1994 – 'Creative Australia' – was released in March 2013 (Commonwealth of Australia, 2013). Since the change of federal government in September 2013, there has been no official word as to the status of this policy, and there has been no policy released in its place. This could be an early indication that funding levels are not likely to increase, and may in fact be reduced.

Thus we return to convergence in the digital environment. Advances in technology and the affordances it offers in terms of resource sharing is perhaps a way to achieve these economic rationalisations. If financial and economic efficiencies are indeed the prime drivers of convergence in Australia, then as a profession, it is important that we respond proactively rather than having changes imposed on us by people and/or agencies who may have far less understanding of the (largely)

non-financial benefits of the cultural heritage sector. Two emerging roles and responsibilities of information professionals identified from the Round 2 data and initially discussed in Chapter 5, Section 5.2.4 are also relevant here. Firstly, the need to advocate by "demonstrating the ongoing relevance of cultural institutions" (Participant G26) and secondly, our role in enacting social justice principles by better articulating the profession's role in "social capacity building" (Participant L31). If the information profession is to counteract the "measures of organisational worth based on capitalist/financial criteria" (Participant A19) these two areas are critical.

In summary, although the expert panel did not reach consensus regarding the likelihood of convergence between galleries, libraries, archives and museums, their agreement on many other points about roles, responsibilities, skills and knowledge suggests the need for a holistic approach to education for information professionals who are able to work flexibly across (or move between) the four GLAM sectors.

6.2 Roles and responsibilities of GLAM Information Professionals

This section discusses what participants saw as the emerging roles and responsibilities of information professionals who work with cultural heritage materials in galleries, libraries, archives and museums. As addressed in the previous chapter, all ten categories that were presented in the Round 3 questionnaire gained consensus. The section continues by looking at the impact on roles if convergence were to occur, and includes a discussion of the possible emergence of a meta-professional.

6.2.1 Emerging roles and responsibilities of information professionals

With regard to the emerging roles and responsibilities of information professionals, all ten broad categories achieved consensus. A summary of the results is provided in Table 6.1 below. The characteristics of these broad categories are outlined in Chapter 5, Section 5.2.4. The implications of the ten categories for the education of GLAM professionals are discussed in turn after the table.

Item name	Agree % (*n*)	Disagree % (*n*)	Partly agree/ disagree % (*n*)
Understand the broad purpose of their role	100 (27)	--	--
Advocate	100 (27)	--	--
Build relationships	100 (27)	--	--
Develop a user focus	96 (26)	4 (1)	--
Innovate/Find better ways …	96 (26)	--	4 (1)
Utilise technology in a highly skilled way	93 (25)	--	7 (2)
Provide wider access …	93 (25)	--	7 (2)
Social justice principles and learning …	85 (23)	--	15 (4)
Apply digital curation principles	81(22)	--	19(5)
Add value (to collections, client experience)	78 (21)	--	22 (6)

Table 6.1: Emerging roles and responsibilities (*n*=27)

Understand the broad purpose of their role

The first item, that information professionals need to understand the broad purpose of their role, was presented in the Round 3 questionnaire with participant comments from Round 2 indicating what this category might include (refer Appendix 9). Three of the four examples provided by experts acknowledged the need for expertise in managing information in both physical and digital forms, with two of the examples noting that digital formats will be important for future generations. Additionally, the reason why digital expertise is important was suggested in the first example – it is required in order to maintain a link to the next generation – a point also made by Lazorchak (2011) in relation to digital curation/stewardship in Chapter 2, Section 2.11. These aspects reflect the focus

group finding that information professionals understand 'why we do what we do.' As this point achieved 100% agreement, it suggests that having an understanding of the bigger picture and the reasons *why* certain tasks are done is as important as knowing how to actually *do* the tasks.

Advocate

The need to 'Advocate' has already been touched on in this chapter in Section 6.1 above. As a profession that does not generate large profits to shareholders, it becomes increasingly important that we advocate, not simply to ensure funding remains at an appropriate level, but in order to communicate the intangible benefits the cultural heritage sector has on society as a whole. Participant L31 notes that advocacy "needs to convert into influence [of] management internally and externally and politically," highlighting the importance of this role/responsibility at multiple levels.

Build relationships

In response to the need to 'Build relationships', Participant A30 highlighted that relationships need to be managed in what can be "contestable environment[s]", as previously reported in Section 5.2.4. The idea was put forward that this could be due in part to professional tension caused by issues with professional identity and professional boundaries, or what Abbott (1998) refers to as "professional jurisdiction" (p. 224). A profession claims jurisdiction over an area when "its knowledge system is effective in the task domain" (Van House and Sutton, 1996, p. 58). Because these tasks change and evolve, the jurisdictional boundaries do not remain static (Abbott, 1988), but move flexibly to accommodate the changes. For example, Abbott (1988) notes how librarians' jurisdiction in particular has faced "an invasion" (p. 224) from what he refers to the "treatment substitution" (p. 224), an analogy whereby "a profession accepts another's' diagnoses […], while claiming to carry them out faster or more effectively than the other" (Abbott, 1988, p. 224). By "another's diagnoses" in this scenario he is referring to the computer professions.

The argument from the computer professions is that because computers "can carry out information retrieval much faster than other technologies" (Abbott, 1988, p. 224), computer professionals should dominate the information profession (Abbott, 1988). The contest for professional jurisdiction between librarians and those who today might be called "computer scientists" remains largely unresolved (Abbott, 1988, p. 239), an issue that continues to this day, as evidenced by participants' responses regarding the need for 'Advanced IT skills' (discussed further in Section 6.2.2 below). The findings from this research also demonstrate that the situation is now more complex, due to the inclusion of archivists, and museum/gallery information professionals, in addition to the librarians that were the focus of Abbott's (1988) work.

Similarly, librarians have sought to take control over other information professionals in the cultural heritage sector. A museum information professional attending the pre-conference of the Rare Books and Manuscripts Section (RBMS) of the Association of College and Research Libraries (ACRL) in 2006 raised the concern that the librarians present assumed "that library techniques were the way to go if other […] organizations were interested in any meaningful collaboration. […] [T]hat libraries are correct, and museums might not have as much to offer, definitely seemed to be a pervasive one " (Dupont, 2007, p. 16). Building, nurturing and maintaining productive working relationships is important if information professionals are to avoid the "contestable environment" referred to above. As Participant M28 suggested, not only is it important to "recognize both the differences and the similarities across the GLAM sector, [but to] be realistic about what works best in a given environment." This will require a level of respect from each professional domain towards their professional counterparts.

<u>Develop a user focus</u>

The question of developing a user focus had one participant select 'Disagree.' The reason given was that "[t]he GLAM sector already has a user focus. The question is,

how will this be developed and encouraged via digital technologies" (Participant A1). This is indeed a valid question, one that may be answered with further investigation and research, as it was not within the scope of this thesis to necessarily address *how* such items could be addressed. As no study of this kind has taken place in the context of the Australian cultural heritage environment, this thesis is in many ways a benchmarking exercise to identify *what* those emerging roles, responsibilities, skills and knowledge actually are. In contrast to Participant A1's assertion that "[t]he GLAM sector already has a user focus," Participant L31 suggested that a user focus was "something the GLAM sector is yet to truly understand and embrace," adding that "I emphatically believe this is going to be mission critical where there is competition in the world." This difference in perspective could perhaps be due to each participants' professional domain: Participant A1 is a qualified archivist who has worked in archives and libraries (as separate institutions); Participant L31 is a qualified librarian who currently works in a converged organisation incorporating library, archives and museum collections. It may be that as a converged environment, a cohesive user focus is more difficult to achieve, which may go some way to explaining the comment that "the GLAM sector is yet to truly understand and embrace" (Participant L31).

<u>Innovate/find better ways of doing things</u>

Although agreeing that information professionals need to be able to "Innovate/find better ways of doing things," Participant A5 provided the following caveat:

> But this presumes a clear and well understood grounding in core concepts which are absolutely prerequisite before you can ditch the old ways and employ new ways. You need to know the core 'whys' of what we do so you can change the 'what' and the 'how'.

This comment supports the findings from the focus groups, discussed in Chapter 5, Section 5.1.2.1, that an understanding of 'why we do what we do' is vital, and that archivists especially equated this to a strong theoretical understanding. The above comment could also be seen as adding another dimension to this point, in that not

only is it necessary to understand the 'why we do what we do' from a contextual perspective, but that this understanding is needed in order to make informed decisions about potential future directions. This also indicates a need for an open, critical approach to determine what is and is not relevant to professional education.

While in response to the question that 'Some traditional theories may not have as much of a home as they have in the past' from Part 8: 'Aspects of Museum, Library or Archive studies that may no longer be relevant in the future', Participant M17 noted that "History of theoretical changes should never be diminished in higher education." This supports Participant A5's comment above that the "old ways" still require an understanding, even if they end up falling into obsolescence.

Utilise technology in a highly skilled way

For the category of 'Utilise technology in a highly skilled way,' two participants selected Partly agree/disagree; however, when taken in conjunction with their comments, both had what could be considered relatively minor reasons that led to their selections. Participant L21 disagreed with the last dot point example of what might be included in the category, that being 'Understand enough about coding to know what is possible with code.' Participant M15 suggested a re-wording of one of the dot points, from 'Make more of the data generated by collection description and management' that appeared on the questionnaire, to "make data accessible to be used in different ways by endusers [*sic*]." Nevertheless, the support for this category is significant, and may suggest the beginning of a shift in jurisdictional boundaries as conceived by Abbott (1988) and discussed above.

Provide wider access to data and collections

The same level of agreement was reached for this category as for the previous one, with two participants again selecting Partly agree/disagree. One of these participants advised via a comment that s/he agreed with each dot point, but that in addition "we may need to move beyond the idea of a collection in an

organisation to how a number of collections across organisations and even nations can be mined/presented to help create new data, new understandings" (Participant M8). This idea echoes the researcher's own motivation in undertaking this research, as pointed out in Chapter 1, Section 1.2. A potential way for this to be achieved is discussed in Section 6.2.2.1, with the idea of a meta-professional – someone who can work across the boundaries of galleries, libraries, archives and museums to make collections available. In light of the discussion in Section 6.1 above, it could be that the meta-professional role is only applicable to the digital environment.

Apply digital curation principles

This item received a high level of agreement at 81%, with the remaining 19% of participants selecting Partially agree/disagree. The comments provided suggested that this was predominantly because not all information professionals would need all of these skills. For example, Participant A1 noted that "Archivists rarely lend, or are concerned with digital works of art […], a reference to the first two examples provided in the question itself (refer Appendix 9), which highlights the difficulty of phrasing questions in such a way as to be intelligible and meaningful for each of the four GLAM sectors. S/he continues: "As always, the broad focus may be generic, but the focus of the professional will change." In one sense, this may support the claim of Tibbo and Duff (2008) and Tibbo and Lee (2010) discussed in Chapter 2, Section 2.11, that while there may differences in the application and practice of digital curation tasks between galleries, libraries archives and museums, the principles remain consistent for each. However, it could also be interpreted to refer to the individual professional within one sector, and that not every archivist needs digital curation skills. If the latter, the current researcher would argue against that stance, given the importance placed on the effective (continuing) management of the archival document from the point of creation within the recordkeeping continuum. Digital curation skills may be required to a greater or lesser extent depending on the individual role, but within archives it could be considered that

ensuring continued access to digital information for as long as necessary is their raison d'être.

Add value

The question of 'Add value' was presented to participants in the questionnaire as a potential role/responsibility of the information professional in the future. Examples of 'Adding value' include adding layers of information to collection items via tags, descriptions and interpretation, or re-using/re-purposing information resources through 'mash-ups'. However, three participants (M2, A1 and L14) noted that there was – or should be – a role for people other than information professionals. Participant M2 provides a good explanation, commenting that "GLAMs hold our collective memory; adding value to that is everyone's business, […] we don't own it" [the collection]. Participant L14 supported this by suggesting that "[c]ommunity contribution can also add value, e.g. specialist knowledge contributed by collectors of certain works or artefacts." This was also a point of Participant M2 – that there may very well be experts in certain collection areas who are not employed by galleries, libraries, archives or museums, but who nevertheless have specialist knowledge that has been built up through years of personal collecting (antique collectors and/or dealers, for example). These views link closely with the participatory systems and processes as suggested by Participant A19 and discussed in Chapter 5, Section 5.2.4.

Social justice principles and learning for transformative outcomes

A key finding to emerge from the future roles and responsibilities results was support for 'Social justice principles and learning for transformative outcomes.' Unlike any of the other categories, except perhaps 'Advocate', this category could be considered less hands-on and task oriented and more overarching and directional – conceivably representing a more philosophical outlook of what an information professional's role should be. It could be argued that information

professionals need skills like Advocacy in order to bring about social justice and transformations.

Participant L31 articulated this particularly well – that information professionals need to "clearly articulate the social and economic outcomes of the professions [*sic*] existence and [its role in] social capacity building." The use of the term "social capacity" as opposed to "social capital" is itself an interesting choice. Smith and Kulynych (2002) argue that "*social capacity* [… has] as much heuristic value as the term *social capital* without having the broad ideological implications …" (p. 152, italics in original) of associations with the word 'capitalist' and 'capitalism.' As an economic system, capitalism encourages "individualism, competition, and the pursuit of wealth [which is] antithetical to the civic virtues that discussions of social capital frequently seek to promote" (Smith and Kulynych, 2002, p. 152). Despite being rooted in the ability to deal with the impacts of natural hazards, the CapHaz-Net project provides a definition of social capacity building that fits equally well in the current scenario:

> Social capacity building refers to the purposeful and systematic development of the resources available in a local community or an organisation […].
>
> We understand social capacity building as an umbrella term which comprises all efforts to build individual, organisational, technical as well as institutional capacities. (CapHaz-Net Consortium, 2014)

In further support of social capacity building, the same participant (L31) proposed that "the collection isn't the outcome anymore … it's a tool of social outcome." In other words, the collection itself should be utilized "to publicly leverage literacies [reading, writing, digital, financial, social, etc.] into the service experience of clients" (Participant L31, square brackets in original), advocating for clients to be taken on "learning journeys" rather than simply being "trained" (Participant L31).

These comments demonstrate the relationship between galleries, libraries, archives and museums and their ability to contribute to social capacity building. More broadly, the connection to the knowledge economy that we experience today and the epistemic infrastructure that supports it, as discussed in Section 2.4.1, is cemented. Hedstrom and King (2004) call for the need to strengthen the epistemic infrastructure of the knowledge economy "through a new view of collecting and collections" (p. 1). A holistic approach to information professional education across galleries, libraries archives and museums may be the catalyst for that new view, and potentially for a future converged GLAM environment.

6.2.2 Impact on roles if some level of convergence were to occur

In the Round 2 questionnaire, participants were asked their thoughts on what impact there may be on information professionals' roles if some level of convergence were to occur. Six specific items were identified, and participants were then asked whether they agreed, disagreed or partly agreed/disagreed in the Round 3 questionnaire. The summary of those items that achieved and did not achieve consensus is given below in Table 6.4.

Additionally, the comments from Round 2 indicated that many participants were concerned about the specialist/generalist dichotomy if convergence were to occur: briefly, that yes, perhaps information professionals do need more generalist skills, but not at the expense of losing specialist skills. This led to the concept of the Cultural Heritage Information Professional (as discussed in Chapter 2, Section 2.9) – or a 'meta-professional' - being introduced to the participants in Round 3. This is discussed in greater detail in the Section 6.2.2.1 below.

Item name	Agree % (*n*)	Disagree % (*n*)	Partly agree/ disagree % (*n*)
Greater flexibility, innovation and creative problem solving	100 (27)	--	--
Need to Collaborate	92.6 (25)	--	7.4 (2)
Understand different ethical governance frameworks	92.6 (25)	--	7.4 (2)
Increase in cultural heritage experts outside of institutions	85 (23)	--	15 (4)
Potential role for a meta-professional	78 (21)	7.4 (2)	15 (4)
Did not achieve consensus:			
Advanced IT skills	74.1 (20)	4 (1)	22 (6)
Modes of cataloguing will change	74.1 (20)	7.4 (2)	19 (5)

Table 6.2: Impact on IP roles if some level of convergence were to occur (*n*=27)

Greater flexibility, innovation and creative problem solving

There were no participant comments to offer further insight into the need for information professionals to have greater flexibility, innovation and creative problem solving skills if convergence were to occur. However, it is worth noting the connection with 'innovation' in this item and the requirement that information professionals will need to 'Innovate / find better ways of doing things' discussed in Section 6.2.1 above, which also achieved a very high agreement level (96%). These two, highly rated items may suggest a need for pedagogy that can support the development of these qualities in the information professionals of the future.

