

**SUPPORTING SME COLLECTING ORGANISATIONS: A BUSINESS MODEL
FRAMEWORK FOR DIGITAL HERITAGE COLLECTIONS**

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ABSTRACT

Increasing numbers of heritage collecting organisations such as archives, galleries, libraries and museums are moving towards the provision of digital content and services based on the collections they hold. The collections sector in Australia is characterised by a diverse range of often very small organisations, many of which are struggling with the transition to digital service delivery. One major reason for this struggle is the lack of suitable underlying business models for these organisations as they attempt to achieve a sustainable digital presence. The diverse characteristics of organisations within the collections sector make it difficult, if not impossible, to identify a single business model suitable for all organisations. We argue in this paper that the development of a flexible e-business model framework is a more useful strategy for achieving this goal. This paper presents a preliminary framework based on the literature, utilising the Core + Complement (C+) Business Model Framework for Content Providers initially developed by Krueger et al. (2003) and outlines how the framework will be refined and investigated empirically in future research within the Australian collections sector.

Keywords Business Model, Digital, Online, e-business, Collections, Cultural, Heritage, Scientific, Small and Medium Enterprises (SMEs)

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INTRODUCTION

The transition to an economy and society increasingly shaped by digital information and communications technology (ICT) presents profound challenges for all industries and organisations (Pilat, 2003; Schreyer, 2000; Abbott, 2001). This is particularly true for SMEs (small to medium-sized enterprises) because of limitations in their financial power, technical knowledge and human resources (Ihlstrom & Nilsson, 2003; Taylor & Murphy, 2004; Tucker & Lafferty, 2004). The adoption of ICT by SMEs has been a focus for many researchers worldwide (Al-Qirim, 2005; Burke, 2005; Ihlstrom & Nilsson, 2003; Levy & Powell, 2003; Parker & Castleman, 2007a; 2007b; Taylor & Murphy, 2004) with varying results in terms of identifying the empirical significance of ICT adoption factors for SMEs (Parker & Castleman, 2007b). The adoption of ICT and the implementation of e-business practices often require SMEs to transform their thinking about products, services, markets and customers (Finn et al., 2006; Ihlstrom & Nilsson, 2003; Shiels et al., 2003). In an interconnected digital world, new networks of exchange and collaboration may emerge, as well as new markets and new sources of competition (Chaffey, 2000; Clayton & Waldron, 2003; Pigneur, 2000).

While the definition of an SME differs between countries and industries (Ayyagari et al., 2007; Srivihok & Intrapairot, 2004), the European Commission classifies SMEs as micro, small or medium sized (European Commission, 2008). In Australia, which is the context of this study, organisations with five or fewer employees are classified micro-sized, those with 5-19 employees as small and those with 20-200 employees as medium (ABS, 2008). SMEs are significant drivers of economic growth for almost all nations (Kotelnikov, 2007). In many countries, SMEs represent the majority of enterprises (90% and above), explaining the importance of supporting SMEs – particularly in terms of ICT adoption (European Commission, 2008; Taylor & Murphy, 2004).

According to the Australian Bureau of Statistics (ABS), Australia has approximately 3,000 collecting organisations, including more than 500 public libraries, 600 public archives and about 2000 museums of various kinds, which themselves include public art galleries and historic properties (ABS, 2007). These collecting organisations are the custodians of records and objects of local, regional and national significance. The artefacts and associated information they hold are the legacy of the nation's history and the foundation of its collective knowledge and memory (Collections Council of Australia, 2006). The vast majority of these organisations would be defined as SMEs because they typically have few (if any) paid employees, often rely on volunteer staff and, with a few exceptions, have very low annual turnover. The experience of ICT and e-business adoption in the collections sector is therefore representative, if not typical, of SMEs generally and particularly of not-for-profit micro-sized enterprises.

Organisations classified as SMEs not only differ in number of employees and turnover, but also in terms of business goals and philosophy (Macpherson et al., 2003; Parker & Castleman, 2007a; 2007b). This is important when we look at not-for-profit SMEs, which are not driven to maximise profits but are instead bound by social, ethical and philosophical principles (Finn et al., 2006). For these organisations, ICT use may support a range of business purposes such as community engagement, marketing and fundraising, rather than simply optimising profit and efficiency.

Many collecting organisations have identified online content and service delivery as an important new way to fulfil their organisational missions (European Commission, 2002). Although there are already significant amounts of digital content from scientific and cultural collections online, there is a significant knowledge gap about how existing online collections information creates value, both for end-users and for collecting organisations themselves. There is also a very limited understanding within the collections sector about how to support and sustain participation in the digital economy

by collecting organisations, particularly those smaller, non-profit organisations which rely on volunteer labour for their survival (CLIR, 2001, Zorich, 2003). The small amount of research-based literature about e-business models for heritage collecting organisations (such as European Commission, 2002; Wall Communications, 2002; WIPO, 2007; Davies, 2008) focuses primarily on larger institutions and portal-based aggregation services from multiple organisations large and small. To date there has been no theory-based development of e-business models that might support greater participation in the digital economy by small collecting organisations and ensure the long-term sustainability of digital service delivery by such organisations.

In this paper we argue that one major reason the collections sector struggles with e-business is the lack of a flexible business model framework for collecting organisations venturing into digital service delivery. While business issues for online content and service delivery by collecting organisations have been discussed for some time, online content and service within the collections sector is generally not underpinned by any explicit e-business model. This is partly because of widespread confusion about the meaning of the term business model, particularly in a digital marketplace. In addition, not-for-profit collecting organisations in Australia are most likely to identify the operation of their businesses with that of a government service than with a commercial enterprise. The business model framework approach advocated here allows for a more flexible conception of the not-for-profit enterprise.