Need to Collaborate

The first two examples given as being representative of this item ('… ensure tools and systems that interface with each other is possible' and 'data and collections will need to be shared, possibly via federated access, of which linked open data is a part') are both quite technical in nature. The high agreement rate (92.6%) and no participant selecting Disagree could be another indication that the jurisdictional boundaries between computer science professionals and information professionals,

as discussed earlier in Section 6.2.1, are currently in a state of fluctuation and instability.

Understand different ethical governance frameworks

A high level of agreement was achieved for this item at 92.6%, with the remaining 7.4% selecting 'Partly agree/disagree.' One participant was perhaps sceptical of perceived differences in governance frameworks, suggesting that "… some of the differences are fabricated and these need to be considered carefully and cahnged [*sic*] where they are leading to inefficiencies or blockages for user experiences or GLAM sector development" (Participant M25). This is reflective of the comment by Participant M28 in Section 6.2.1 above regarding the need to 'Build relationships' – that it is important to "be realistic about what works best in a given environment."

Increase in cultural heritage experts outside of institutions helping communities navigate gallery, library, archive and museum collections

In agreeing with this concept, Participant L14 identified two areas "where the alignment [between institutions] needs to be stronger." The first idea involved face to face visitors, with specific reference to the education programmes for primary and secondary students. Currently, these are "insular and run within one [institution]" (Participant L14), as opposed to being run across galleries, libraries, archives and museums. This would provide an excellent collaboration opportunity, although not necessarily involving experts external to the institutions, as these education programmes often require people with education qualifications and/or experience.

The second idea concerned the online environment. Participant L14 suggested that "by deprecating the institutional profile and making the cultural content the primary focus" would assist in engaging the online visitor (Participant L14). This resonates quite strongly with the idea presented in Chapter 1, Section 1.2 regarding Ned Kelly or Phar Lap – that "all the books, photos, artefacts etc are linked together

online" (Lundy, 2011, p. 88). These two ideas of Participant L14 could also be seen as supporting Hedstrom and King's (2004) call for the need to strengthen the epistemic infrastructure of the knowledge economy "through a new view of collecting and collections" (p. 1), which as discussed in Section 6.2.1 in relation to 'Social justice principles…' may be possible with a converged GLAM environment.

Advanced IT skills

Given the levels of support for IT skills in the 'Utilise technology in a highly skilled way' in Section 6.2.1 and the technical elements of the 'Need to Collaborate,' above, it is surprising that this item did not reach the 75% consensus benchmark. This could in part be because of how participants understood the phrase 'Advanced IT skills' and what might be relevant to particular areas or roles, such as web design, programming and database architecture to name a few. While it could be argued that GLAM information professionals work in partnership with IT professionals and therefore do not need advanced IT skills, this is somewhat of a contrast to the focus group finding that it is better for a museum professional to learn IT skills rather than an IT professional try to learn and understand the museum environment.

Comments largely highlighted that while more advanced IT skills are important, this should not become the focus of an information professional's skill-set. For example, Participant M25, while agreeing with the question, did not want to "underestimate the importance of the multitude of other skills heritage professionals have. IT is only one part." In what could be seen as a variant of the specialist/generalist dichotomy, Participant A5 warned against "homogenisation and lowest common denominator," insisting that "different professional data models underlying documentation of different resources in various sectors [need to be] understood and respected" (Participant A5). This stance could also be viewed in terms of Abbott's (1988) jurisdictions – that this participant is perhaps staking a claim for the continued current practice of – in this case – archivists.

Modes of cataloguing will change

Despite not reaching consensus, there was a reasonably high level of agreement that modes of cataloguing would need to change. However, those who disagreed or partly agreed/disagreed (17.4% and 19% respectively) suggested that it won't be the cataloguing processes that change, but that system requirements will need to be able to accommodate the different cataloguing practices (incorporating differences in underlying philosophies) across galleries, libraries, archives and museums. As Participant M8 noted - "[t]he systems we use should allow for the differences among collection institutions and to enable, even encourage, difference." It is possible for systems to accommodate these differences through the use of 'crosswalks,' a table that maps the elements of one schema (such as Dublin Core) to the equivalent elements of another schema (such as Darwin Core). Whether information professionals or IT professionals will perform these more technical aspects was not mentioned, but this could be an area where information professionals will need 'Advanced IT skills' in order to know what can be achieved.

6.2.2.1 Potential role for a meta-professional in GLAM

Consensus was reached about a potential meta-professional role that spans all four GLAM domains. Of the four participants who selected Partly agree/disagree in response to this question, three of them provided comments that may be considered to lean towards the Agree end of the scale. Participant M9 qualified his/her selection of 'Partly agree/disagree' on the grounds that s/he "STRONGLY disagree[d] that it will be consultants" performing this role (capitals in original). Participant M17 saw a role for a meta-professional "in terms of brokerage between different parties (organisational and individual)." The fourth participant to select Partly agree/disagree (Participant A12), did not provide any reasons as to why s/he disagreed.

Several authors have noted that for (digital) convergence to be successful, the need for information professionals who can transcend professional boundaries is paramount (Marty, 2014; Ray, 2009; Trant, 2009; Rayward and Miller, 1998). This has led to the suggestion of an entirely new type of information professional – a meta-professional - who is able to work across the cultural heritage sector (Given and McTavish, 2010; Ray, 2009; Martin, 2007; Gilliland-Swetland, 2000). Martin (2007) proposes that "librarians, archivists, and museum professionals are not separate and distinct professions but, rather, different facets of a single unified profession" (p. 88). Gilliland-Swetland (2000) has described the coming together of library, archive and museum information professionals as a 'meta-community'. Bates (2015) takes this a step further, advocating that the broader information professions "cut across the spectrum of traditional research disciplines" (para. 5) from Arts at one end through to the Natural Sciences and Mathematics at the other to form a meta-discipline. The application of Informatics to different disciplines as discussed in Chapter 4, Section 4.3.3.2 can be seen as an instantiation of the meta-discipline.

What all of these ideas have in common though, is the belief that 'the whole is greater than the sum of its parts' – that together, "we would find our ability to serve the needs of our communities strengthened" (Martin, 2007, p. 88). Bates (2015) argues that "at the heart of all [information professions] are the key services and functions […] using information technologies in order to make […] information available for humanity to use" (para. 53).

This gives credence to the concept of cultural heritage information professionals as a new category of information professional, not necessarily as one who only manages cultural heritage materials, but one who is cognisant of the similarities and differences of cultural heritage institutions, and who also has a deep understanding of why they developed in the way that they did. They will understand that cultural heritage institutions are "more than a collection of records and objects, but [that

they contain] the sum total of what it means to be human" (Marty, 2014, p. 625). The cultural heritage information professional has the potential to meet the challenges of the changing information, cultural, social, political and economic environment, especially with regard to need for social capacity building.

Participant M5 commented that "meta-professionals already exist and are working in GLAM organisations." S/he also noted that "[m]ost have acquired these skills through experience and apprenticeship, not through any formal training." It is not possible to determine if this was simply an advisory comment, or if there is an insinuation that formal education in this area is not needed. If the latter, this researcher questions that view. If there is an increasing role for meta-professionals, it might be wise to have some consistency around the skills and knowledge that these professionals obtain. It would be possible to achieve that through a structured, inclusive GLAM education programme. Participant L14 highlighted that there needs to be "some openness to different approaches to keeping and providing access to GLAM collections." This echoes the quote from Given and McTavish (2010) that was read to Focus Group participants:

> "[a]s long as librarians, archivists, and museologists […] continue to be educated in isolation from one another, […] real boundaries to collection, management, and access of materials will remain" (Given and McTavish, 2010, p. 23).

So the question remains: how does one develop "openness to different approaches" if there is no tailored programme (education-based or vocation-based) that incorporates these different approaches?

6.3 Skills, knowledge and qualities

The expert panel identified a wide range of current and future requirements for skills, knowledge and qualities in the GLAM sectors through a variety of questions. After asking participants what they saw as the emerging roles and responsibilities of information professionals, they were asked what skills and knowledge would be needed in these emerging roles. Although many of the skills and knowledge identified may not be considered new skills, in some instances there did appear to be a change in focus, for example, from analogue to digital.

An issue raised by some participants in both the Round 2 and 3 questionnaires, was that when asked to make choices about skills and knowledge was that "definitions are quite abstracted from context" (Participant M25), and that there was "a lack of position contingency in the survey" (Participant A27). The researcher does not disagree with these statements, but as the first study of its kind with Australian cultural heritage representatives, the scope was intended to be quite general in the information professional roles included. Therefore, providing very context-specific definitions and position-specific information was not in keeping with the research aims. The majority of participants seemed to accept this aspect and answered the questions accordingly. It is anticipated that the data from this research may be used to inform future research that targets more specific information professional roles at different levels.

Some archivist participants commented that the way questions in the survey were worded reflected custodial thinking (refer Section 2.8.3) – that is, that there was an assumption that archivists in the cultural heritage sector are concerned only with information that is no longer in active use, which has been transferred to the custody of a particular institution. However, other responses demonstrated that

the questions were interpreted from a much broader perspective, as evidenced by Participant A19's response to 'Develop a user focus' in Chapter 5, Section 5.2.4.

The following sections discuss the skills and knowledge identified by the panel of experts as being required of information professionals who work with cultural heritage materials in galleries, libraries, archives and museums in more detail.

6.3.1 New skills, knowledge and qualities

After being asked about the emerging roles and responsibilities of information professionals, participants were asked about any new skills and knowledge that these roles may require. As mentioned in Chapter 4, Section 4.4.1.2, the responses that participants gave in many cases were not new skills per se. Instead, skills took on a different focus in the digital environment (Legal issues, for example), or when possible convergence was considered (for example, Ethics). Of the nine items considered in Round 3, eight reached consensus, as shown in table 6.3 below.

Item name	Agree % (*n*)	Disagree % (*n*)	Partly agree/ disagree % (*n*)
Ways of thinking about professional practice	96 (26)	4 (1)	--
Business skills	92.6 (25)	4 (1)	4 (1)
Knowledge of Informatics	92.6 (25)	4 (1)	4 (1)
Generic capabilities	88.9 (24)	4 (1)	7.4 (2)
Knowledge of Legal Issues	85 (23)	4 (1)	11 (3)
Working with collections and/or content	85 (23)	4 (1)	11 (3)
Ethics	81.5 (22)	7.4 (2)	11 (3)
Digital Humanities skills	81.5 (22)	4 (1)	15 (4)
Did not achieve consensus:			
Advanced IT skills	67 (18)	4 (1)	30 (8)

Table 6.3: New Skills and knowledge (*n*=27)

Ways of thinking about professional practice

The conceptualisation of this category evolved after some reflection of participant responses from the Round 2 questionnaire. What at first seemed to be a disparate collection of qualities and attitudes came together as 'Ways of thinking about professional practice', influenced by the work of Dall'Alba (2009a; 2009b). Dall'Alba argues that "[w]hen a professional education programme focuses on the acquisition and application of knowledge and skills, it falls short of facilitating their [the students'] integration into professional ways of being" (Dall'Alba, 2009b, p. 34). This focus on the epistemological dimension – the acquisition of skills and knowledge – "occurs at the expense of ontological considerations relating to who the students are becoming" (Dall'Alba, 2009b, p. 35). Whilst she acknowledges that the acquisition of skills and knowledge are a necessary aspect of professional education, "they are insufficient for skilful practice and for transformation of the self that is integral to achieving such practice" (Dall'Alba, 2009b, p. 35). Two findings in particular could be seen as reflecting the ontological considerations – firstly, the need to 'Understand the broad purpose of the information professional's role' identified in the "Emerging roles and responsibilities" (Section 6.2.1 above); and secondly, the need to understand 'why we do what we do' that was so prevalent in the focus groups. Although both of these findings have been discussed from a predominantly epistemological perspective with participants focusing on the skills and knowledge needed in these areas, it could be possible to re-focus to an ontological perspective. This would form an overarching framework for the education of information professionals in the future.

Business skills

Some of the skills that made up the category of 'Business skills' may be dependent on the level and/or type of position held by an information professional. For example, negotiation skills and the ability to argue for funding may be skills more often employed by more senior level management roles. Participant M15 added that there may be "people in very specialised roles which don't require skills to

form a business case, negotiate etc." but also noted that "they're nice skills to have" (Participant M15). In contrast to some skills potentially being role-dependent, Participant A5 advised that "enterprise architecture, data models, workflow designs etc. would be a major part of the [archives] operational role, not just as generic business skills." Any education programme would therefore need to accommodate both a generic understanding and a specialised application of these skills. This might be achieved by having the more generic business skills offered as an elective, while the more specialist skills are core for those undertaking specialist archival studies. If an Informatics/Information Management undergraduate degree is developed, perhaps the generic skills could be incorporated into that programme, with the specialised skills undertaken in an Archival masters degree.

Knowledge of Informatics

Knowledge of Informatics gained a high level of consensus (92.6%). The following definition of Informatics by Fourman (2003) was provided in the questionnaire:

> Informatics is the science of information. It studies the representation, processing, and communication of information in natural and artificial systems. Since computers, individuals and organisations all process information, informatics has computational, cognitive and social aspects.

It was noteworthy that along with the high level of agreement for this category, participants did not feel the need to make any qualifying comments. The one exception was a Registrar participant who advised that "this [Informatics] is not really my area of expertise" (Participant G20). Given that registrars are responsible for information representation and processing when cataloguing artworks, this comment is surprising. This could be explained in part by a comment by Participant G11 in response to Question 4, Part 4 of the Round 2 questionnaire: "There is still no tertiary course for Registration and Collection Management professionals […]. There is a shortage of trained collection maangement [*sic*] professionals who have the requisite knowledge of legal, ethical and administrative issues associated with Collection Management." So it could be that while Participant G20 performs the

information representation and processing tasks as per the Fourman (2003) definition provided, s/he does not associate this terminology with the action.

Knowledge of Legal Issues

The three participants who selected Partly agree/disagree (Participant G16, L31 and G17) all suggested that knowledge of legal issues would be dependent on the role and/or environment. However, Participant G16 did concede that "[s]ome will and should be responsible for monitoring [changes to legal requirements that may affect galleries, libraries archives and museums]." Although the question was not situated specifically in the digital environment, it could be argued that knowledge of legal issues takes on a renewed focus in the digital environment. Much of this legal knowledge, such as copyright and privacy for example, is already a requirement for many information professionals, particularly archivists and librarians. However, coupled with the ease with which files can be copied and widely distributed in the digital environment, issues around legal requirements relevant to GLAM are likely to continue and therefore be an ongoing concern of the information professional.

Generic capabilities

Ten generic skills were given as examples of generic capabilities derived from participants' responses. These included flexibility, adaptability, being well rounded, listening skills, presentation skills, teamwork, communication, leadership, ability to support and foster learning and critical thinking. As with other categories in the 'New skills, knowledge and qualities' question, many – if not all – of these examples could not be considered to be new. However, they were identified as skills that will be required in relation to the emerging roles and responsibilities, and the high level of agreement (88.9%) suggests a continuing need for them.

Working with collections and/or content

Working with collections seems an unlikely new skill for information professionals working in galleries, libraries, archives or museums. The discerning feature of many

of the comments that led to the creation of this category was a reference to the digital environment: working with born-digital documents in varying formats such as digital artwork, for example. Participant L31 again referenced the importance of "understand[ing] and articulat[ing] the social and economic outcomes of engaging with content … collections not engaged with are just collections." Here again, connections can be made with previous elements such as 'Understanding the broad purpose of the information professional's role'; the need to 'Advocate' and 'Social justice principles for learning and transformative outcomes.'

Ethics

In what could be seen as further support for 'Understanding the broad purpose of the information professional's role,' Participant M15 suggested that "an understanding of why an ethical framework should apply to the workplace and the values of the organisation, something about context" would be a welcome addition. Including the contextual element is once again reflective of the 'why we do what we do' finding from the focus groups.

Digital Humanities skills

Digital humanities skills gained the lowest level of consensus, which may suggest a level of uncertainty as to exactly how digital humanities and Information Management as it relates to cultural heritage materials/institutions as per this thesis, are related. It may also be due to less familiarity with what 'digital humanities' actually is.

While digital humanities may be a recognised discipline, there is no single definition of what it constitutes. Bialkowski, Niles and Galey (2011) provide a good (although somewhat generalised) summary of the two predominant streams that many digital humanities definitions fall into. Firstly, there are the definitions that see digital humanities as "the application of digital tools to humanistic topics (Bialkowski, Niles and Galey, 2011, p. 19). The second stream of definitions are those that "privilege critical reflection on how digital modes of writing, reading, and scholarship impact

our understanding of humanistic inquiry" (Bialkowski, Niles and Galey, 2011, p. 19). As the question of 'What are digital humanities' continues to be debated by scholars (Terras, Nyhan and Vanhoutte, 2013), McCarty (2003) argues that this is not a question "to be answered, but continually explored and refined" (p. 1233).

Regardless of the specifics of a definition (or lack thereof), the presence of the word 'digital' in 'digital humanities' suggests that a certain level of digital literacy is required in order to study and work in this field. The inclusion of digital literacy skills within the digital humanities domain is interesting particularly for library practitioners and information science educators. As an extension of information literacy skills relevant in the digital environment, these are core skills not only for librarians – and indeed all GLAM information professionals - to have, but to be able to teach: information science educators to information science students; and practicing librarians to their clients, whether in public, academic, special or school libraries. Further, one participant noted that digital humanities skills have "in the main been an unacknowledged skill set that most GLAM practitioners have already, having conducted undergraduate or post-graduate degrees in the arts, humanities and social sciences" (Participant L14). It is possible that we could be witnessing the beginnings of a new jurisdictional contest between aspects of digital humanities and Library and Information Science/Information Management.

<u>Advanced IT skills</u>

All items gained consensus in Round 3 except 'Advanced IT skills.' The researcher found this unexpected, considering the number of participants who noted different – and sometimes quite specific – aspects of IT that should be a part of the information professionals' skill-set. This is evidenced by the examples provided in the question itself, such as 'Knowledge of semantic web protocols' and 'Understanding of coding,' although it is acknowledged that "knowledge of" and "understanding" does not necessarily mean "the ability to apply" such skills. As

with the previous discussion of 'Advanced IT skills' in Section 6.2.2, participants' perception of this phrase may have had an impact on their response.

Some of the comments did provide insight as to why participants selected the Partly agree/disagree option - a relatively high result at 30%. Two participants (Participant L31 and Participant M22) remarked that it would depend on the role of the information professional and the environment in which they worked as to whether advanced IT skills were needed. The wide and varied GLAM environments that information professionals may work in – such as size of the organisation and size of the IT department - make it difficult to be specific about the skills and knowledge needed for individual roles.

6.3.2 Skills and knowledge no longer required

Only one item gained consensus about the skills and knowledge that will no longer be required, namely 81.5% agreed that many if not all skills would continue to be needed across galleries, libraries, archives and museums. In other words, the experts considered that all the items shown in Table 6.4 would still be necessary in the future.

Item name	Agree % (*n*)	Disagree % (*n*)	Partly agree/ disagree % (*n*)
Many, if not all, will still be required	81.5 (22)	4 (1)	15 (4)
Did not achieve consensus:			
Specific technical knowledge	30 (8)	26 (7)	44 (12)
Skills potentially performed by machines (e.g. describing, access clearing etc.)	15 (4)	52 (14)	33 (9)
Subject expertise/highly specialised roles	19 (5)	37 (10)	44 (12)
Less focus on face to face interaction	37 (10)	33 (9)	30 (8)
Diminishing need for traditional reference skills	30 (8)	48 (13)	22 (6)

Table 6.4: Skills and knowledge no longer needed (*n*=27)

Many, if not all, current skills and knowledge will still be required

The one item to achieve consensus as shown in Table 6.4 was the need to maintain 'Many, if not all' skills to manage new and existing collections. For example, one participant stated that cultural heritage organisations "still have a lot of analogue collections coming in" (Participant L13). Adding further weight to the idea of meta-knowledge as discussed in Section 6.3.3 below, Participant L13 noted that "[m]ost of the knowledge in managing analogue collections transfers to digital. It is just that digital requires additional skills."

Skills related to specific technical knowledge will no longer be required

Given the result above, it is unsurprising that the majority of participants considered that 'Specific technical knowledge' would continue to be required. If physical holdings "aren't going to vanish" (Participant A7), then it could be presumed that those born digital and digitised collection items will also not vanish – at least not intentionally. With specific reference to born digital material, Participant G11 noted that "some knowledge will need to be maintained in this area." This could be likened to the microfiche technology in that it is considered an outdated format in which to produce 'new' material, yet there are people needed today who can instruct users on how to use the technology.

Subject expertise may become less important

The majority of experts disagreed that 'Subject expertise may become less important/highly specialised roles' would no longer be required. The example of someone with subject expertise / highly specialised role given in the questionnaire was "curator of philately" - a response given by a participant in the Round 2 questionnaire. Many of the comments supported the retention of subject expertise, but that these roles "will be expanded to incorporate new knowledge and skills" (Participant G26). Again, this fits with the meta-knowledge concept to be discussed in Section 6.3.3. Participant A19 offered a similar comment that also

supports the concept of meta-knowledge: "these specialist roles will need to incorporate a greater diversity of skills than at present."

Participant L21 selected Partly agree/disagree and provided a very pragmatic reason in support of this choice: "Economic constraints will drive this – if resourcing were adequate I would happily retain several specialised roles." This comment reminded the researcher of a comment from the Archives focus group that "funding is the driver. Education is not the driver" (Participant FG-A1). This point was raised in relation to the possibility of increased collaboration and/or convergence – that is, if galleries, libraries, archives and museums were to collaborate on a large-scale project for example, it would need funding to do so – it would not be possible within existing budgets. However, this could be seen from a different perspective: that a potential *decrease* in funding may necessitate professionals who are able to work across the boundaries of GLAM institutions, in which case it will be necessary to educate professionals who are able to do this. Funding, or rather the *cuts* to funding may prove to be the driver, as also discussed in Section 6.1. The economic reality of the world we live in may very well trump what we may be able to accomplish with infinite resources.

<u>Skills potentially performed by machines (e.g. describing, access clearing etc.)</u>

Not only did this item not achieve consensus, but the majority of participants (52%) disagreed. Many comments were around the continued need for "human interpretative intelligence" (Participant A19), even for the most machine-based work. Additionally, "the fragile nature of paper records, the difficulties in reading handwritten records" (Participant A1) will ensure the need for human intervention "particularly with preservation" (Participant A1). From an education perspective, Participant M17 noted that "[a]n understanding of what can be done by machines and what can't is an important theoretical position in future training of GLAM professionals."

Less focus on face to face interaction

This item did not achieve consensus, nor was there any indication of what participants thought of this item, as it achieved ratings of 37%, 33% and 30% for Agree, Disagree and Partly agree/disagree respectively. Participant comments suggested that there would always be a need for both face-to-face and virtual interaction, with Participant G29 highlighting that "it's never an either/or proposition." In a related point, Participant M9 observed that "… face to face no longer necessarily means 'in the same room as." In a comment that supports G29's assertion that "it's never an either/or proposition," Participant L14 commented that "it is still vital to connect the onsite engagement with the online engagement in some way." These points could be an indication that as pervasive as the digital environment seems to be, there will always be scope for physical, face-to-face interactions.

Diminishing need for traditional reference skills

In a similar vein to the responses received for 'Less focus on face to face interaction,' participant comments supported the continuing need for traditional reference skills, albeit a diminished one (L13, G11, M9) alongside 'digital' reference interactions including via email and social media applications such as Facebook and Twitter. This is perhaps best summed up by Participant G29 who states that "finding things still matters" which could suggest that the reference skills themselves don't change, but that the way – or media – in which they are applied is different.

6.3.3 Skills and knowledge required of co-workers

The skills and knowledge of co-workers is not a mainstream finding, but nevertheless an important finding emanating from the focus groups. As mentioned in Chapter 5, Sections 5.1.2.1 and 5.1.2.3, many curators recognised the need for

high-level research skills, especially around the ability to find and evaluate information, acknowledging that this was an area in which they needed more instruction. It was interesting to have had some of these curators' colleagues attend separate focus groups, and for them to confirm this need of the curators. Knowledge of information management principles was also an area that was deemed to be deficient amongst the scientists within the museums, as many scientists did not understand the need for consistency in naming conventions, for example. This suggests that there could be a place for a tailored information literacy/information management component within the common undergraduate degrees undertaken by people on their path to becoming a curator (e.g. Art History) or a museum scientist (e.g. Science).

It could be seen that the need for specialist museum scientists and curators to have broader information management skills is another dimension of the specialist/generalist dichotomy. The curators and scientists in museums – regardless of their particular subject focus (e.g. geology, ornithology or 20th century European art) - are specialists in their own right. They are not information managers, and presumably, they do not want to be. Bos (2012) refers to this additional layer of knowledge as 'meta-knowledge.' Referring to collection specialists in the Koninklijke Bibliotheek (The Royal Library of The Netherlands), he noted that these staff come into the library with their subject specialisations, "be it book history, or codicology, or geography, or social sciences" (Bos, 2012, p. 48). But because they also now deal with digital material (both born digital and digitised), they are also required to have knowledge "of digitization techniques and formats, and also of digital rights management to guarantee free access to digitized collections" (Bos, 2012, p. 46). He argues that the role of the collection specialists "becomes much larger with the inclusion of digital forms of exploitation" (Bos, 2012, p. 47), and refers to them as "specialists with generalist knowledge" (Bos, 2012, p. 48). In the current study, this idea of meta-knowledge is supported by the discussion in Chapter 5, Section 5.3.3 in relation to the question 'Subject expertise

may become less important,' with the view that specialist roles will not be diminished, but will rather expand to incorporate the generalist skills deemed necessary in the digital environment.

Scientists in museums (and curators in galleries) could also be considered specialists who require generalist knowledge – or meta-knowledge – about the digital environment. If galleries, libraries, archives and museums are going to contribute to social capacity building in the digital environment, some knowledge of information management seems appropriate. It could be argued that contributing to social capacity building is not in the remit of the scientific role (i.e. of scientists as co-workers to information professionals), and in purely scientific terms, perhaps it is not. However, consideration should be given to the principle that all who work within cultural heritage organisations should have an understanding of the broader institutional function. Highlighting issues such as the importance of consistent naming conventions on information sharing protocols like interoperability for example, may assist in developing this meta-knowledge.

6.4 Education needs for information professionals

The following sections discuss the experts' views about education requirements of information professionals in the case of a converged cultural heritage environment. First, the forecasting capabilities of the GDM are used to identify changes to education that may be needed as a result of convergence. Then, aspects of library, archival and museum/gallery studies that were seen to be beneficial to other programmes are discussed. This is followed by an examination of aspects of these programmes that may not be relevant in the future. The section concludes with a discussion about the affordances of a converged education programme for galleries, libraries archives and museums.

6.4.1 Changes in education for GLAM information professionals

The specialist/generalist dichotomy was again a theme in the responses gathered from Round 3. Some participants saw value in a wider skill-set and greater cross-disciplinary knowledge, while others acknowledged the need for this, but were emphatic about the need to protect specialisations. If broader and more diverse skills and knowledge are seen as beneficial, but not to the exclusion of the need for specialists, how might that be incorporated into what is already and extremely full curriculum, which is mostly (or will be) completed as a 2-year Masters programme? One possible way considered was an undergraduate degree where the broader, cross-disciplinary skills and knowledge are taught in an Information Management/ Informatics focussed programme, followed by specialist qualifications (i.e. Librarian, Archivist, Collection Manager) at the post-graduate level. This idea did achieve consensus as evidenced in Table 6.5 below. Participant M9 offered a slightly alternative approach to this education model:

> I think we should move closer to the model common in training lawyers – do your degree, then do a professional year where professionals actually working in the sector can teach you how to do the job. Academic learning only goes so far.

This idea certainly warrants further consideration and investigation, but it would require a big commitment from employers in the GLAM sector if it were to be successful. However, it is a possibility, as this is also the model followed by medical doctors, nurses and accountants, amongst others. It needs to be highlighted here that these professions all have mandatory qualifications, education and registration to a professional association/body. This is not currently the case for information professionals in galleries, libraries, archives and museums in Australia.

Two items that achieved consensus and a relatively high level of agreement - 'Understand the bigger issues of the industry' and 'Understand diverse practices in

GLAM' – are possible topic areas for inclusion into a broader-based Information Management/Informatics curriculum.

Item name	Agree % (*n*)	Disagree % (*n*)	Partly agree/ disagree % (*n*)
Understanding the business and different business models	92.6 (25)	4 (1)	4 (1)
Understand the bigger issues of the industry	92.6 (25)	7.4 (2)	--
Understand diverse practices of GLAM	92.6 (25)	4 (1)	4 (1)
IM focussed undergraduate, followed by post-graduate professional qualification	88.9 (24)	--	11 (3)
Capacity and benefits of GLAM …	88.9 (24)	4 (1)	7.4 (2)
Global information management	81.5 (22)	7.4 (2)	11 (3)
Did not achieve consensus:			
More emphasis on developing advanced IT skills - Understanding the possibilities of technology	74.1 (20)	14.9 (4)	11 (3)
More emphasis on legislative/legal environment	67 (18)	15 (4)	19 (5)

Table 6.5: Changes in education if some level of convergence were to occur (*n*=27)

Understanding the business and different business models

The 'Understanding the business' aspect of this item reflects the focus group finding of the need to understand 'why we do what we do,' and 'Understand the broad purpose of our role.' Participant L13 saw that it was important to understand how to develop a business model "when managing a Section or a library or archive." This may indicate that this item is more applicable to higher levels of management, a point mentioned and supported by Participant L14. A further benefit of understanding different business models, "particularly those outside our own professions [is that it] provides lateral approaches to problem solving" (Participant L31).

Global information management

There was quite a strong acknowledgement that international perspectives need to be factored into information management education, with 81.5% of participants agreeing with this item. Put simply, the "ability to be up to date with global trends in a global world is critical" (Participant L31).

More emphasis on developing advanced IT skills - understanding the possibilities of technology

It is interesting that this item did not achieve consensus (albeit only narrowly missing out), when understanding the possibilities offered by technology is a feature of Informatics, which achieved a high level of agreement (92.6%) in the Round 3 questionnaire (Question 8). Unfortunately, none of the participants who selected Disagree provided a comment as to why they did not agree. It may be that participants did not read the question in full, and only responded to the first part, or – as noted in previous discussions about IT skills – there may have been confusion surrounding the term 'advanced'. One participant fully supported the need to understand the possibilities, stating "[t]here needs to be a concept of what could be possible, not just what has been done in the past" (Participant M2), although it needs to be acknowledged that "understanding possibilities" does not mean being able "to do". In terms of educating for 'understanding the possibilities' aspect, this could perhaps be incorporated into the pedagogical considerations along with other facets such as innovation and creative problem solving.

More emphasis on legislative/legal environment

In a similar outcome to the previous item, the need for more emphasis on the legislative/legal environment also did not achieve consensus, obtaining 67%, but when asked in relation to "New skills and knowledge" it achieved an 85% agreement level. This is perhaps an indication that although knowledge about these skills is necessary, the place to learn about them is not necessarily in an education programme. This is supported by Participant L14 who highlighted that

"[t]here is also an institutional onus on ensuring that any new staff member is acquainted [with] the legal framework they are operating in." As mentioned in Chapter 5, Section 5.3.6, this could be an area for professional development, with a basic overview provided in formal education to create an awareness of legal issues and implications.

Capacity and benefits of GLAM … (etc.)

In a comment that supports the category 'Social justice principles and learning for transformative outcomes' (Question 7, Part 1 in the Round 3 questionnaire), Participant M2 suggested the following should be incorporated into current and future GLAM curriculum: "Teaching the capacity and benefits for galleries, libraries, archives and museums to bring together their information and collections for the betterment of enrichment, greater understanding and an improved end-product for the consumer." This has a direct correlation to the concept of social capacity building as discussed in Section 6.2.1 above. The statement in itself could be seen as a guiding principle for the education of future information professionals who will work in the cultural heritage environment.

6.4.2 Aspects of Museum, Library or Archival studies programs that would be beneficial to one or more of the other programs

While it is important to identify where common skills and knowledge may lie, it is also wise to be mindful of the strengths that each sector could bring to a converged environment. Additionally, if these were incorporated into educational programs as 'trans-disciplinary' components as mentioned by Participant A27 in Chapter 5 Section 5.2.5, graduates would have the opportunity to gain a broader understanding of the cultural heritage sector as a whole, assisting with potential collaboration and/or convergence efforts.

6.4.2.1 Library Studies programs

Table 6.6 below provides a summary of the items from Library Studies programs that gained consensus and those that did not. Two items in particular - 'how information is stored and used' and the 'knowledge and use of controlled languages and vocabulary' - could be regarded as the very foundations of librarianship. Reflecting on Otlet's (1934) and Buckland's (1991) view of information as discussed in Chapter 2, Section 2.4 ("information-as-thing"), it is quite possible to see the relevance to the remaining sectors.