In this paper, drawing on earlier definitions such as those of Timmers (1998) and Weill and Vitale (2001), we define a business model as:

A representation of a system for creating and exchanging value, which describes roles, relationships and the flows between actors within the system. An e-business model describes these roles, relationships and flows within a system which depends upon digital information and communication technology (ICT).

To date, discussion relevant to e-business models for collecting organisations within the practitioner and government literature has focussed on the choice of business models, trying to identify or implement a unique formula in terms of a single business model. We argue instead that the heterogeneity of the collections sector and of the rapidly evolving marketplace for digital content and services require a more complex "matrix" approach to designing and implementing e-business models within collecting organisations. Rather than seeking to identify the single best or most viable e-business model we need a flexible approach which recognises the diverse needs, capabilities and objectives of SME collecting organisations. This is what we propose in the framework presented in this paper.

The deficiencies in the collections sector literature noted above are an echo of similar deficiencies identified by Parker and Castleman (2007a) within the broader e-business literature. Their analysis of 120 SME and e-business journal articles from 2003-2006 identified three common problems within the literature on SME up-take of e-business which need to be addressed in future SME research:

- Treating SMEs as a homogeneous group of organisations.
- Applying a technological expansionist view which assumes that e-business is the only solution and should be adopted by all SMEs.
- Focusing on SME adoption of "the Internet" and "the Web" and so on, instead of acknowledging that these technologies can fulfil other business application tasks and goals.

The first of these issues, "*treating SMEs as a homogeneous group*", is of particular relevance for this paper because Australian collecting organisations such as archives, galleries, libraries and

museums, which are predominantly SMEs, are very diverse in terms of size, organisational structure, needs and capabilities. We address this limitation in the existing SME literature by presenting a conceptual argument which suggests that our preliminary business model framework can support the disparate needs of digital heritage collection organisations. We will conclude this paper by describing our future research programme which aims to develop this framework further and build empirical evidence concerning its usefulness to Australian heritage collecting organisations.

Our proposed framework also addresses the third problem identified by Parker and Castleman, by recognising the diversity of business functions web-based technologies can perform within collections sector organisations. The framework components are extensible to make provision for differences in mission, end-user, delivery systems, licensing, content and services.

THE CHALLENGE OF SUSTAINING DIGITAL HERITAGE COLLECTIONS

The archive, art, library and museum collections managed by Australia's collecting organisations hold the material and documentary evidence of the nation's social, economic and cultural life, as well as the natural history of its plant, animal and geological life (Collections Council of Australia, 2005). Increasingly, these collections have been documented and recreated in digital form, creating a wealth of new "virtual" collections. The storehouses and library stacks which characterised traditional cultural heritage institutions are being supplemented by server racks and hard disks (Lynch, 2002). The cultural content maintained by our public collecting and heritage organisations is now widely accessible electronically as websites, databases, scanned images, e-books, video and other digital files. Many more people now visit the websites of these collecting institutions than enter their physical premises (Lynch, 2002; Kline et al., 2003). Much of the nation's future history is "born digital": the records, images, documents, data, websites and recordings captured and collected by Australia's collecting organisations (Collections Council of Australia, 2006), although not all of these virtual collections are as yet of the highest quality or readily accessible.

All of Australia's major collecting institutions have an online presence, both through their own websites and through government portal sites such as Australia's Culture and Recreation Network (Culture and Recreation Portal, 2007) and Collections Australia Network (CAN, 2007). The size of Australia's publicly held digital collections is growing rapidly through systematic digitisation and the creation and acquisition of new materials.

An essential part of the mission of Australia's collecting organisations has been to provide public access to collections material, generally on a free or cost-recovery basis. Through exhibitions, loans and supervised viewing and reproduction, collecting organisations have enabled and encouraged people to experience the wealth of these collections and to make use of them for educational, personal and professional purposes (Collections Council of Australia, 2007). Through publications and recordings – and a range of other merchandise – collecting organisations have further increased exposure and use of these collections and generated additional revenue. Authors, artists, filmmakers and media producers have also drawn upon those collections in their own creative and educational works, typically through content licensing agreements (Collections Council of Australia, 2006; 2007). Increasingly, however, public demand for these collections is shifting online. Users of these collections seek direct online access to view, copy and manipulate digital representations and information. The advent of Web 2.0 applications, designed to satisfy the increasing appetite for user-controlled online applications, is extending the range of end uses for digital collection objects,

as users create and combine content in new ways (often without regard for the source of origin or stipulated conditions of use) (Collections Council of Australia, 2007).

While digital heritage collections have grown rapidly, sustaining them into the future (both as a legacy and as a resource) is a matter of concern for many cultural heritage organisations. The evolution of ICT and the Internet led to increased interest worldwide for digital cultural content (including born digital content as well as digitised tangible content) within the collections sector (Erpanet, 2004; Smith, 2004). Today, many collecting organisations are aware of the importance of transforming themselves into digital collecting organisations for reasons such as recording and preserving existing two and three dimensional collection items² in digital form and providing born digital content (CLIR, 2001, Smith, 2004). In creating and sustaining digital collections, however, some of the identified challenges faced by cultural heritage organisations have included (Wall Communications Inc., 2002):

- Ensuring the necessary sources of funding (public/private/self-funding, corporate/private sponsors, partnership arrangements, product sales, licence/subscription/access fees) for transformation into a digital collecting organisation;
- Establishing the necessary technical infrastructure and in-house expertise for digitising content and providing digital content;
- Managing standards;
- Gaining copyright clearance; and
- Addressing the demands and needs of the target audience.

Of all these challenges, economic factors are the most pressing for collecting organisations, since digitising and providing content is quite resource-intensive (especially financially) and the collections sector is characterised by non-profit/low-profit margin SME organisations which, to a large extent, depend on external funding or sponsorship from public or private sources (Smith, 2004). A survey undertaken by Wall Communications in 2002 revealed that many Canadian collecting organisations had future plans to develop their online presence and capabilities but were somewhat vague in terms of future funding requirements. This suggests that for SME collecting organisations and for the collections sector as a whole, the question has moved from "*How to become digital?*" to "*How to become digitally sustainable?*".

The challenge of sustaining digital collections, and concerns over the directions of these initiatives, has also been raised in the Australian context. For example, a report from the Australian National Audit Office (ANAO, 2005), released in 2005, highlighted a number of issues in planning and managing digitisation within Australia's five major national collecting institutions, noting that:

"... there are no stated means within the cultural institutions to determine the success of digitisation program(s) and evaluate their effectiveness" (ANAO, 2005). Further, "The ANAO considers that cultural institutions should define how they will measure the outcomes of their respective digitisation programs, be it for preservation, conservation or accessibility. [...] Most institutions have the necessary data to undertake these assessments already but have not articulated their ultimate goals" (ANAO, 2005).

Sustainability challenges were also raised at a national summit on Digital Heritage Collections, convened in 2006 by the Collections Council of Australia (Collections Council of Australia, 2007),

² 2D refers to pictures (which might well be of 3D objects), while 3D refers to images which can be viewed from all planes.

at which 190 representatives from archive, gallery, library and museum organisations met to discuss Australian achievements and challenges in building and sustaining digital heritage collections. The Action Plan arising from that event notes:

"A number of world-leading initiatives in digital preservation and access are already being progressed by different parts of the collections sector in Australia, but overall the efforts are piecemeal, under-funded and difficult to sustain at the industrial scale that is needed"
(Collections Council of Australia, 2007, p. 3)

In Australia, few collecting organisations have to date developed self-sustaining digital services. Digital service delivery in almost all heritage collecting institutions relies on additional sources of funding or on the reallocation of internal organisational resources. The National Archives of Australia aimed at cost-recovery on its digitisation activities through a "digitisation-on-demand" approach³. The national war museum (Australian War Memorial) has created a significant revenue stream through the digitisation and packaging of war service records. But these collecting organisations, and others like them which charge licensing and reproduction fees for digital images and documents from their collections, are usually the larger collecting institutions with hundreds of staff and substantial ongoing government funding. They do not fit within the definition of SME offered here and represent no more than two or three percent of Australia's collecting organisations.

Such dramatic shifts in revenue channels may be achievable by large collecting organisations because of their sophistication and general business "savvy". Toepler (2006), for example, in a discussion of the Metropolitan Museum of New York's changing attitude to revenue-raising notes that revenue from sales of merchandise and auxiliary services increased significantly over the period from 1960-2002, suggests that the organisation had essentially transformed itself into a highly effective retail operation over a comparatively short space of time. However, smaller organisations may not be able to achieve benefits of this sort so easily.

Alexander (2000), in a widely-cited paper on the response of not-for-profit organisations to the rise of New Public Management, notes that these better-established community organisations are more able to persuade clients and government funding bodies that their services are worth purchasing. Smaller organisations almost always, by their very nature, lack such expertise. As Lazarevski et al. (2008) found in a study of Australian bushcare organisations' responses to changes in public sector funding, "... *the amount of funding is a reflection of the level of expertise and experience of these organisations; therefore, those with a limited amount of experience will have lower amounts of funding and consequently less sophisticated structures*" (p. 227). The findings of both these studies have strong parallels with the experiences of collecting organisations – many of which also lack the sophistication needed to optimise their income stream.

In the next section we argue, conceptually, that a business model perspective might potentially assist in resolving the problem of sustaining and developing Australia's digital heritage collections and in helping to develop effective e-business practices among all organisations in the collecting sector, and especially for SME collecting organisations.

³ <http://www.naa.gov.au/about-us/publications/fact-sheets/fs249.aspx>

A BUSINESS MODEL APPROACH TO SUSTAINING DIGITAL HERITAGE COLLECTIONS

Over the past ten years the term "business model" has received attention from many researchers, as well as from many different industries (Afuah & Tucci, 2001; Osterwalder & Pigneur, 2002; Rappa, 2002; Weill & Vitale, 2001). With the advent of the Internet and the increasing importance of ICT, "business models" have evolved into "e-business models" (also referred to as digital business models or Internet business models) to address the specific needs and requirements of the increasingly online business environment (Margretta, 2002). With the bursting of the Internet Bubble at the turn of the century, interest in e-business models declined – although the importance of a well-defined business model for a company's success and sustainability is undiminished (Afuah & Tucci, 2001; Margretta, 2002).

The e-business model definition we have used as the basis for this paper is founded on many years of not entirely consistent academic argument over what constitutes a precise and useful definition of an e-business model, which has resulted in a variety of definitions. Weill and Vitale (2001), for example, see a business model as "... a description of the roles and relationships among a firm's consumers, customers, allies, and suppliers that identifies the major flows of product, information, and money, and the major benefits to participants", while Timmers (1998) saw a business model in fairly similar terms as:

"... an architecture for the product, service and information flows, including a description of the various business actors and their roles; and a description of the potential benefits for the various business actors; and a description of the sources of revenue" (Timmers, 1998, p.2).