Item name	Agree % (*n*)	Disagree % (*n*)	Unsure % (*n*)
How information is stored and used	88.9 (24)	7.4 (2)	4 (1)
Controlled language/vocabulary	88.9 (24)	4 (1)	7.4 (2)
Audience engagement	85 (23)	4 (1)	11 (3)
Virtual communities and how they behave	85 (23)	4 (1)	11 (3)
How to design digital content	81.6 (22)	7.4 (2)	11 (3)
Did not achieve consensus:			
Knowledge management…	70.4 (19)	7.4 (2)	22.2 (6)
Information theory	66.7 (18)	7.4 (2)	25.9 (7)

Table 6.6: Aspects of Library Studies programmes that would be beneficial to other programmes (*n*=27)

Participant A1 noted that "[m]any of the library focussed areas are already present in combined library and archive courses." S/he specifically mentioned "KM [knowledge management], information theory and the storage of information" (Participant A1). It may well be the case that these elements are in combined libraries and archives courses, however not all courses in Australia are combined. Furthermore, the comment does not take into account whether this may be useful for museum and gallery information professionals, although it is acknowledged that it may be outside of the participant's expertise, as s/he represents the Archives sector. In light of this comment, it was interesting to see that although highlighted in the Round 2 questionnaire as something that could be beneficial to the other GLAM sectors, 'Information Theory' did not achieve consensus.

6.4.2.2 Archival studies programmes

Echoing the selection of what could be regarded as foundational to librarianship, two elements that could be considered the cornerstones of archival practice - 'understand how archivists capture and manage context' and 'understand provenance' also reached above the consensus measure. It is possible to see the immediate relevance of both provenance and context to those managing acquisitions in both galleries and museums. Moving into the digital world, digital curation and the need to know that it is more than scanning documents was seen to be a specialty of the archival domain. The remaining items all achieved consensus and this can be seen in Table 6.7 following.

Item name	Agree % (*n*)	Disagree % (*n*)	Unsure % (*n*)
Understand provenance …	96 (26)	--	4 (1)
Digital curation …	96 (26)	--	4 (1)
Understand records management systems	92.6 (25)	--	7.4 (2)
Provide overarching descriptions …	88.9 (24)	4 (1)	7.4 (2)
Understand how archivists capture and manage context	88.9 (24)	4 (1)	7.4 (2)
The need to understand archives in order to get better access to them	81.5 (22)	7.4 (2)	11 (3)

Table 6.7: Aspects of Archival Studies programmes that would be beneficial to other programmes (*n*=27)

6.4.2.3 Gallery and Museum studies

In regards to the Gallery and Museum aspects shown in Table 6.8 below, Participant L14 raised the question of how these aspects might impact social outcomes: "if there is a stronger awareness of how to craft significance statements, how might that benefit the community? What is the social outcome of a community learning of the significance of a collection object or a collection?" This is indeed an interesting question, and shows the role that that galleries, libraries, archives and museums can play in social capacity building.

Item name	Agree % (*n*)	Disagree % (*n*)	Unsure % (*n*)
Expertise in sharing, displaying and promoting parts of collections	92.6 (25)	--	7.4 (2)
Interpretation	88.9 (24)	7.4 (2)	3.7 (1)
Did not achieve consensus:			
Object bibliography and significance studies	74 (20)	11 (3)	15 (4)
Museum/gallery professionals bring a level of creativity	56 (15)	25.9 (7)	18.5 (5)

Table 6.8: Aspects of Museum and Gallery Studies programmes that would be beneficial to other programmes (*n*=27)

6.4.3 Aspects of Museum, Library or Archival studies programmes that may not be relevant in the future

The two questions that focussed on aspects that may not be relevant in the future - Section 6.3.2 above (*Skills and knowledge no longer required*) and the current section - gained the least consensus of items overall. However, the one item that did achieve consensus is shown in Table 6.9 below and connects with the 'change of focus' or rather, a change in application of skills and knowledge observed in Section 6.3.2.

Item name	Agree % (*n*)	Disagree % (*n*)	Unsure % (*n*)
GLAM principles currently taught will remain, but application of skills may change	81.5 (22)	11 (3)	7.4 (2)
Did not achieve consensus:			
Some areas of object classification within Museum Studies programmes …	63 (17)	4 (1)	33 (9)
Some traditional theories may not be as relevant …	59.3 (16)	18.5 (5)	22.2 (6)
Bespoke, hand-crafted approaches …	48.2 (13)	33.3 (9)	18.5 (5)
Traditional approach to the reference function may be less relevant	40.7 (11)	29.6 (8)	29.6 (8)
'Traditional' collection management	15 (4)	67 (18)	18.5 (5)

Table 6.9: Aspects of Museum, Library or Archival Studies that may not be relevant in the future (*n*=27)

This change of focus appears to have emerged as a theme connecting different aspects of this research. The 'why we do what we do' that was such a strong presence in the focus groups still has the same importance placed on it when talking about the digital environment, which in some instances provides affordances that the analogue environment cannot offer. As summarised by Participant M28: "there will always be a need to look after, research and interpret items, be they archives, books, animal specimens or works of art. The ***ways*** we do this might change, but not our core responsibilities" (emphasis added). This could be equally true with the word "digital" placed in front of the word "archives" in the above quote.

6.4.4 A case for converged education?

In Section 5.1.4, when reporting on the Focus Groups' reactions to the Given and McTavish quote (refer Appendix 1), there was great concern from the archivists that any form of converged education would necessarily mean a 'dumbing down' of the archival qualification. The thought process behind this was that the current archival studies programmes in Australia have extremely full curricula already that adding further subjects covering galleries and museums for example would not be a feasible outcome. The researcher does not disagree with this sentiment, however it is perhaps prudent to look at the advantages that may be achieved by converged education and then look at how it might be accomplished, rather than dismissing the potential on the grounds that specialised subject knowledge may be lost. It was the intention of the researcher to explore the similarities *and* differences between professionals who all manage cultural heritage information in order to see where they may benefit from converged or shared education, rather than lowering any standards or the level of knowledge for any GLAM professional group. Cox and Larsen (2008) note the tendency for archivists to be somewhat cautious in their approach, so perhaps this is a reflection of that tendency. As has been discussed in

previous sections of this chapter and other sections of this thesis, there appears to be acknowledgement that more generalist skills are required, but not at the expense of specialist skills and knowledge. Trant (2009) supports this position by asserting that differences between professional identities must be maintained.

6.5 Moving towards a framework for cultural heritage information professionals

In order to devise a framework for the education of information professionals who will work in a cultural heritage environment, this research has identified several areas for consideration, in particular, the need to incorporate both ontological (what it means to be) and epistemological (what it means to know) elements into education for information professionals who will work in a cultural heritage environment. This reflects the findings of Partridge, Lee and Munro (2010) in their study of Librarian 2.0. Not only did they find that for librarians, the advent of Web 2.0 meant "less about technology and more about quality transferable skills and interpersonal abilities" (p. 333), but perhaps more significantly, they noted that "what it means to *be* an LIS professional in Australia is changing" (p. 331, italics in original).

As the first study to produce any empirical evidence on this topic, a fully developed framework is not possible at this early stage. However, the following sections present some guidelines around what needs to go into this framework, but more empirical work is needed in order to develop this in full.

According to Adams, Daly, Mann and Dall'Alba (2011) "[s]uch a framework needs to speak to multiple dimensions of learning, not just knowledge and skill progression …" (p. 589). Firstly, if information professionals are in fact *to be professional* in their practice, there is a need to incorporate ontological considerations into professional

education programmes (Dall'Alba, 2009b). There are some specific elements that can be incorporated which can "contribute positively to [the] process of becoming" (Dall'Alba, 2009a, p 140). These are discussed in more detail in Section 6.5.1 below.

Linked very closely with the ontological perspective are two elements that the researcher has labelled "Context of GLAM" and "Theories, values and ethics of GLAM." These are discussed in Sections 6.5.2 and 6.5.3 respectively. Finally, the epistemological perspective is discussed in Section 6.5.4.

6.5.1 Ontological dimension

As mentioned in Section 6.3.1 above (specifically 'Ways of thinking about professional practice'), "[w]hen a professional education program focuses on the acquisition and application of knowledge and skills, it falls short of facilitating their [the students'] integration into professional ways of being" (Dall'Alba, 2009b, p. 34). This focus on the epistemological dimension – the acquisition of skills and knowledge – "occurs at the expense of ontological considerations relating to who the students are becoming" (Dall'Alba, 2009b, p. 35). Equally, the epistemological dimension cannot be ignored in favour of the ontological dimension. However, the ontological dimension is not simply a discussion to be had with students at the beginning or end of semester. Instead, any curriculum development needs to integrate "ontological and epistemological aspects of becoming professionals" (Dall'Alba, 2009a, p. 141), and appropriate pedagogy to enable students to learn professional knowledge and skill. Some of these ontological and pedagogical elements are discussed below.

6.5.1.1 Ontological and pedagogical elements

Ontology is the branch of philosophy that investigates the nature of being, or what it means "to be" (Macquarie Dictionary online, 2014). In order to start to

understand *professional* ways of being, ontological elements need to underpin professional education programmes. One such way is to help students develop a sense of self-awareness, including the ability to identify their strengths and those areas that could benefit from further development. Appropriate pedagogical approaches can encourage both reflexive practice, where the relationship between ourselves and others is questioned (Cunliffe, 2009); and reflective practice, where our own experience is reflected upon critically, is one such way to build self-awareness. This can be promoted through the use of a learning journal, where students are encouraged to write about various aspects of theory and/or practice. The learning journal can also be incorporated into a professional portfolio. Having class discussions *about* practice is also useful (Dall'Alba, 2009a). This can be achieved with practitioner-led classes, where students have the opportunity to hear how the subject matter they are learning about in class is put into practice. Students' discussions about their own practicum placements (if they take place) is another opportunity for them to seek feedback from peers and educators about their practical experience. Provocative questioning and ethical dilemmas are also useful in the class discussion context.

One final element involves the student/teacher relationship. If ontological elements are to be integrated successfully, the teacher cannot simply impart skills and knowledge in the hope that the student is a willing recipient. Instead, students and teachers should "participate […] in the learning process as collaborators" (Dall'Alba, 2009a, p. 142), or, as stated by Bonnett (2002), "the teacher has to let the pupil learn rather than impose learning upon her" (p. 241). The student/teacher relationship should strive for a mutual commitment: the student commits to the process of becoming a professional, while the teacher commits to both challenging and supporting the student in that endeavour.

6.5.2 Context of GLAM

Professionals need to understand the context in which they operate, as evidenced by the comments in the focus groups regarding the need to understand 'why we do what we do.' This element has been derived from the five items that gained consensus in Section 6.4.1 (Table 6.5) as when taken together, they help to contextualise and situate what GLAM is and can be. These five items are:

- Understand the business and different business models
- Understand the bigger issues of the industry
- Understand diverse practices of GLAM
- Understand the capacity and benefits of GLAM (i.e. social capacity building; social and economic benefits)
- Global information management

As explained in Chapter 1, Section 1.6, in this thesis, GLAM is considered to represent something broader than an acronym denoting four cultural heritage institutions - the 'GLAM sector' is an entity of its own, and is something greater than the sum of its parts. The "Context of GLAM" element sits within the ontological dimension of the education framework. The current researcher contends that learning to become a professional involves not only knowing who we are *personally* (i.e. the 'self'), but who we are professionally – as a professional group. What does it mean to be an information professional in the 'GLAM sector'? What does the 'GLAM sector' represent?

6.5.3 Theories, values and ethics of GLAM

The 'Theories, values and ethics' element, like the 'Context of GLAM' element, contributes to the ontological dimension at the level of knowing who we are as a professional group. Both elements feed into and from each other. The importance of knowing and understanding theories and how they contribute to professional

practice and identity was evident in the focus groups, and validated in the results of the Round 2 questionnaire and discussed in Chapter 5, Section 5.2.3. In Section 6.3.1 above, Ethics was one of the 'New skills and knowledge' to gain consensus, indicating its importance for information professionals who will work in galleries, libraries, archives and museums. Thus, 'Theories, values and ethics' influence the "Context of GLAM", and vice versa.

6.5.4 Epistemological dimension

Epistemology – or the 'theory of knowing' – is embodied in professional education programmes as the acquisition of skills and knowledge in the relevant professional domain. Dall'Alba (2009b) argues that skills and knowledge alone are "insufficient for skilful practice" (p. 35), but does acknowledge that skills and knowledge are necessary for professional practice. The current researcher suggests that the epistemological domain sits within the overarching ontological and pedagogical dimension. Within the epistemological dimension there are two elements: the areas that form a common core to all GLAM practice, and those areas that have some differences, or variables. Both are discussed in more detail in the following two sections.

6.5.4.1 Common core element

The Common core element sits within the epistemological dimension and includes skills and knowledge required of information professionals who work with cultural heritage material in galleries, libraries archives and museums. These skills and knowledge were identified through the current research process, and only consists of those that gained the minimum 75% consensus level. As such, they can be considered common to GLAM practice.

6.5.4.2 Variables element

The Variables element includes those skills and knowledge that may be common to GLAM practice, but that may take a different focus according to context. For example, Ethics is common to galleries, libraries, archives and museums, but there may be a different focus on this in a museum as opposed to a library. Similarly, there would be a different approach to preservation of digital objects as opposed to physical, 'analogue' items – the principles of why it is done remains the same, but the skills required are different. The Variables element does not include skills and knowledge that are requisite in only one of the GLAM institutions.

6.6 Recommendations

As can be seen from the above discussions throughout Section 6.3, many of the skills, knowledge and qualities currently required by information professionals working in galleries, libraries, archives and museums would also be required in a converged GLAM environment. This was supported by participant comments highlighting that these "weren't new skills" (participant A1). However, it was acknowledged that some skills may require a 'change of focus' in the digital or a converged environment. This was also evidenced by the high level agreement (81.5%) to 'GLAM principles currently taught will remain the same, but the application of skills may change,' discussed in Section 6.4.3. Therefore, the following recommendations target various approaches to the education of information professionals who will work in a cultural heritage environment in the case of the first three recommendations; whereas the fourth recommendation concerns non-information professionals who may work in a cultural heritage environment.

Recommendation 1: Ontological perspectives to underpin GLAM education

The acquisition of skills and knowledge is only one part of professional education and of being a professional. The strong level of agreement for 'Ways of thinking about professional practice' (96%) suggests that participants place a certain amount of emphasis on 'being professional.' In order to move from beyond the acquisition of skills and knowledge – or the epistemological dimension of education – Dall'Alba (2009b) suggests that "ontological considerations relating to who the students are becoming" (p. 35) are necessary. Therefore, it is recommended that ontological perspectives should underpin any professional education for information professionals who will work in galleries, libraries, archives and museums.

Recommendation 2: Developing and implementing a holistic approach to GLAM education

The evidence-base developed in this thesis shows a clear need for a holistic approach to educating information professionals who will work in galleries, libraries, archives and museums, and/or in a potentially converged digital GLAM environment. Consideration should be given to the structure as proposed by Pymm (2012) and making use of existing consortia such as WISE (as discussed in Chapter 2 Section 2.10), or developing new collaborative agreements.

Recommendation 3: Expanded role for GLAM education

The findings acknowledged the need for more generalist skills, but without losing the professional identities of gallery/museum professionals, librarians and archivists. This is difficult to achieve in a postgraduate programme that is currently between 1.5-2 years in length, therefore consideration needs to be given to the possibility of an undergraduate programme that focuses on Information Management/ Informatics. This would take a broad approach to those cross-disciplinary skills (for example IT skills, project management, information/enterprise architecture) with the Library, Archive and Museum specialisations remaining at the postgraduate level.

In turn, this could lead to an expanded role for educators from GLAM-related disciplinary areas. For example, "traditional" LIS topics such as information representation (cataloguing, classification and indexing for example) and less traditional topics – but becoming more integral to LIS programmes – such as Information Policy, Information Governance and Information Ethics are subjects that would fit within an Informatics programme. Further, these subjects could also be offered in conjunction with the more IT focussed education programmes. This sits well with the definition of Informatics used throughout this thesis:

> Informatics is the science of information. It studies the representation, processing, and communication of information in natural and artificial systems. Since computers, individuals and organisations all process information, informatics has computational, cognitive and social aspects (Fourman, 2003).

If this was successful, core Informatics topics could potentially be offered in other disciplines such as Health informatics and Urban Informatics.