Other authors, however, have emphasised individual aspects of business models in their definitions. Petrovic et al. (2001), for example, provide a definition focusing on value creation within an organisation, while Rappa (2002) and Afuah and Tucci (2001) concentrate on the revenue generation aspect of business models; and the descriptions provided by Picard (2000) and Linder and Cantrell (2000) are more practice-orientated. Picard (2000) emphasises business activities and their underlying characteristics, while the interrelationship of individuals and parts of an organisation in generating revenue are central to Linder and Cantrell (2000). As we have already noted, we believe a useful composite definition of business model and its corollary e-business, is:

A representation of a system for creating and exchanging value, which describes roles, relationships and the flows between actors within the system. An e-business model describes these roles, relationships and flows within a system which depends upon digital information and communication technology (ICT).

The adoption of new technology may suggest, or necessitate, a reworking of the current business model(s) of an organisation or industry. In a commercial environment, business model innovation through the use of ICT may provide a significant competitive edge (Margretta, 2002). For a not-for-profit or government organisation, by contrast, business model innovation is typically pursued for reasons other than profit or competitive advantage. Improving efficiency and effectiveness by increasing productivity and/or the achievement of desired client and social outcomes are typically more important objectives for public sector collecting organisations (Dart, 2004). Promoting access to and use of heritage collections is typically the highest priority for these organisations, rather than generating a return on investment made in digitisation and electronic content delivery. The growing imperative for digital content and service delivery represents a significant new area of activity for these institutions. In many instances new digital activities have been undertaken without sufficient additional funding, which limits the scope and threatens the sustainability of such initiatives.

"Business model" and "e-business" are not terms often associated with cultural heritage institutions, which are grounded in a tradition of public service and in the materiality of information. Nonetheless, in times of rapid change, a business model perspective provides a perfect lens through which to view the future of cultural heritage in a digital world. Business models help define how to identify and respond to changed circumstances and new opportunities. Yet, this remains an unfamiliar concept for many museums and other collecting organisations. "As a community..." observe Falk and Sheppard (2006, p. 22), "... museums have only recently begun to appreciate that they need to be more explicit about their business models, that they need to attend to the details of their business model as much as do businesses in the for-profit world".

Simple income generating practices cannot properly be described as a business model. Rather, they typically represent simple cost-recovery and/or revenue-raising. A business model comprises much more than a revenue stream and must take account of value flows that go beyond simple income generation. In fact, it has been argued recently in some collecting organisations that the pursuit of such revenue streams for digitised collections material may in fact be detrimental to advancing other organisational objectives. Major collecting institutions such as the Powerhouse Museum in Australia and the Victoria and Albert Museum in the UK have recently eschewed the collection of licensing fees for collection-based images to support their goal of free open access to publicly-funded information (Bray, 2009). The open access movement emerging in the wake of initiatives such as *Flickr Commons*⁴, pioneered by the US Library of Congress, represents a new business model for digital heritage collections predicated on the ideal of a shared "digital commons" (WIPO, 2007). New approaches of this kind challenge many of the traditional preoccupations with intellectual property (IP) rights which have constrained digital content and service delivery by collecting organisations. Nonetheless, such an approach may not meet the goals of all collecting organisations equally well and, in any case, IP rights represent just one aspect of a fully developed business model.

As the World Intellectual Property Organisation (WIPO), an agency of the United Nations, observes, "... *e-business models for collecting organisations like museums need to be cognisant of the differences within the sector, as well as those existing between profit and not-for-profit organisations. It is apparent, however, even from the type of work conducted with profit-oriented companies that a 'one-size-fits-all' model will not work*" (WIPO, 2007)⁵.

The use of appropriate business models to focus and direct the development of Australia's digital heritage collections will enable institutions and the collections sector as a whole to maximise the return on their existing investment in digitisation, to articulate clearer objectives for their ongoing digitisation programs and to secure the future sustainability of digital heritage collections. Falk and Sheppard strike a note of urgency for this task, saying, "*The old business models of museums worked fabulously during the twentieth century, particularly in the last quarter of the century. Yet these old models, like the Industrial Age from which they developed, are increasingly out of step with the new century*" (2006, p. 23-4).

The need for digital business models within the cultural heritage/collections sector has been recognised for some time. A dozen years ago, Lyn Elliot Sherwood, then Director of the Canadian Heritage Information Network (CHIN, 2007) suggested that in moving from an experimental to a systematic approach to digitisation, cultural heritage collecting organisations, "... *will need to be concerned about all aspects of the cultural industry 'chain': markets and sales, distribution, production, and intellectual property rights*" (Elliot-Sherwood, 1997, p. 39). This is exactly what a

⁴ www.flickr.com/commons/

⁵ http://www.wipo.int/copyright/en/museums_ip/guide.html#P997_142636

well defined business model addresses. Contemporaneously, David Bearman, a leading cultural informatics practitioner observed:

"Cultural institutions face two major challenges in making their information available to new digital consumers. First they need to imagine and help invent information services that would use their content to reach educational and mass markets. Second they need to forge the means through which potential customers could effectively access that information. These two requirements must be satisfied in tandem" (Bearman, 1997, p. 234).

More than a decade ago both these authors recognised the critical requirement for actively engaging with the whole cycle of production and use, not merely supplying digital content.

The growing importance of business models for digital heritage collections was also recognised in the recent European framework designed to support digital sustainability within the collections sector (Smith, 2004). The DigiCULT study (European Commission, 2002) commissioned by the European Commission, examined the future of cultural heritage in the "Information Society". The Report discusses potential online business models for digital cultural heritage, largely by way of case study examples. While briefly discussing the typology of business models devised by Rappa (2002) the DigiCULT report goes on to elaborate its own:

"... basic set of business models including models that focus on selling:

- user attention & information,*
- products (physical & digital products) & tickets for events,*
- pay-per-view, [and]*
- subscriptions"* (European Commission, 2002, p. 139).

In narrowing the discussion of business models in this way, the DigiCULT Report does not address the more complex issues in the relationships between selling, production and distribution; and the non-financial elements of an e-business model. The Report does, however, offer a number of significant case examples of business models for digital cultural heritage, both successful and unsuccessful; and also recognises the challenges faced by collecting institutions in moving from online experimentation to sustainable digital business models:

"Today, many memory institutions lack a clear strategy with regard to their business processes. The piecemeal, one-dimensional approach is often due to the fact that the original impulse for 'going online' came from a single department (or even an individual) with a particular interest. Other important factors are small budgets and project-to-project funding. For memory institutions progressing from a one-dimensional use of ICT (e.g. 'having a web site') to new ways of doing their core business is clearly not easy to manage" (European Commission, 2002, p. 81).

In the United States, a study commissioned by the Institute of Museum and Library Services (Zorich, 2003) examined the sustainability issues facing the large numbers of digital cultural heritage initiatives (DCHIs) that emerged in the US around the turn of the century. The author of that study concluded that *"DCHIs lack proven, sustainable business models. Despite a great deal of experimentation, no one is certain which models work. Even a model that appears successful in one circumstance may not work in another equivalent situation"* (Zorich, 2003).

In Australia, the question of business models for digital cultural heritage has not been explicitly addressed. As in Europe and North America, collecting organisations have adopted a largely experimental approach, with a number of innovative and successful digital projects initiated within the collections sector making use of the Web to provide improved access to public collections. Yet a

number of issues have emerged which suggest that the lack of appropriate business models is proving an impediment to further development of e-business and the digital cultural heritage sector more generally. Funding and revenue models, cross-organisational collaboration, market knowledge and technical interoperability remain largely unresolved issues. We believe that the development of an appropriate business model framework will help address these issues or, at the very least, facilitate discussion about them.

The limited resources (human, financial and technical) typical of SMEs exacerbate the economic challenges represented by the advent of the digital economy (Vaaland & Heide, 2007). Many collecting organisations are, to a greater or lesser extent, dependent on volunteers to achieve even the daily activities of the organisation – let alone the additional work involved in transforming physical collections into digital ones. Acquisition of the financial and technical resources (plus the human expertise) required to undertake this transformation is unlikely to occur unless the organisation clearly understands the specific potential attractions of digital content and services derived from its own collections. Achieving digital sustainability thus requires the right choice of business model(s) to provide an underlying framework and ensure ongoing financial viability (Besser, 2002).

To date, there has been no attempt to apply theoretical e-business models to the online business practices of cultural heritage organisations – especially those which are smaller and have fewer resources. The use and evaluation of ICT in collecting organisations has primarily been informed by practical imperatives rather than theoretical perspectives. Within the museum domain, Ross Parry (2005) has reflected on "the dearth of theory in museum computing" observing that:

"... much of the literature and published research on museum computing has been project-orientated, written largely by museum professionals with a view to best practice and procurement, and it has generally been indisposed to placing new technology within a conspicuous and coherent theoretical context. It is not too controversial to say that, as a body of work, museum computing has not consistently been predicated on clear theoretical models" (Parry, 2005, p. 338).

A similar lack of theoretical discussion on the topic of e-business and business models is also true of the libraries, archives and gallery domains.

In the next section we explain how we designed our preliminary business model framework, to be developed further and refined through future empirical research. We argue why we believe this framework will help Australian SME collecting organisations to identify suitable e-business models to meet their heterogeneous requirements.

A PRELIMINARY BUSINESS MODEL FRAMEWORK FOR SUSTAINABLE DIGITAL HERITAGE COLLECTIONS

Our preliminary framework draws on the extensive literature about e-business models at the turn of the century. This section of the paper surveys the range of approaches to e-business model definition and description and introduces our framework approach.

Research into the classification of e-business models

In addition to the many definitions of e-business models outlined earlier, there is an even greater variation of individual business model examples. Timmers (1998) identified 11 e-business models, Weil and Vitale (2001) eight, Applegate (2001) distinguishes between 22 business models; and

Cherian (2001) and Rappa (2002) both believe that more than 30 different e-business models can be found!

This lack of consensus on a mutually agreed definition of a business model, together with the limited number of generic business models (Pigneur, 2000) developed by researchers, have led to two complementary streams of e-business model research (MacInnes, 2005; Hedman & Kalling, 2003):

- In the first stream, researchers such as Timmers (1998), Rappa (2002), Applegate (2001) and Cherian (2001) have focused on defining the existing types of e-business models – an approach which has produced, in most cases, a classification of e-business models. Some authors in this field refer to their classifications as "taxonomies" but, as Lambert (2006) explains, this is a misnomer because in a true (numerical) taxonomy, objects are grouped on the basis of observed similarity between many characteristics, so that members of the group possess "...a large number of common characters, that each character is possessed by many [objects] in a group, but that no character is possessed by all the [objects] in the group" (McKelvey, 1982). A typology, by contrast, is based on just a few critical characteristics possessed by all members of the group (Bailey, 1994, McKelvey, 1982). All existing e-business model classifications are thus typologies, rather than taxonomies;
- Researchers in the second stream, such as Afuah and Tucci (2001), Amit and Zott (2001), Weil and Vitale (2001), Gordijn et al. (2000) and Osterwalder and Pigneur (2002) have instead focused on defining the components of a business model and developing ontologies for e-business models.