Recommendation 4: Research skills/Information literacy for non-Information professionals

Closely related to Recommendation 3 and an expanded role for the Information educator is the potential for research skills, information literacy and information management principles to be taught to other, non-information, disciplines. As noted in Chapter 5, Section 5.1.2.3 and Chapter 6, Section 6.3.3, curators mentioned that research skills such as finding and evaluating information resources was an aspect of their roles in which they did not feel overly proficient.

Also mentioned in these sections were the scientists in museums and their lack of knowledge and awareness about the importance of naming conventions, for example. With further investigation, other disciplines in addition to Art History (curators) and Science (museum scientists) which could benefit from some elementary 'information education' may also be identified.

6.7 Conclusion

This chapter has elaborated on the findings presented in Chapter 5. It set about answering the research question by first answering the two sub-questions:

- What are the current and potential roles and responsibilities of information professionals who deal with cultural heritage material in galleries, libraries, archives and museums?
- What are the knowledge, skills and qualities they need to carry out their roles, now and into the future?

The overarching research question was then answered:

What are the future education needs of information professionals in a potentially converged cultural heritage environment?

These needs are addressed in the foundations of the education framework presented and discussed in this chapter, Section 6.5. Where appropriate, this discussion was supported throughout by relevant literature. Tables showing the items that gained consensus and those that did not from the Round 3 questionnaire were provided for ease of reference. Recommendations for developing innovative education for professionals who will work with cultural heritage material in galleries, libraries, archives and museums were discussed. The proposed education framework would provide an empirically derived basis to support the practical implementation of these recommendations, although it is acknowledged that further empirical work is needed to more fully develop the framework.

The following chapter discusses the contribution this study has made to new knowledge in various areas, along with coverage of the limitations of the study; implications for the education of information professionals, and further research.

Chapter 7: Conclusions

7.1 Introduction

This final chapter of the thesis discusses the contributions of this study to the existing body of knowledge about possible GLAM convergence and the education needs of future information professionals in a potentially converged GLAM environment, with specific reference to Australia. While the panel of experts did not consider that full convergence of GLAM sectors is likely, they identified significant points of commonality and specialist education needs for information professionals in galleries, libraries, archives and museums.

The chapter is presented in four main sections. Firstly, an overview of the research process is provided. This is followed by a discussion of the contributions to research, which includes GLAM education specifically, LIS education more generally and the potential for an expanding role of the LIS educator. As this study used a relatively new research method by employing the GDM, the contribution to the research methods literature is also addressed. Limitations and Implications for future research conclude the chapter.

7.2 Research overview

This thesis has explored the future education needs of information professionals who will work with cultural heritage materials in galleries, libraries, archives and museums. It achieved this by first investigating the emerging roles of information professionals in these sectors, followed by examining what skills and knowledge will be needed to carry out these roles. The study took a Social Constructivist approach within the Interpretivist tradition. It used a new addition to the research method

literature that combines elements of both Grounded Theory and the Delphi method called the GDM.

7.3 Original contribution to research

The current research has made an original contribution to new knowledge in the library and information science discipline by contributing to the literature about the education of information professionals in the cultural heritage sector. It has also identified current and future knowledge and skill requirements for information professionals in galleries, libraries, archives and museums. It has contributed to the research methods literature by using a relatively new methodological approach in the GDM, which reflects the informed opinions of experts in the field. Finally, an extended role for LIS educators has been identified.

7.3.1 Contribution to GLAM Education for Professional Practice

This research has contributed to improving future practice through identifying areas of similarity in information professionals' roles and responsibilities. This helps to understand existing strengths and development needs as a basis for both human resources and education planning. The research has highlighted some enhancements that could be made to education for the GLAM sector, and these are not necessarily dependent on converged/shared education taking place. Many of the findings will have considerations for the different GLAM fields separately. Aligning education so that it more accurately and appropriately reflects the changing needs of the sector will ultimately lead to a more holistically educated professional. In turn, this contributes to developing a more sustainable and relevant GLAM sector that can support potential collaboration and/or convergence opportunities.

7.3.2 Contribution to Education for Information Professionals

The results of this research show that both the current and future education requirements for information professionals is extremely broad, even when looking at what could be considered a sub-set of the total cohort. If information professionals are going to work collaboratively or indeed in a converged cultural heritage environment, understanding the differences in practice between institutions will be vital – or in the very least, they will require a healthy respect for each jurisdiction. So, a museum information professional will be required to understand the different practices in both libraries and archives, and perhaps to a lesser extent, galleries. At the same time, the research findings also support the need to retain specialisations. This requirement to provide education that is both broad and specialised led to the proposal for an undergraduate programme informatics or information management, where the broad skills, such as Business and Information Technology skills can be taught prior to students specialising in either Gallery and Museum Studies, Library Studies or Archival studies.

It was also argued that LIS educators could take on a wider role within the information education discipline, with potential opportunities to instruct different disciplines in research and information literacy/information management skills. Also suggested were topics such as Information Policy, Information Governance and Information Ethics that are often incorporated into the more technically focussed IT degrees.

Finally, a foundational framework for the education of information professionals in GLAM was presented. This framework highlighted the need for information educators to incorporate ontological considerations, as well as the more typical epistemological considerations, thus educating professionals, and not simply practitioners.

7.3.3 Contribution to Policy Development

Given that many of the larger cultural heritage institutions are funded to a greater or lesser extent by government, and are potentially influenced by organisations such as the Australia Council, policy regarding the convergence (or not) of cultural heritage institutions may very well be informed by the relevant findings in this thesis. As one archive focus group participant noted – "funding is the driver for convergence…". Other policy advisors who could draw on the findings may include social justice/social welfare advocates, and indeed senior management /CEOs of the cultural heritage institutions themselves.

7.3.4 Contribution to the Method

The study contributes to qualitative research methodology by further developing the Grounded Delphi Method and establishing it as a viable alternative to the standard Delphi. It was the first Grounded Delphi study within the GLAM sector, incorporating all four types of institutions.

The current study for the most part followed the process established by the creators of the GDM, Päivärinta, Pekkola and Moe (2011). The major point of departure was in the concept prioritisation phase. Päivärinta, Pekkola and Moe (2011) used the ranking procedure in order to determine which were the most important challenges, whereas the aim of the current study was an understanding of what is needed for the future education requirements of information professionals who will work in galleries, libraries, archives and museums. As such, the process followed in the current study may be viewed as an alternative to the ranking procedure, enhancing the GDM by offering a level of flexibility.

7.4 Limitations

Regardless of what method is selected or which philosophical stance is taken for a research project, there are limitations. The specific limitations as they relate to this study are discussed below.

While the selected GDM achieved the aims of the study, there are issues of potential bias inherent in the Delphi aspect of the method. The participants were hand-picked by the researcher, potentially leading to findings that corroborate the researcher's position. The current researcher reduced the level of bias as much as possible by following the process of participant selection suggested by Okoli and Pawlowski (2004) as discussed in Chapter 3, Section 3.4.2.1.

Another limitation is what one participant described as "a lack of position contingency" (Participant A27). In other words, the research was not positioned to relate specifically to a certain level of staff, for example entry-level staff, middle management, or CEOs. It was also not restricted to certain types of information professional roles, some of which are more technical and less focussed on visitors/users, others that are very focussed on the visitor and user, but use very little technology in their day-to-day role. The researcher understood the concerns, and did not disagree. However, as mentioned in Chapter 6, Section 6.2, it was exploratory, and so intentional that the study be quite broad in its scope. As it was the first study of its kind in Australia, the researcher did not want to limit the responses to only one specific role or level of role (e.g. senior management or first line management). Further, the current researcher argues that although skills such as strategic planning may not be used very much (if at all) by entry-level staff, an *understanding* of it – why it is done and what it involves – is important for an holistically trained professional. Skills like strategic planning also contribute to understanding 'why we do what we do' in a very practical way.

Finally, due to the relatively small number of participants (31 in Round 2 questionnaire and 27 in the Round 3 questionnaire), the results are not generalisable, nor are they transferable. A survey with a few hundred participants may have given more weight to any quantitative data, but may have lacked the qualitative insight that the participants from this study offered. On the other hand, if in-depth interviews were held with significantly fewer participants than this study, the qualitative data may have been 'deeper', but any quantitative data would almost be meaningless. This study achieved a rich set of qualitative findings as an evidence base on which to build further research.

7.6 Implications for future research

As with a lot of research, often many more questions are raised than are answered, but this gives us an opportunity to further refine and enhance findings. This research is no exception, and offers several lines of future enquiry.

In order to contend with the lack of position contingency (one of the limitations of the current research discussed in Section 7.4 above), future research could be conducted on more specific job roles. This could be at different levels (i.e. entry level, senior management and so on), or on more specific job titles. This would then provide more detailed data that may be used to inform curriculum decisions, which also seems to be a natural progression from the current study.

A three-way comparison of the Salzburg Curriculum and the CHIM programme at the CUA (both discussed in Chapter 2, Section 2.10), with the current findings may provide a level of corroboration with the current research. This may further result in initial refinements towards a curriculum-level framework suitable for the Australian context.

The suggestion of an undergraduate programme in Informatics/Information Management to accommodate the breadth of skills is another area that warrants further investigation. The current path for many archivists and librarians is the professional qualification of a two-year Masters programme (in most cases) on top of any undergraduate degree. Perhaps it is time for the 'any undergraduate' degree to be questioned, given that the professional qualifications are already extremely full programmes, and more and more demands are being made on them. Whilst there are benefits to 'liberal arts' type qualifications in many information professional roles, it may be worth investigating if there are more appropriate pathways, given the nature of the information world we live in today.

Closely linked to the investigation of alternative educational pathways to becoming an information professional is the potential to investigate other professions' qualification frameworks. For example, in South Australia at least, there are two pathways that can be taken to become a teacher. The first is an undergraduate qualification in Education (junior primary, primary or secondary, depending on the stream chosen). The second pathway is a Graduate Diploma in Education (although this is moving towards a Masters degree as the minimum professional qualification), on top of any other degree. Many subject specialist secondary school teachers take this option – for example, maths/science teachers, music teachers and history teachers. However, as the professional associations for information professionals, such as ALIA and the ASA are moving towards accrediting and recognising a two-year Masters as the minimum level for professional recognition and membership, perhaps there is a role for an 'associate' membership, or an 'Information Professional' membership in addition to 'qualified librarian/archivist' membership. This raises further questions about the role of professional associations in professional education. Do they recommend – or require – curriculum content? Which professional association will align itself to any GLAM education programme, or will all of them (ALIA, ASA, MA) want a say in content and/or delivery? And how would they approach the possibility of an internship year

such as that completed by lawyers, as suggested by Participant M9 in Chapter 6, Section 6.4.1? These are all potential lines of research enquiry.

Finally, if education for GLAM information professionals is to become a reality in Australia, the practicalities of how this will be offered needs to be investigated. In the current economic climate of uncertain university funding, large class sizes and more generic offerings seem to be the status quo. A relatively niche education programme that will attract comparatively few students - regardless of whether it is undergraduate or postgraduate – would possibly not be overly attractive to university administrators at the moment. There are possibilities for universities to collaborate more actively in a programme such as the WISE consortium, however this would require further research in order to determine the feasibility of this concept.

7.7 Conclusion

The research reported on in this thesis investigated the future education needs of information professionals in a converged cultural heritage environment. In answering this overarching research question, two sub-questions were also answered that addressed the emerging roles and responsibilities of these information professionals, and the skills, knowledge and attitudes required to carry out these roles. This resulted in an initial framework for converged GLAM education.

The study was the first of its kind in Australia and the wider the Asia-Pacific region to to take a holistic approach to education of information professionals by engaging all four types of cultural heritage institution. It has provided a much needed evidence base from which to evaluate the merits or otherwise of a converged education programme for information professionals who will work in the GLAM

environment. In doing so, this thesis makes a significant contribution to the GLAM research field, with a focus on Australia and to Australian Information education generally.

Epilogue: Reflections on GLAM convergence

In 2008, I was lucky enough to do a four-week internship at *La Casa della Musica*, (trans: The House of Music) in Parma, Italy. It was a co-located library, archive and museum housed in a 16th century palace. The collections were like nothing I had ever seen before, coming from such a 'young' country as Australia, European-settlement wise. Posters and programmes from the local opera theatre, *Teattro Reggio*, (quite famous in its day); original handwritten scores from Giuseppe Verdi; batons and marked scores of Arturo Toscanini, both of whom were born and lived for some time in Parma. The opportunities for these incredible documents to be digitised in order to create a unique online cultural and scholarly collection were seemingly endless. The pots of money were not. However, my love of all things GLAM (or 'LAM' in this case) was born.

When deciding on a topic for this PhD, I once again returned to GLAM. All I seemed to hear was "We all do the same thing, and people just want stuff, it doesn't matter where it comes from." Fair point, I thought. But where's the evidence to say "we all do the same thing"? And if we *DO* do the same thing, then why aren't we educated all in the one place? Why so many programmes? So I set out to prove that we all do the same thing and that we should all be educated together …

Or so I thought!

While entertaining the possibility that my findings may not turn out the way I expected (and trying to be a good researcher and not 'force' the data one way or the other), I found myself moving further and further away from the belief that GLAM convergence was inevitable and a good thing. We weren't actually the same, we were very, very different. But there was ***something*** there, something that united us. I just couldn't put my finger on it.

I have now arrived somewhere in the middle of these two extremes – we are not the same, but nor are we so different. The digital environment blends us back to our 'converged' origins; the analogue world keeps us at arm's length. That is not to say that we couldn't reduce the length of that arm, and having more closely connected education programmes may help to do just that. There are things we can all learn from each other, and in turn these will make our collections shine all the more brightly. Australia may be a young country, but it is also one of the oldest. Our cultural heritage collections are perhaps one of the most diverse in the world. I want them to shine as brightly as they can.

Appendix 1: Focus Group Discussion Guide

Scope and Limitations
There are many different ways of looking at GLAM convergence. I'm not focusing on the physical convergence of GLAM institutions, what I am more interested in is the intellectual and, to a certain extent the philosophical convergence that is happening across the work of what I am calling for now, information professionals across GLAM, largely associated with what digitisation can offer for these institutions.

Definition of Information Professional (Melissa Terras, UCL, London):
"an individual working in a library, archive , museum, cultural heritage or information environment whose aim is to maintain, and often improve, access to the ever growing amount of information generated from within the culture and heritage industry, the media, and, increasingly, by the general public."

Terras, M. (2009) Digital Images for the Information Professional Ashgate:Farnham, p. vii

What do you think about that term?

- **Does it reasonably accurately describe what you do? To a large extent or a lesser extent?**

What skills, knowledge, qualities, attributes – whatever you want to call them - are important in your role?

What about graduates? What skills, knowledge and/or qualities will a graduate need if they wanted to work in this kind of environment?

- (If predominantly soft skills mentioned, then ask): **What about what they need to *know*?**

What do you see as being *potential* roles of an information professional in a gallery/library/archive/museum environment? What does the digital environment offer in terms of new or emerging roles?

What about the idea of a Cultural Heritage Information Professional?
Definition:
"The cultural heritage information professional uses or manages information technology to organize and provide access to information resources for all users of cultural heritage organizations, including libraries, museums, and archives."
Cultural Heritage Information Professionals (CHIPs) Workshop Report, (Marty, 2008)

What are some of the constructs or concepts behind this name/label: if this is somebody who works in a GLAM institution – or perhaps even across multiple institutions, whose primary role is around the cultural heritage information space -

Do you see that as being an emerging area for information professionals to be working in?

- **perhaps as a meta-professional?**

If so, then tell me about some of the things people need to be able to DO in that role.

What do you see are some of the barriers associated with GLAM convergence, ignoring any issues regarding the physical convergence or co-location?

The following quote was read to participants and their agreement or disagreement and explanation was sought:

Given, L.M. and McTavish, L. (2010) What's old is new again: The reconvergence of libraries, archives and museums. *The Library Quarterly, 80*(1), pp. 7-32. doi: 10.1086/648461

> "[a]s long as librarians, archivists, and museologists […] continue to be educated in isolation from one another, […] real boundaries to collection, management, and access of materials will remain" (Given and McTavish, 2010, p. 23).