Today, a plethora of e-business model classifications is available with varying approaches, philosophies, targeted industries and levels of detail (Applegate, 2001; Farhoomand & Lovelock, 2001; Gordijn et al., 2000; Rappa, 2002; Timmers, 1998; Weill & Vitale, 2001), which makes the process of comparison extremely difficult. Krueger (2006), however, identified seven perspectives on existing e-business model classifications which allow the categorisation of existing groupings and provide a framework for the first stream of research on e-business models. These perspectives are not isolated and may overlap, enabling linkages between the approaches. We extend Krueger's work by summarising a selection of available e-business model groupings with their core components, using her seven perspectives for e-business classifications (Figure 2 provides examples of business models falling into each group):

- **Transplanted "real world" business models** which comprise classifications of business models originating in the real world and which have been directly transferred into the digital world.
- **Entirely new cyber business models** which focus on classifications of "born digital" business models which were developed *ab initio* for use on the Internet.
- **Marketing-focused business models** which include classifications concentrating primarily on product sales using the Internet as a sales channel.
- **Customer relationship-based business models** which consist of business models using Internet technology to facilitate long-term relationships with customers.
- **Value-chain based business models** which consist of business models emphasising the value-chain.
- **Network-based business models** which are further evolutions of value-chain models leading to value networks and value webs.

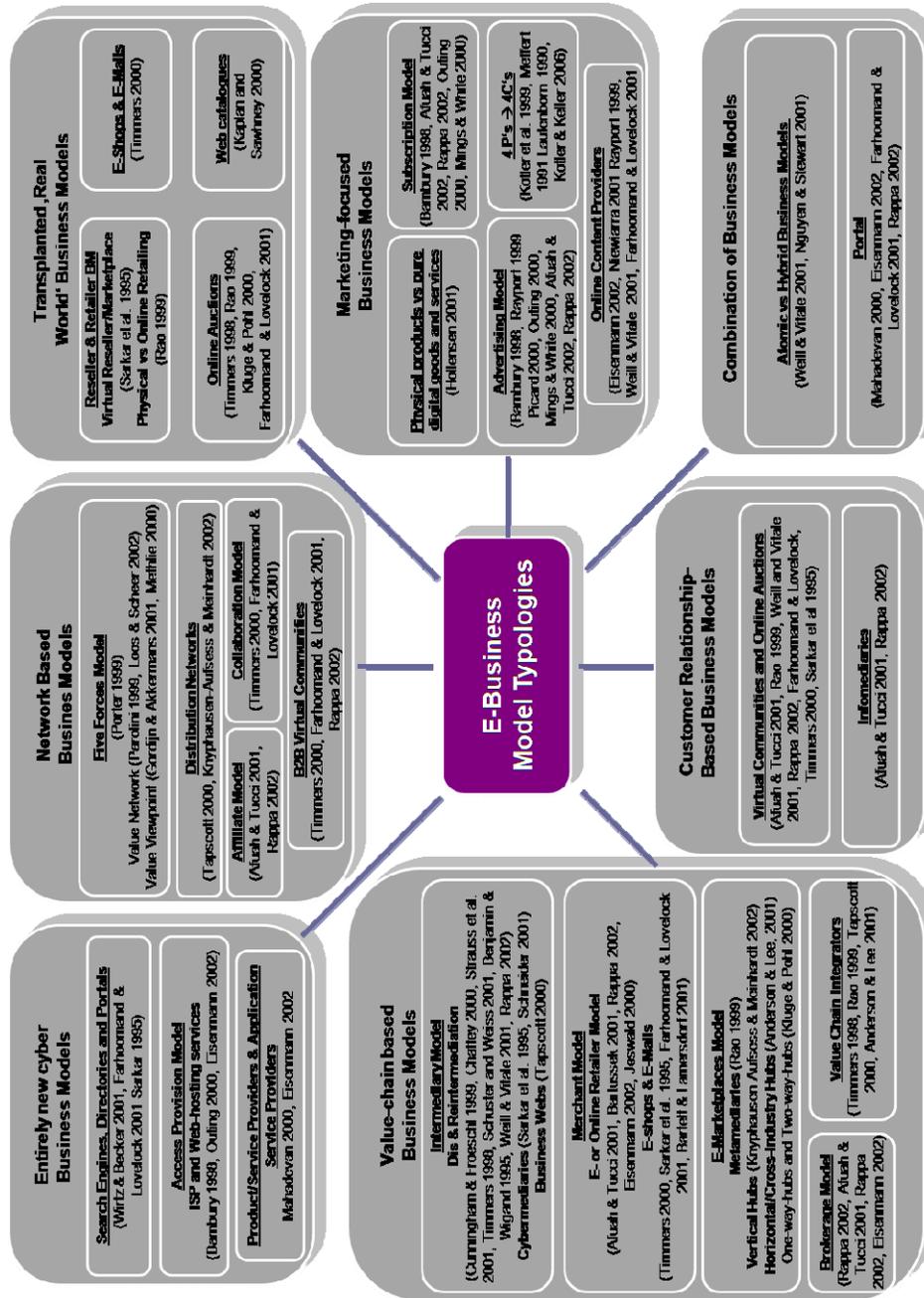


Figure 2: Seven perspectives of business model classification (extended & adapted from Krueger 2006)

- **Combined business model classifications** which are relevant to researchers who believe a combination of e-business model classifications appropriately describe a company's processes and situations.

Figure 2 expands Krueger's seven perspectives on e-business model classifications, with their core elements and authors and summarises the approaches and issues graphically – a particularly useful way of approaching such a complex group of approaches to the issue.