Appendix 2: Knowledge Resource Nomination Worksheet

Disciplines	Organisations	Literature
Academic: - lecturers - researchers	National cultural institutions, including NAA, NGA, NLA, NMA, National War Memorial, Australian Film and Sound Archive	Academic Journal literature
Practitioners: - galleries - libraries - archives - museums	State-based cultural institutions: galleries, libraries, archives and museums in all Australian states and territories (e.g. SAM, SLWA, GOMA)	Conference proceedings
	Professional associations (e.g. ALIA, ASA, MA)	Conference attendee lists
	Australia Council	
	Australasian Registrars' Committee	
	Museum Victoria	
	Museums and Galleries of NSW	
	Universities, including research institutes	

Appendix 3: Experts mapped against criteria

CRITERIA:	Discipline	Organisation	Literature	Multiple sectors
GALLERIES				
Participant G20	✓	✓		
Potential participant	✓	✓		
Participant G26	✓	✓	✓	✓
Participant G16	✓	✓		
Participant G23				
Potential participant	✓	✓	✓	✓
Participant G11	✓	✓	✓	
Potential participant	✓	✓		
Participant G29	✓	✓	✓	✓
LIBRARIES	**Discipline**	**Organisation**	**Literature**	**Multiple sectors**
Potential participant	✓	✓	✓	✓
Participant L24	✓	✓	✓	✓
Potential participant	✓	✓	✓	✓
Participant L14	✓	✓		✓
Participant L31	✓	✓	✓	
Potential participant	✓	✓		✓
Participant L3	✓	✓		
Participant L18	✓	✓		
Participant L13	✓	✓		✓
Participant L21	✓	✓	✓	
Potential participant	✓	✓		
Participant L10	✓	✓		✓

ARCHIVES				
Participant A7	✓	✓	✓	
Potential participant	✓	✓	✓	
Participant A27	✓	✓	✓	
Participant A5	✓	✓		
Participant A4	✓	✓	✓	
Participant A19	✓	✓		✓
Participant A6	✓	✓	✓	
Participant A1	✓	✓		
Participant A30	✓	✓	✓	✓
Participant A12	✓	✓		✓
MUSEUMS				
Participant M9	✓	✓		✓
Participant M28	✓	✓		
Participant M17	✓	✓	✓	
Participant M22	✓	✓		
Participant M15	✓	✓		
Participant M8	✓	✓		✓
Participant M25	✓	✓		✓
Potential participant	✓	✓	✓	✓
Participant M2	✓	✓	✓	✓

Appendix 4: Invitation to participate email text

Dear _____,

My name is Katherine Howard from the School of Information Systems, Science and Engineering Faculty, Queensland University of Technology (QUT) and I'm doing a PhD investigating similarities in knowledge, skills and attitudes in the current and future roles of GLAM Information Professionals in Australia.

You are invited to participate in this project because you have been identified as an expert in the Gallery, Library Archive or Museum field. Participation will involve responding to a series of online questionnaires known as a Delphi study. Please view the attached Participant Information Sheet for further details on the project, including more specific information about what the Delphi study will involve. I have also attached an abstract of my study for added information and context.

Please note that this study has been approved by the QUT Human Research Ethics Committee (approval number 1200000614).

To assist you in deciding if this will fit into your schedule, I anticipate having no more than 3 rounds of questionnaires; the first of which I am expecting will be the longest (approximately 30-45 minutes). The second and third rounds (if needed) are expected to be much shorter at approximately 20 minutes or less. The first questionnaire will be sent early-mid July; the second in mid-August and the third if needed around mid-September.

I would appreciate it if you could advise me at your earliest convenience of your willingness or otherwise to participate. It is expected that the first online questionnaire will be sent early next week.

Many thanks for your consideration of this request.

Katherine Howard

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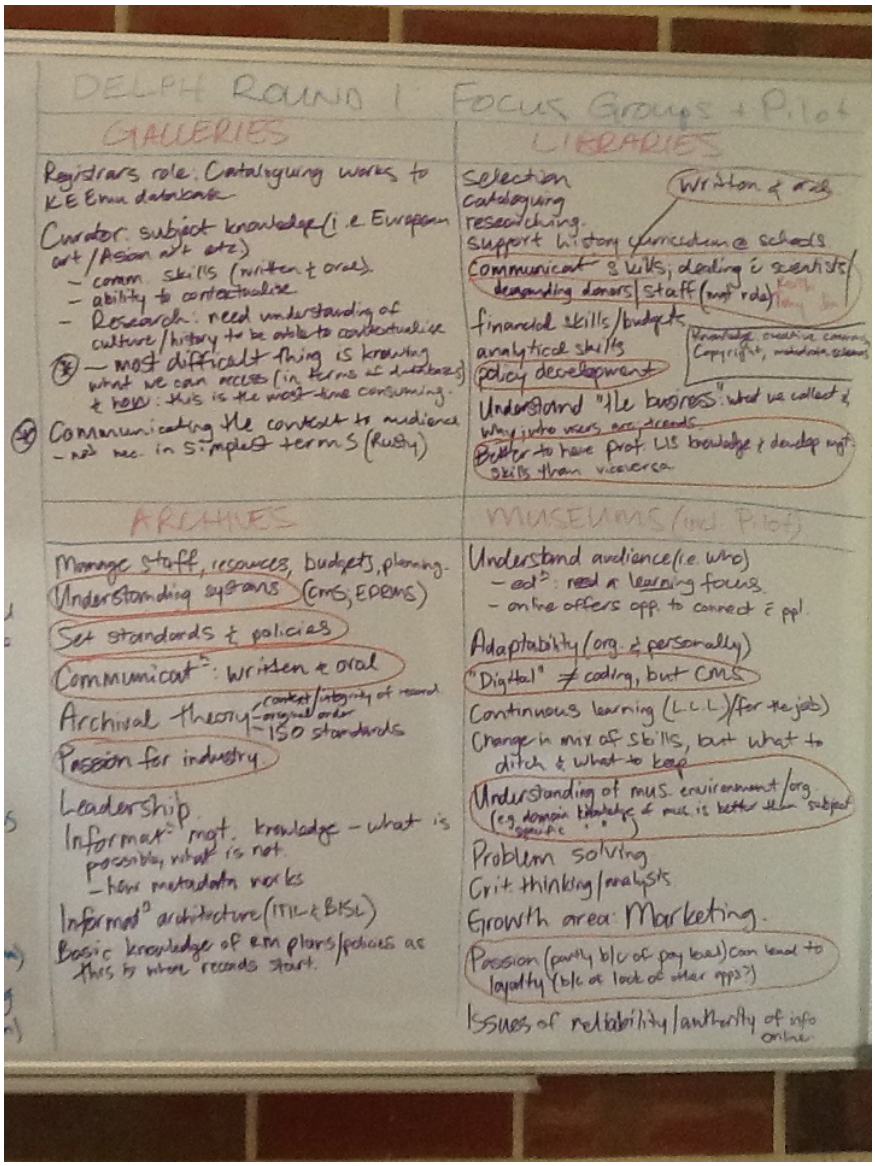
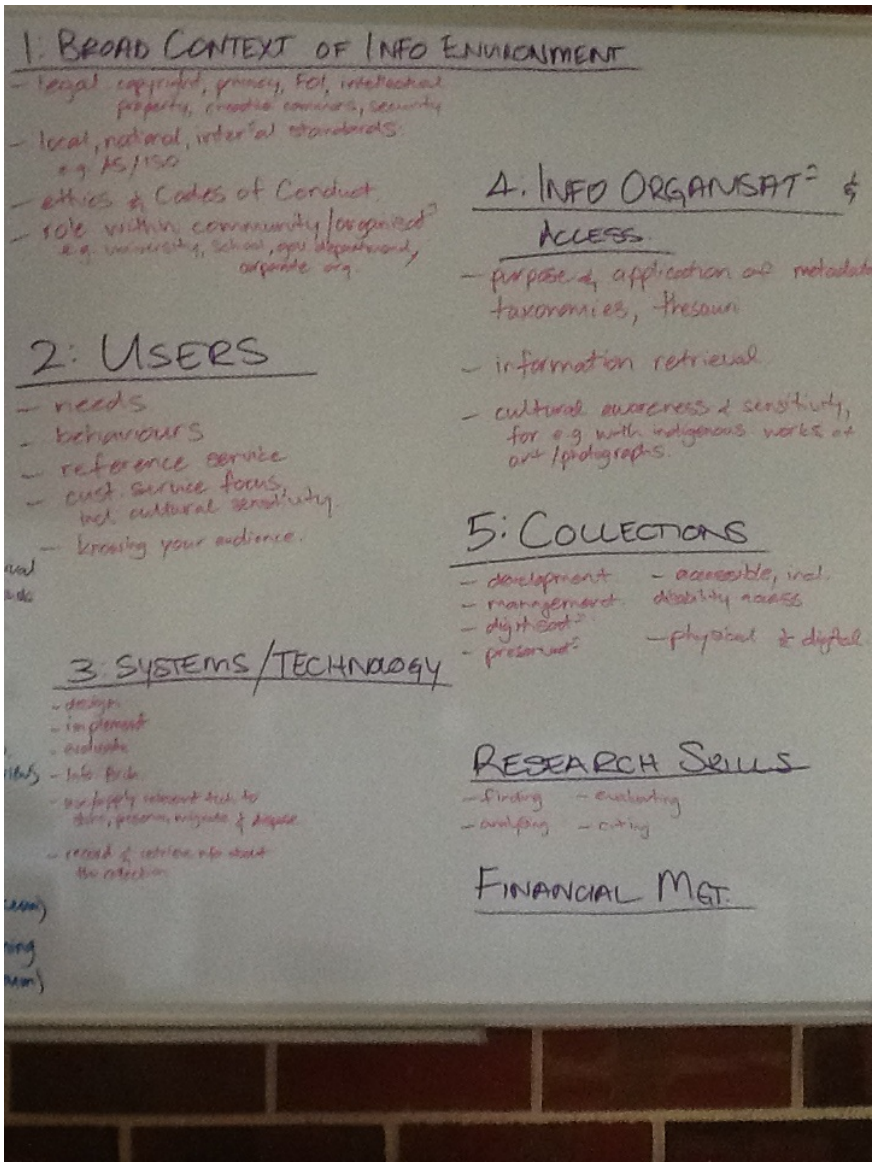
School of Information Systems
Science and Engineering Faculty
Queensland University of Technology

Appendix 5: Focus Group Analysis on whiteboard



Appendix 6: Emergence of five broad categories from focus group analysis and cross-referenced core knowledge statements



Note the omission of 'Governance: including policies, procedures and regulations of information organisations' at the point in time of the photograph being taken.

Appendix 7: 25 knowledge concepts and 15 generic skills

1. Legal: copyright, privacy, Freedom of Information (FOI), intellectual property, creative commons, information security
2. Local, national and international standards, e.g. AS/ISO
3. Governance: including policies, procedures and regulations of information organisations
4. Ethics and Codes of Conduct
5. The role within the community/organisation e.g. school, university, government department, corporate organisation
6. Various theories/philosophies as they pertain to your profession within the cultural heritage sector (e.g. archival theory, museum theory).
7. User needs
8. User behaviour/s
9. Reference services
10. Customer service focus, including cultural awareness
11. Knowing who audience/users are
12. Information Architecture principles
13. The design, implementation and evaluation of information systems
14. Use/apply relevant technologies to capture, store, preserve, migrate, and dispose
15. Record and retrieve information about the collection
16. Technology languages including XML, HTML, Java (not exhaustive)
17. Purpose and application of metadata, taxonomies, thesauri and other cataloguing tools
18. Information Retrieval
19. Cultural awareness and sensitivity e.g. access to indigenous materials
20. Collection Development
21. Collection Management
22. Digitisation
23. Preservation

24. Accessibility issues, including disability access
25. Requirements of both physical and digital collections

Generic skills and attributes

1. Communication (written and oral)
2. Professional ethics and social responsibility
3. Customer service focus
4. Project management
5. Critical thinking
6. Problem solving
7. Marketing
8. Financial skills
9. Human Resources
10. Teamwork/team focus
11. Self-management
12. Commitment to lifelong learning
13. IT skills
14. Leadership
15. Research skills
    a. finding,
    b. analysing,
    c. evaluating,
    d. citing information

Appendix 8: Second round questionnaire

Part 1: Demographic Information

Demographic information will only be asked in this round. It will not need to be asked in subsequent rounds.

1. What is your age range?
   - Under 25
   - 25-34
   - 35-44
   - 45-54
   - 55+

2. Please indicate how long you have been involved in the cultural heritage sector (in either Gallery, Library, Archive or Museum), and which sectors you have been involved with. (Educators/Researchers: Please include your teaching/research in the relevant sector)

3. What qualifications do you have? Please list all (undergraduate, postgraduate, certificate, diploma etc.) e.g. *Bachelor of Information Studies, awarded 2005; Certificate in Audio Visual Archiving, awarded 2012*, even if you may think it is not particularly relevant to your role.

Part 2: Validating information gathered from Round 1 Focus Groups

The Round 1 Focus Groups identified areas of skill and knowledge that are required of information professionals who work with cultural heritage materials. These results were then cross-referenced to three national skills documents in order to produce the lists for this research. Those documents are:

- ALIA: Core Knowledge and Skills
- ASA: Statement of Knowledge for the Archives, Records and Information Management professions (draft)
- National Standards for Australian Museums and Galleries

Please note that the terms "skill" and "knowledge" are being used in their broadest sense. Many other terms may be used, such as competencies, capabilities and qualities to name just three. It is not the purpose of this thesis to debate labels, but rather to identify what the information professional in galleries, libraries, archives and museums will need in order to carry out their job. These questions should be answered from the perspective of what skills and knowledge you expect information professionals in your sector to have. In the case of educators, this would be the sector that you teach.

1. Broad context of the Information Environment

Information professionals working with cultural heritage materials need knowledge and/or an understanding of (select all that apply):

- Legal requirements: copyright, privacy, Freedom of Information (FOI), intellectual property, creative commons, information security
- Local, national and international standards, e.g. AS/ISO
- Governance: including policies, procedures and regulations of information organisations
- Ethics and Codes of Conduct
- The role of the institution (i.e. gallery, library, archive or museum) within the community/organisation e.g. school, university, government department, corporate organisation
- Various theories/philosophies as they pertain to your profession within the cultural heritage sector (e.g. archival theory, museum theory).

Is there anything further you wish to add? Please include your reason/s for inclusion: _____
_____

2. Users / Visitors

Information professionals working with cultural heritage materials need an understanding of, or the ability to (select all that apply):

- Identify and respond to User needs
- Understand User behaviour/s
- Provide Reference and information services
- Show a Customer service focus, including cultural awareness
- Who your audience/users are

Is there anything further you wish to add? Please include your reason/s for inclusion: _____
_____

3. Systems/Technology

Information professionals working with cultural heritage materials need an understanding of and/or the ability to (please select all that apply):
- Apply Information Architecture principles
- Design, implement and evaluate information systems
- Use/apply relevant technologies to capture, store, preserve, migrate, and dispose
- Record and retrieve information about the collection
- Use technology languages including XML, HTML, Java (not exhaustive)

Is there anything further you wish to add? Please include your reason/s for inclusion: _____
_____

4. Information Organisation and Access

Information professionals working with cultural heritage materials need knowledge and/or an understanding of (select all that apply):
- Purpose and application of metadata, taxonomies, thesauri and other cataloguing tools
- Information Retrieval
- Cultural awareness and sensitivity e.g. access to indigenous materials

Is there anything further you wish to add? Please include your reason/s for inclusion: _____

5. Collections

Information professionals working with cultural heritage materials need knowledge and/or an understanding of (select all that apply):
- Collection Development
- Collection Management
- Digitisation
- Preservation (including digital preservation)
- Accessibility issues, including disability access
- Requirements of both physical and digital collections

Is there anything further you wish to add? Please include your reason/s for inclusion: _____
_____

6. Generic skills and attributes

Information professionals working with cultural heritage materials need (select all that apply):

Communication (written and oral)
Professional ethics and social responsibility
Customer service focus
Project management
Critical thinking
Problem solving
Marketing
Financial planning /budgeting
Human Resource management
Teamwork/team focus
Self-management
Commitment to lifelong learning
IT skills
Leadership
Research skills (including but not limited to finding, analysing, evaluating, and citing information)

Is there anything further you wish to add? Please include your reason/s for inclusion: _____
_____

Part 3:

*The following section aims to get a better understanding of the **future** roles and responsibilities of information professionals who work with cultural heritage material in Galleries, Libraries, Archives and Museums.*

1. What do you see as the **emerging** roles and responsibilities – or future possibilities – of information professionals employed in your sector, both generally and with particular reference to the digital environment?

2. What new?? skills, knowledge and qualities might these emerging roles need?

3. What knowledge and skills might no longer be needed?

Part 4: GLAM convergence and the Information Professional's role

A workshop held in 2008 in Florida, USA, explored (amongst other things) the possibility of a new type of cultural heritage information professional – one that has the ability to work across institutional boundaries "to help cultural heritage organizations reach their users in new ways while continuing to fulfill their basic missions" (Marty, 2008, p. 4).