The second research stream of e-business model research addresses the components of business models and highlights their importance for companies in terms of becoming and remaining sustainable (Hedman & Kalling, 2003). Figure 3 provides a selected overview of the most relevant work in this area, structured by authors and their core concept(s).

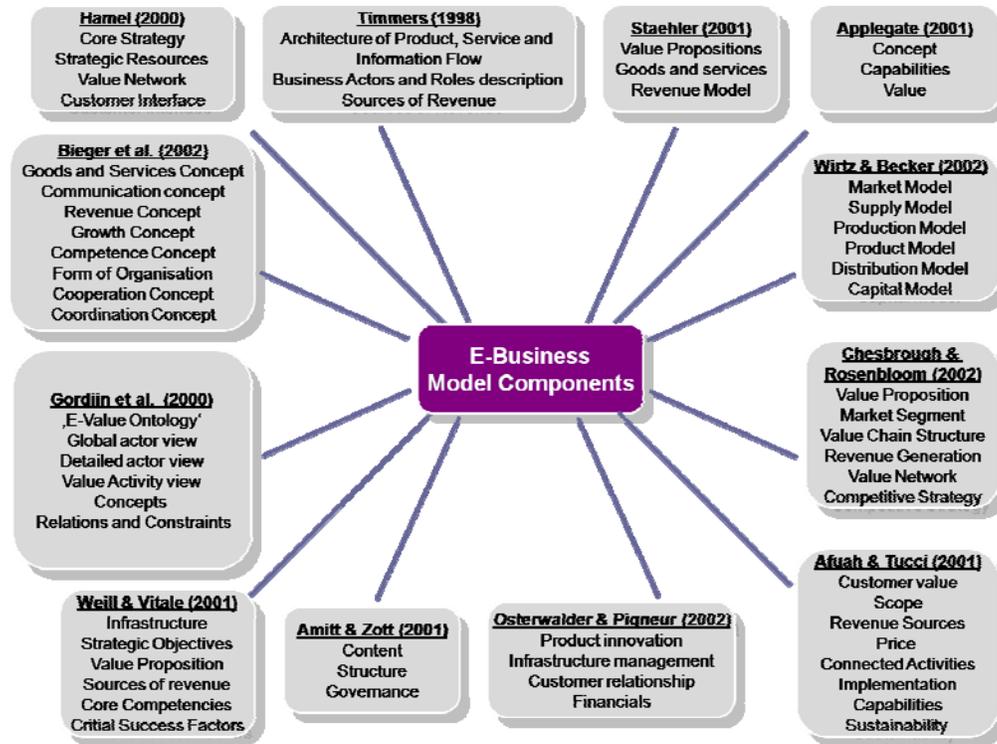


Figure 3: Business model components

The Core + Complement business model framework

Despite the apparent similarity of these two streams of research, there is a significant distinction in terms of the level of granularity at which the proponents of these two *Weltanschauungen* have approached the topic of e-business models. Clearly, it would be extremely useful to find a way of combining the two streams of research effectively. Krueger et al. (2003) offer a generic approach to joining these business model research streams by identifying core and complementary business model components within a full range of classifications. Thus researchers may combine both research streams by highlighting core business model components, which are common to all

business model classifications, plus a variety of complementary components which are specific to a particular classification.

This generic approach was initially applied by Krueger et al. (2003) to the digital content industry and led to the Core + Complement Business Model Framework for Content Providers (C+) which identifies content, revenue and infrastructure as core business model components for this group of online providers, each consisting of a number of sub-components. In addition to these core components, the C+ Framework also incorporates optional complementary business model components such as cooperation or growth. This framework was relevant to the digital content context, particularly the two sectors which were the focus of the original research project (online news and online music), because there is considerable heterogeneity among content developers and providers (Swatman et al., 2006). In the online music industry, for example, music "provision" ranges from individual musicians who record and distribute their own music, to the "indies" (the independent distributors which vary widely in terms of size and market influence), through to the huge and immensely powerful "record labels" – the four conglomerates (Warner Music Group, EMI, Sony Music Entertainment and Universal Music Group) which, since 2005, have controlled 70% or more of the world's music. The situation is similar for online news, where content can be provided by an individual journalist, a local community-based organisation, a small regional newspaper – right through to the huge and influential international news agencies such as Reuters, BBC News or Deutsche Presse-Agentur. With such variety in terms of size, influence and technical/managerial sophistication, it was clear that any general business model framework would need to support any organisation's ability to select core and complementary components to provide for their specific needs.

In the next section we describe the Core + Complement Framework in more detail when we justify, conceptually, why it appears that this framework might also assist heterogeneous SME collecting organisations to identify their own suitable business model.

A preliminary business model framework for digital collecting organisations

The Core + Complement Business Model Framework for Content Providers appeared to be a useful starting point for our own research into the development of an adaptable business model framework for the collections sector, because it is highly flexible and should enable diverse SME collecting organisations to identify a suitable, sustainable business model. Figure 4 illustrates our preliminary C+ Business Model framework for Digital Collections, showing proposed core components (and their associated sub-components) and complementary components which would be applicable to digital heritage collections based on our secondary data analysis. Later in the paper we explain how we will conduct our future empirical research to develop this model further and to determine whether it can assist the diverse range of collecting organisations to identify suitable, sustainable business models.