***Please note:** 'Convergence' in this study does NOT refer to the physical co-location of institutions.*

Marty, P.F. (2008) Cultural Heritage Information Professionals (CHIPs) Workshop Report. *Ringling Museum of Art, Sarasota, FL, April 3-4.* Retrieved 20 August 2011 from http://chips.ci.fsu.edu/chips_workshop_report.pdf

1. How likely do you think it is that convergence between galleries, libraries, archives and museums in Australia will increase?

Very likely Likely Neutral/unsure Unlikely Very unlikely

2. Please elaborate on your response to question 1:

_____

_____

3. What impact might convergence have on the future roles of information professionals in these institutions?

_____

_____

4. How might the education for these information professionals need to change, if at all, if some level of convergence was to occur?

_____

_____

5. Are there any particular aspects of Museum, Library or Archive Studies programmes that would be beneficial to one or more of the other programmes?

Please answer according to your own professional knowledge/education (e.g. if you are an Archivist by profession and education, what aspects of an archival studies programme do you think could be of benefit to gallery, library or museum information professionals?).

_____

_____

6. Drawing on your experiences of professional education, are there any aspects of Museum, Library or Archive Studies that you don't think will be relevant in the future?

_____

_____

Appendix 9: Third round questionnaire

Part 1: Emerging Roles and Responsibilities

From your responses to the previous round, I have identified ten categories of emerging roles and responsibilities for information professionals working in galleries, libraries, archives and museums. Included is a series of statements that are considered to be key elements of what each category may contain, but is by no means exhaustive.

Please indicate your agreement or otherwise with the category (in *blue italics*), rather than each individual statement. There is an option to partly agree/disagree – if selecting this option, please elaborate.

1. Information professionals working in galleries, libraries, archives and museums in the future will need to have an understanding of the *Broad purpose* of their role.

This may include:

- Maintaining a link to the next generation: future generations will expect digital equivalents
- Preserving collections, both physical and digital, for future generations
- Having the necessary mix of both digitisation and collections management expertise
- Having respect for cultural collections

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

2. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Utilise technology in a highly skilled way*.

Examples of how this might be enacted include:

- Collect, preserve, describe and interpret using technology
- Find new ways of presenting information and collections, including the use of social media to achieve this (e.g. Vimeo, YouTube, Wikipedia and Wikimedia)
- Make more of the data generated by collection description and management
- Keep abreast of trends in how we use technology
- Understand enough about coding to know what is possible with code

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

3. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Apply digital curation principles*, including issues of:

- Storing, lending, keeping and copyright
- The care of digital assets, including born digital, and especially digital works of art
- Access: to data, metadata and all forms of multimedia
- Manage risk
- Manage digital obsolescence
- Digital preservation

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

4. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Provide wider access to data and collections*.

Examples of how this might be enacted include:

- Allowing access to digital data and metadata (e.g. the collection database), while being mindful of security, privacy and cultural sensitivity issues
- Providing collection information online, and allow to be used and re-used (subject to any copyright/usage restrictions)
- Being alert to new ways of enabling discovery of and engagement with collections

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

5. Information professionals working in galleries, libraries, archives and museums in the future will need to *Develop a user* focus*.

Examples of how this might be enacted include:

- Have a deep understanding of the user/audience needs and potential needs. Be responsive to user needs
- Engage those who are using the service: what do they want and how can it be accommodated
- Involve communities in the creation, maintenance, understanding and dissemination of cultural heritage material
- Empower communities to undertake their own identity/memory projects
- Develop an understanding and interest in the collection
- Engage the public to participate
- Move toward a participatory system/process where subjects of cultural heritage material can be directly involved in the co-creation of knowledge (including metadata, catalogue descriptions etc.)

* A 'user' is not only the public, but can include any member of any community served by the institution/collection, including various internal and external stakeholders.

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____

_____

6. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Advocate*.

Examples of how this might be enacted include:
- Highlighting the impact and value of an organisation's work
- Marketing and publicising collections
- Marketing and publicising the work that information professionals do
- Demonstrating and promoting the importance of proper, organised and valuable information management
- Advocating for open collections that are inclusive of and responsive to their communities
- Providing authoritative information with conviction
- Demonstrate ongoing relevance of cultural institutions

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

7. Information professionals working in galleries, libraries, archives and museums in the future will need to use *Learning and social justice principles for transformative outcomes*.

Examples of how this might be enacted include:
- Pro-actively engage non-traditional clients
- Articulating the social and economic outcomes of the professions' existence and its ability for social capacity building
- Articulating the social and economic outcomes of the collection (both physical and virtual) as a tool of social outcomes. The collection itself is no longer the outcome.
- ability to effectively take clients on learning journeys, not just 'train'
- to be able to proactively embed 'life long learning' into the client service experience

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

8. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Add value*.

Examples of how this might be enacted include:
- Interpreting material (in addition to providing access)
- Adding layers of information via tags, descriptions, and interpretation, in order to improve knowledge sharing and understanding
- Making more of the data generated by collection description and management
- Keeping collections alive by telling stories
- Becoming written and oral commentators on cultural collections

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

9. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Innovate / Find better ways of doing things*.

Examples of how this might be enacted include:
- The capacity to take risks
- Becoming more responsive to changing trends and foci
- Having agility to be able to rapidly prototype solutions

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

10. Information professionals working in galleries, libraries, archives and museums in the future will need to be able to *Build relationships*.

Examples of how this might be enacted include:

- Working with partners to achieve large digitisation outcomes
- Building partnerships to improve organisational objectives
- Managing partnership relationships in contestable environments
- Greater liaison with a wider and more diverse set of clients

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

Part 2: New skills and knowledge

From your responses to the previous round, I have identified nine categories of skills knowledge and capabilities for information professionals working in galleries, libraries, archives and museums. Included is a series of statements that are considered to be key elements of what each category may contain, but is by no means exhaustive.

Please indicate your agreement or otherwise with the category (in *blue italics*), rather than each individual statement. There is an option to partly agree/disagree – if selecting this option, please elaborate.

1. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Knowledge of Legal issues*.

Some examples include:

- Legislation
- Standards
- Copyright
- Licensing
- Take-down policies

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

2. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Advanced IT skills and knowledge*.

Some examples include:

- Knowledge of semantic web protocols (The W3C-approved standards – XML, RDF, and OWL – form the base protocols)
- Understand code – not to BE a coder, but to know what can be done with code
- Be able to make an effective online product that suits its purpose
- Creation and management of images and multimedia

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

3. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Business skills*.

Some examples include:
- Negotiation skills
- Project management
- Workflow design
- Enterprise architecture models
- Form alliances
- Strategic thinking
- Argue for funding
- Research: ability to source new information from different information platforms and media

☐ Agree
☐ Disagree
☐ Partly agree/disagree
If you answered 'Partly agree/disagree', please elaborate:_____
_____

4. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Working with collections and/or content*.

Some examples include:
- Understand the content of the collection
- Acquire new skills associated with collecting born digital documents (including non-textual documents such as images)
- Accessioning and deaccesioning
- Collection policies rather than [collection] development
- Market and promote the collection using web and social media skills

- Risk management as it relates to the collection in general (e.g. storage conditions, etc.); and as it relates to moral rights
- Understand other types of collections and how they might be presented and used in order to complement each other

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

5. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Ethics*.

Some examples include:
- Ethics when managing and providing access
- The need to work within a sound ethical framework
- The need for clarity re: ethics across the [GLAM] sector

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

6. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Digital Humanities skills*.

Some examples include:
- Interpreting the cultural and social impact of new media and information technologies
- Creating and applying new technologies to answer cultural, social, historical, and philological questions
- Digital literacy skills, which may include the ability to navigate across, reconfigure, and evaluate different media forms; the ability to synthesize information and bring together different media and methodologies to solve complex problems; and the ability to critically evaluate the potentials and limitations of new technologies

- Be reflexive, dialectical thinkers
- Curating online collections
- Data mining large cultural data sets

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

7. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Generic capabilities*.

Some examples include:

- Flexibility
- Adaptability
- Be well rounded
- Listening skills
- Presentation skills
- Teamwork
- Ability to communicate with various stakeholder groups at various levels and with various media (e.g. academics, general public, online and face to face)
- Leadership
- Ability to support and/or foster learning
- Critical thinking

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

8. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Knowledge of Informatics*.

Definition: ***Informatics is the science of information. It studies the representation, processing, and communication of information in natural and artificial systems. Since***

computers, individuals and organisations all process information, informatics has computational, cognitive and social aspects (Fourman, 2003).

Some examples include:

- An appreciation of opportunities afforded by technology, but also be aware of limitations
- Scoping, selection, implementation of technology
- Knowledge and exploitation of digital platforms (currently social media), but need to be agile
- Understand how the web is being used to reach out to and interact with users on new platforms such as social media
- Data visualization
- Interface design
- Human Computer Interaction

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

9. The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include *Ways of thinking about professional practice*.

Some examples include:

- Being open to challenging existing ways of doing things
- Try new things. Do things differently
- Having an attitude of "Let's give it a go". Experiment.
- Creativity
- Imagination

☐ Agree
☐ Disagree
☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate: _____
_____

Part 3: Skills and knowledge no longer needed

Please indicate your agreement or otherwise to each individual statement. There is an option to partly agree/disagree – if selecting this option, please elaborate.

1. Many, if not all, of the current skills and knowledge will still be required, as analogue holdings aren't going to vanish.

- ☐ Agree
- ☐ Disagree
- ☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

2. Skills related to specific technical knowledge will no longer be needed – e.g. particular programmes/software

- ☐ Agree
- ☐ Disagree
- ☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

3. Skills that could be performed by machines will no longer be needed – e.g. describing, access clearing, digitisation and preservation of paper records as we move towards capturing information at creation.

- ☐ Agree
- ☐ Disagree
- ☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

4. Subject expertise may become less important. Highly specialised roles need to be questioned e.g. curator of philately

- ☐ Agree
- ☐ Disagree
- ☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

5. There will be less focus on face-to-face interactions

- ☐ Agree
- ☐ Disagree
- ☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

6. There will be a diminishing need for traditional reference skills

- ☐ Agree
- ☐ Disagree
- ☐ Partly agree/disagree

If you answered 'Partly agree/disagree', please elaborate:_____
_____

Part 4: The likelihood of convergence between galleries, libraries, archives and museums in Australia

The majority of participants (68%) believed that convergence was either Likely or Very likely. A total of 32% were either unsure, or thought that convergence was Unlikely or Very unlikely.

By total responses:

Very likely: 29%
Likely: 39%
Unsure: 16%
Unlikely: 10%
Very unlikely: 6%

Responses by sector – Likely or Very likely:

Gallery: 60%
Library: 75%
Archive: 67%
Museum: 67%

Responses by sector – Unsure, Unlikely or Very unlikely:

Gallery: 40%
Library: 25%
Archive: 33%
Museum: 33%

Reasons given in support of a Likely or Very likely response:

- Financial/economic reasons
  - Competition for resources
  - A decrease in resources
  - Increasing costs
  - Budget cuts, leading to mergers

- The need to emerge from silos and break down artificial barriers [between collecting institutions]

- The expectation of integrated online services

- Efficiencies that may be gained from merging 'back of house' functions: either perceived or real.

- Availability and ability of technology to work across boundaries will lead to more collaboration which will naturally lead to more convergence.

Reasons given in support of an Unsure, Unlikely or Very unlikely response:

- Audiences expect different experiences in these places [physical]

- Most institutional convergence is political, and given that there is a non-sophisticated understanding of the differences, it is likely this will continue.

- Institutional change is unlikely.

In light of this feedback, you now have the opportunity to change your response if desired.

1. How likely do you think it is that convergence between galleries, libraries, archives and museums in Australia will increase?

Very likely
Likely
Unsure
Unlikely
Very unlikely

Please elaborate on your response: _____

Part 5: The impact on the roles of information professionals if some level of convergence were to occur.

Over half of respondents raised concerns about the specialist/generalist dichotomy. Many thought that if some level of convergence were to occur, professional skills would become undervalued; specialism and subject knowledge may be lost; there may be a lack of appreciation of the difference between an archive and a library (this was also noted as already being an issue), and the possible amalgamation of roles would result in a more generalised knowledge base.

Conversely, some respondents thought that specialisation would remain, and that only some information professionals' roles would become more generalist, albeit requiring a wider skill set, needing a deeper knowledge of diverse practices and cross-disciplinary skills.

This dichotomy raises the question of whether there may be an emerging role for a type of 'meta-professional' – someone who understands "both information technology and the nature of information itself" (Marty, 2008). Their role may include mediating between the collecting institution and its users; reaching their users in new ways and interacting with their equivalents in other parts of the GLAM sector.

1. Do you see a potential role for a meta-professional such as this?
(Note: they may or may not be employed by the collecting institutions. It may be that consultants perform this type of role, for example).

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

The following specific elements were identified as possibly impacting the roles of information professionals if some level of convergence were to occur.

Please indicate your agreement or otherwise with the category (in *blue italics*), rather than each individual statement. There is an option to partly agree/disagree – if selecting this option, please elaborate.

2. If some level of convergence were to occur, information professionals working in galleries, libraries, archives and museums will need *Increased Information Technology (IT) skills*.

Examples may include but are not limited to:

- Information professionals may be required to ensure that tools and systems that interface with each other is possible
- Embrace and master various aspects of IT
- IT skills need to be highly developed and more sophisticated
- Semantic web capabilities for greater access beyond the walls of each institution

☐ Agree
☐ Disagree
☐ Partially agree/disagree

If you answered 'Partly agree/disagree', please elaborate: _____
_____

3. If some level of convergence were to occur, information professionals working in galleries, libraries, archives and museums will need to *Collaborate*.

Examples may include but are not limited to:

- Information professional may be required to ensure that tools and systems that interface with each other is possible
- Data and collections will need to be shared, possibly via federated access, of which linked open data is a part
- Standards and synergies between associated institutions will require greater consideration and thus networking, sharing of knowledge and innovations will be required.

☐ Agree
☐ Disagree
☐ Partially agree/disagree

If you answered 'Partly agree/disagree', please elaborate: _____
_____

4. There is a need to understand different ethical governance frameworks

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

5. Modes of cataloguing will need to change

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

6. There will be a need for greater flexibility, greater innovation and creative problem solving

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

7. There may be an increase in cultural heritage experts working outside the constraints of individual organisations who can help communities (for example, indigenous communities) navigate museum collections, archives, galleries and libraries

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

Part 6: Changes that might be needed in the education for information professionals if some level of convergence was to occur.

The responses to this question, as with the previous one, also provided conflicting ideas. Some saw value in a wider skill set and greater cross-disciplinary knowledge, while others acknowledged the need for this, but were emphatic about the need to protect specialisations. For example, there will always be a need for recordkeeping regulation as part of an Archivist's knowledge base, but it could be argued that not all GLAM workers will need in depth knowledge in this area – an awareness may be enough.

Is it possible to accommodate both sides of the argument? If broader and more diverse skills and knowledge are seen as beneficial (but not to the exclusion of the need for specialists), how could that be incorporated into what is already an extremely full curriculum, which is mostly (or will be) completed as a 2-year Masters programme? Could the broader, cross-disciplinary skills and knowledge be taught at an undergraduate level, with the specialisation of Librarian, Archivist, Registrar and Collection Manager completed as it is now at a post-graduate level? (It is acknowledged that there is no dedicated Registrar post-graduate qualification).

1. A broader, cross-disciplinary undergraduate qualification followed by a specialist, professional post-graduate qualification might be an appropriate education pathway if some level of convergence were to occur.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

The following specific elements were identified as being beneficial for information professionals' education if some level of convergence were to occur.

Please indicate your agreement or otherwise to each individual statement.

2. More emphasis on legislative/legal environments

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

3. More emphasis on global information management.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

4. More emphasis on understanding the business and different business models

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

5. More emphasis on understanding the bigger issues facing the industry

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

6. More emphasis on developing advanced IT skills – understanding the possibilities that technology provides

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

7. More emphasis on the diverse practices in GLAM – e.g. cataloguing, preservation and metadata are common to all, but have different nuances in each sector.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

8. Teach the capacity and benefits for galleries, libraries, archives and museums to bring together their information and collections for the betterment of enrichment, greater understanding and an improved end-product for the consumer.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____
_____

Part 7: Aspects of Museum, Library or Archival Studies programmes that would be beneficial to one or more of the other programmes.

Please indicate your agreement or otherwise to each individual statement.

1. The following elements from *Library Studies* programmes were seen to be beneficial to other programmes:

	Agree	Disagree	Unsure
Virtual communities and how they behave	☐	☐	☐
How to design digital content	☐	☐	☐
How information is stored and used	☐	☐	☐
Controlled language/vocabulary	☐	☐	☐
Audience engagement	☐	☐	☐
Cataloguing	☐	☐	☐
Information theory	☐	☐	☐
Knowledge management (in order to understand that which cannot be documented)	☐	☐	☐

Comments: _____
_____

2. The following elements from *Archival Studies* programmes were seen to be beneficial to other programmes:

	Agree	Disagree	Unsure
Understand how archivists capture and manage context	☐	☐	☐
Understand provenance, especially for those managing acquisitions in galleries and museums	☐	☐	☐
Digital curation – knowing that it is more than scanning documents	☐	☐	☐
Provide overarching descriptions (now being used in RDA)			

The need to understand archives in order to get better access to them	☐	☐	☐
Understand records management systems	☐	☐	☐

Comments: _____
_____

3. The following elements from *Museum and Gallery Studies* programmes were seen to be beneficial to other programmes:

	Agree	Disagree	Unsure
Galleries and museums are good at interpretation	☐	☐	☐
Museum professionals bring creativity, which is not always present with librarians and/or archivists	☐	☐	☐
Expertise in sharing, displaying, and promoting parts of collections	☐	☐	☐
Care of physical objects	☐	☐	☐
Object biography and significance studies	☐	☐	☐

Comments: _____
_____

4. Some respondents suggested elements to be included in GLAM study programmes that don't necessarily belong to one sector – some may not be "native" to GLAM at all. These include:

	Agree	Disagree	Unsure
A wider understanding of all the disciplines in the information management environment	☐	☐	☐
Recognise both differences and similarities and be realistic about what works best in a given environment	☐	☐	☐
All GLAM information professionals are in greater need of project management skills			

All GLAM information professionals are in greater need of information management skills	☐	☐	☐
All GLAM information professionals are in greater need of communication skills	☐	☐	☐
Visitor centred/client focus transcends the sector: it would be beneficial to see how each institution manages this function	☐	☐	☐
Principles of storage, information systems and databases managing collections are all areas of crossover: it would be beneficial to see how each institution manages these	☐	☐	☐
Copyright and how it affects collection management	☐	☐	☐
Media training: creation of audio, graphics and video	☐	☐	☐
Web display, dissemination and promotion	☐	☐	☐

Comments: _____
_____

Part 8: Aspects of Museum, Library or Archive Studies that may not be relevant in the future?

Please indicate your agreement or otherwise to each individual statement.

1. Some of the traditional theories may not have as much of a home as they have in the past. Perhaps they are the history of the sector rather than the future.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

2. The traditional approach to reference function of librarians may not be relevant in the future

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

3. The bespoke, hand-crafted approaches must be diminished if the tsunami of digital information is to be brought into the professional fold

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

4. Traditional 'collection management' is becoming less useful. In cyberspace information resources can be anywhere and do not necessarily need to be collected.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

5. Some areas of object classification within museum studies are increasingly irrelevant in light of the capabilities of sophisticated databases for collection management. While the skills are often no longer needed, an understanding of the principles are still necessary to understand why we approach cataloguing in a particular way.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

6. Many of the principles taught in GLAM courses will remain the same - it will be the application of the skills that will change. For example, there will always be a need to look after, research and interpret items, be they archives, books, animal specimens or works of art. The ways we do this might change but not our core responsibilities.

- ☐ Agree
- ☐ Disagree
- ☐ Unsure

Please elaborate on your response: _____

References: [relevant to the questionnaire]

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Appendix 10: Corresponding questions from Round 2 to Round 3 questionnaire

Please note:
- Demographic information was only collected in the first round, therefore there is no corresponding part in the Round 3 questionnaire.
- Questions have been abbreviated in some instances

Round 2	Round 3
Part 3: Future roles & responsibilities **Q1:** What do you see as the emerging roles & responsibilities of information professionals who work with cultural heritage material in galleries, libraries, archives and museums?	**Part 1: Future roles & responsibilities** Information professionals working in galleries, libraries, archives and museums in the future will need to: **Q1:** Understand the Broad purpose of their role **Q2:** Utilise technology in a highly skilled way **Q3:** Apply digital curation principles **Q4:** Provide wider access to data and collections **Q5:** Develop a user focus **Q6:** Advocate **Q7:** Use learning and social justice principles for transformative outcomes **Q8:** Add value **Q9:** Innovate/find better ways of doing things **Q10:** Build relationships
Part 3: Future roles & responsibilities **Q2:** What new skills, knowledge & qualities might these emerging roles need?	**Part 2: New skills, knowledge and qualities** The new skills, knowledge and qualities that Information professionals working in galleries, libraries, archives and museums will need in the future include: **Q1:** Knowledge of legal issues **Q2:** Advanced IT skills **Q3:** Business skills **Q4:** Working with collections and/or content **Q5:** Ethics **Q6:** Digital Humanities skills **Q7:** Generic capabilities **Q8:** Knowledge of Informatics **Q9:** Ways of thinking about professional practice
Part 3: Future roles & responsibilities **Q3:** What knowledge and skills might no longer be needed?	**Part 3: Skills and knowledge no longer needed** **Q1:** Many, if not all, of the current skills and knowledge will still be required **Q2:** Skills related to specific technical knowledge will no longer be needed **Q3:** Skills that could be performed by machines will no longer be needed **Q4:** Subject expertise may become less important **Q5:** There will be less focus on face-to-face interactions

	Q6: There will be a diminishing need for traditional reference skills
Part 4: GLAM convergence **Q1:** How likely do you think it is that convergence between galleries, libraries, archives and museums in Australia will increase?	**Part 4: GLAM convergence** **Q1:** How likely do you think it is that convergence between galleries, libraries, archives and museums in Australia will increase?
Part 4: GLAM convergence (cont.) **Q2:** How might the roles of information professionals be impacted, if at all, if some level of convergence were to occur?	**Part 5: Impact on roles of IPs** **Q1:** Do you see a potential role for a meta-professional? If some level of convergence were to occur, information professionals working in galleries, libraries, archives and museums will need: **Q2:** Advanced IT skills **Q3:** to collaborate **Q4:** There is a need to understand governance frameworks **Q5:** Modes of cataloguing will need to change **Q6:** There will be a need for greater flexibility, greater innovation and creative problem solving **Q7:** There may be an increase in cultural heritage experts working outside the constraints of individual organisations who can help communities (for example, indigenous communities) navigate museum collections, archives, galleries and libraries.
Part: 4 GLAM convergence (cont.) **Q3:** How might the education for these information professionals need to change, if at all, if some level of convergence was to occur?	**Part 6: Changes that might be needed in the education for IPs** **Q1:** A broader, cross-disciplinary undergraduate qualification followed by a specialist, professional post-graduate qualification might be an appropriate education pathway if some level of convergence were to occur. **Q2:** More emphasis on legislative/legal environment **Q3**: More emphasis on global information management. **Q4:** More emphasis on understanding the business and different business models. **Q5:** More emphasis on understanding the bigger issues facing the industry. **Q6:** More emphasis on developing advanced IT skills – understanding the possibilities that technology provides. **Q7:** More emphasis on the diverse practices in GLAM **Q8:** Teach the capacity and benefits for galleries, libraries, archives and museums to bring together their information and collections for the betterment of enrichment, greater understanding and an improved end-product for the consumer.

Part 4: GLAM convergence (cont.) **Q4:** Are there any particular aspects of Museum, Library or Archive Studies programmes that would be beneficial to one or more of the other programmes?	**Part 7: Aspects of Museum, Library or Archival Studies programmes that would be beneficial to one or more of the other programmes.** **Q1:** The following elements from Library Studies programmes were seen to be beneficial to other programmes … **Q2:** The following elements from Archival Studies programmes were seen to be beneficial to other programmes … **Q3:** The following elements from Museum and Gallery Studies programmes were seen to be beneficial to other programmes … **Q4:** Some respondents suggested elements to be included in GLAM study programmes that don't necessarily belong to one sector – some may not be "native" to GLAM at all. These include …
Part 4 GLAM convergence (cont.) **Q5:** Are there any aspects of Museum, Library or Archive Studies that you don't think will be relevant in the future?	**Part 8: Aspects of Museum, Library or Archive Studies that may not be relevant in the future.** **Q1:** Some of the traditional theories may not have as much of a home as they have in the past. **Q2:** The traditional approach to reference function of librarians may not be relevant in the future. **Q3:** The bespoke, hand-crafted approaches must be diminished if the tsunami of digital information is to be brought into the professional fold. **Q4:** Traditional 'collection management' is becoming less useful. **Q5:** Some areas of object classification within museum studies are increasingly irrelevant in light of the capabilities of sophisticated databases for collection management**.** **Q6:** Many of the principles taught in GLAM courses will remain the same - it will be the application of the skills that will change.

Appendix 11: Example of initial open coding process

Round 2, Part 3, Question 1

Resp. 11 (Gallery):
Emerging roles and responsibilities - care of digital assets including multimedia and screen based works, born digital images - how do you store, lend, keep, what copying is permitted.

Comment: Category: understanding of digital collections. Issues of Copyright (legal, standards). Is Copyright just a subset of understanding digital collections?

Resp. 16 (Gallery):
- Being more responsive to changing trends and focus.
- Ability to provide authoratitive [sic] information and with conviction.
- Up to date with changing technologies and information providers.

Comment: Category: could include Technology

Comment: Category: Communication

Comment: Category: Technology

Resp. 20 (Gallery):
- Preservation of digital information, particularly digital works of art.
- Access to digital data by general public particularly as relates to collection database.
- Maintaining security, privacy and cultural sensitivity of collection database material whilst also allowing greater access.

Comment: Category: Future focussed/forward looking

Comment: Category: Wider access

Comment: Category: Wider access

Resp. 23 (Gallery):
- Contributors to Social Media.
- Commentators oral and written on Cultural Collections.

Comment: Category: Technology

Comment: Category: Communication

Appendix 12: 17 first-level categories from open coding

Technology

Understanding of digital collections

Wider access

Communication

Future focussed / opportunities

User focussed/understanding users

Relationship building

Provide services

Engagement / participation / interaction

Collections

Social justice

Advocacy

Value add

Data

Innovation / finding better ways to do things

Collaboration

New roles

Appendix 13: Example of first-level categories with supporting responses

Note: Not all 17 categories can be seen in the photograph

Appendix 14: Validating information from focus groups – Results

	Gallery (6)	Library (8)	Archive (9)	Museum (8)	TOTAL (31)
1. Broad context of the Information Environment					
Legal requirements: copyright, privacy, Freedom of Information (FOI), intellectual property, creative commons, information security	6 (100%)	8 (100%)	8 (88.88%)	7 (87.5%)	**29**
Local, national and international standards, e.g. AS/ISO	5 (83.33%)	7 (87.5%)	9 (100%)	5 (62.5%)	**26**
Governance: including policies, procedures and regulations of information organisations	6 (100%)	7 (87.5%)	8 (88.88%)	8 (100%)	**29**
Ethics and Codes of Conduct	6 (100%)	7 (87.5%)	9 (100%)	8 (100%)	**30**
The role of the institution (i.e. gallery, library, archive or museum) within the community/organisation e.g. school, university, government department, corporate organisation	5 (83.33%)	8 (100%)	9 (100%)	8 (100%)	**30**
Various theories/philosophies as they pertain to your profession within the cultural heritage sector (e.g. archival theory, museum theory)	4 (66.66%)	7 (87.5%)	9 (100%)	5 (62.5%)	**25**
2. Users/Visitors					
Identify and respond to user needs	6 (100%)	8 (100%)	9 (100%)	8 (100%)	**31**
User behaviour/s	6 (100%)	8 (100%)	8 (88.88%)	7 (87.5%)	**29**
Provide reference and information services	6 (100%)	7 (87.5%)	9 (100%)	7 (87.5%)	**29**
Show a customer service focus, including cultural awareness	5 (83.33%)	8 (100%)	9 (100%)	7 (87.5%)	**29**
Who your audience/users are	5 (83.33%)	8 (100%)	9 (100%)	7 (87.5%)	**29**
3. Systems/Technology					
Apply Information Architecture principles	3 (50%)	6 (75%)	4 (44.44%)	6 (75%)	**19**
Design, implement and evaluate information systems	2 (33.3%)	7 (87.5%)	6 (66.66%)	7 (87.5%)	**22**
Use/apply relevant technologies to capture, store, preserve migrate and dispose of information/documents	6 (100%)	8 (100%)	9 (100%)	8 (100%)	**31**
Record and retrieve information about the collection	6 (100%)	8 (100%)	9 (100%)	8 (100%)	**31**
Use technology languages including XML, HTML and Java (this is not exhaustive)	1 (16.66%)	4 (50%)	3 (33.33%)	4 (50%)	**12**

4. Information Organisation and Access					
Purpose and application of metadata, taxonomies, thesauri, and other cataloguing tools	5 (83.33%)	8 (100%)	9 (100%)	8 (100%)	**30**
Information Retrieval	6 (100%)	7 (87.5%)	9 (100%)	7 (87.5%)	**29**
Cultural awareness and sensitivity e.g. access to indigenous materials	6 (100%)	8 (100%)	9 (100%)	8 (100%)	**31**
5. Collections					
Collection Development	6 (100%)	7 (87.5%)	7 (77.7%)	6 (75%)	**26**
Collection Management	6 (100%)	8 (100%)	8 (88.88%)	7 (87.5%)	**29**
Digitisation	6 (100%)	8 (100%)	8 (88.88%)	7 (87.5%)	**29**
Preservation (including digital preservation)	6 (100%)	8 (100%)	9 (100%)	7 (87.5%)	**30**
Accessibility issues, including disability access	6 (100%)	8 (100%)	8 (88.88%)	8 (100%)	**30**
Requirements of both physical and digital collections	6 (100%)	8 (100%)	8 (88.88%)	8 (100%)	**30**
6. Generic skills and attributes					
Communication (written and oral)	6 (100%)	8 (100%)	9 (100%)	8 (100%)	**31**
Professional ethics and social responsibility	6 (100%)	8 (100%)	9 (100%)	8 (100%)	**31**
Customer Service focus	5 (83.33%)	8 (100%)	9 (100%)	5 (62.5%)	**27**
Project Management	6 (100%)	7 (87.5%)	7 (77.7%)	6 (75%)	**26**
Critical thinking	5 (83.33%)	8 (100%)	9 (100%)	5 (62.5%)	**27**
Problem solving	6 (100%)	8 (100%)	9 (100%)	7 (87.5%)	**30**
Marketing	3 (50%)	5 (62.5%)	5 (55.55%)	4 (50%)	**17**
Financial planning/budgeting	3 (50%)	5 (62.5%)	6 (66.66%)	6 (75%)	**20**
Human Resource management	3 (50%)	5 (62.5%)	7 (77.7%)	2 (25%)	**17**
Teamwork/team focus	6 (100%)	8 (100%)	8 (88.88%)	6 (75%)	**28**
Self-management	5 (83.33%)	6 (75%)	8 (88.88%)	7 (87.5%)	**26**
Commitment to lifelong learning	5 (83.33%)	7 (87.5%)	8 (88.88%)	5 (62.5%)	**25**
IT skills (generic skills, as opposed to the specific ones mentioned in Q. 7)	5 (83.33%)	8 (100%)	8 (88.88%)	7 (87.5%)	**28**
Leadership	4 (66.66%)	5 (62.5%)	5 (55.55%)	3 (37.5%)	**17**
Research skills (including but not limited to finding, analysing, evaluating and citing information)	5 (83.33%)	6 (75%)	9 (100%)	7 (87.5%)	**27**

Appendix 15: Likelihood of convergence - Round 2 and 3 results

Combined totals:

	Round 2 (%)	Round 3 (%)	Mean (%)	Standard Deviation (percentage points)
Very likely	29	22	25.5	4.95
Likely	39	52	45.5	9.19
Neutral/unsure	16	15	15.5	0.70
Unlikely	10	11	10.5	0.70
Very unlikely	6	0	3	4.24

Responses by sector: Likely or Very likely

	Round 2 (%)	Round 3 (%)	Mean (%)	Standard Deviation (percentage points)
Galleries	60	50	55	7.07
Libraries	75	86	80.5	7.78
Archives	67	75	71	5.66
Museums	67	75	71	5.66

Responses by sector: Neutral/Unsure, Unlikely or Very unlikely

	Round 2 (%)	Round 3 (%)	Mean (%)	Standard Deviation (percentage points)
Galleries	40	50	45	7.07
Libraries	25	14	19.5	7.78
Archives	33	25	29	5.66
Museums	33	25	29	5.66

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