The first core component of this framework would relate to the sources of digital heritage collection *content* which the various collecting organisations might provide, such as artworks, documents, books, artefacts and associated research and interpretation. Content is a core element of any business model for a collecting organisation. Each type of collecting organisation has collection strengths in one or more of these areas which may lend themselves to e-business activities. An archive, for example, might well be converting historical documents into digital form for more general public access, while a gallery would predominantly (though by no means exclusively) offer images of artworks such as pictures and sculptures. Libraries are increasingly making books available in a variety of electronic access forms (such as e-books and talking books); and museums, although potentially wishing to provide any or all of these object types, frequently focus on the provision of digitised artefact records or images.

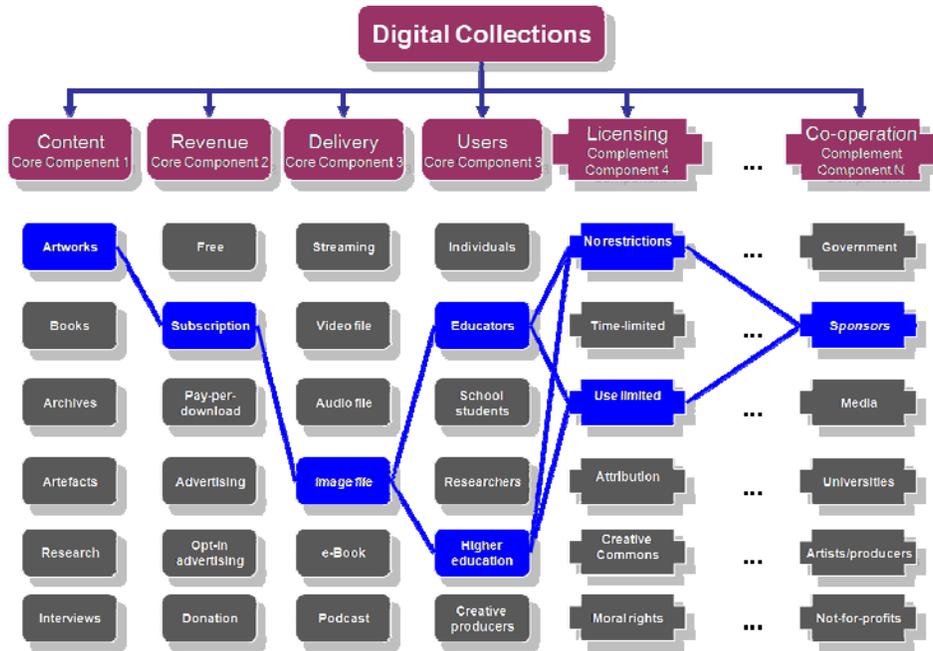


Figure 4: The C+ Business Model Framework for digital collections

The second core component is *revenue* which we have argued earlier is needed by collecting organisations to sustain their digital heritage collections and support the operation of any e-business model. Our review of the literature identified a range of revenue streams, which are listed in Figure 4, including public/private funding, corporate sponsorship and donations, product sales, subscription / one-time payment, or pay-per-view access, as well as more recent e-commerce approaches such as advertising revenue (Hwang et al, 2003) or affiliate marketing (Libai et al, 2003) – or even access to customers for online research (Chaffey and Smith, 2008). Art museums are generally more innovative when it comes to revenue-raising, as Toepler (2006) illustrated most effectively in his study of the evolving financial focus of the (admittedly unusual case) of the Metropolitan Museum of New York. Both groups of collecting organisations have a focus on exhibiting works of art and are thus more easily able to encourage their patrons to purchase representations, or to sponsor particular exhibitions. From the sale of products to more creative forms of fund-raising is a comparatively small step for larger and more sophisticated museums and galleries – although small, regional or rural members of this group may struggle to gain sufficient consumer awareness to make merchandising a dependable income source (Alexander 2000). Libraries and archival institutions are still at a much earlier stage in terms of developing revenue raising strategies – for these bodies, there is a need to make a substantial switch in perspective, from "keeper of knowledge" to information source. Online exhibitions, however, offer the opportunity to attract a larger (and potentially wealthier) audience to all forms of collecting organisations.

The *delivery and distribution mechanisms* used to convey content to end users form the third core component in the preliminary framework. The proliferation of new online channels provides a growing range of options and formats for customising delivery. Some of these require infrastructure

investment which may be beyond most individual collecting organisations, while others may utilise freely available digital hosting and distribution channels. The availability of Web 2.0 technologies including video and photo sharing, tagging sites such as YouTube and Flickr, and virtual reality-based environments such as Second Life increasingly enable publicly and freely available avenues for distribution.

End users are an important core component of our model. The markets for collections-based digital content are not well developed but significant potential has been identified in a number of commissioned studies (Wall, 2002; European Commission, 2002). Potential target users of collections content include individuals and organisations, particularly in the education sector, but also in the creative industries (e.g. television production, architecture and design). In Australia, the schools market has been identified as a priority for distributing digital content from collecting organisations. Recent initiatives in both Australia and Canada to build integrated digital supply chains between collecting organisations and school digital distribution networks demonstrate the potential of new business models and organisational practices (Peacock et al, 2009). Nonetheless, significant work is still required to adequately identify and tap potential demand before this approach can become fully effective. One of the objectives of the framework proposed here is to explore further the dynamics of supply and demand; and to suggest new business models to identify and stimulate new markets for collecting organisation digital content.

Licensing is one of the more contentious and complex aspects of digital content markets and the final core component of the model. Caution and confusion about copyright infringement has been a major constraint holding back the development of e-business models for digital content in the collection sector. As Fitzgerald observes: “*There is great concern worldwide that too much copyright material is left inactive in archives (e.g. government, museums) because the process of negotiating the licence is too time consuming or expensive, even where the copyright owner does not want to make money*” (Fitzgerald, 2007, p. 6). Fitzgerald and others argue that Creative Commons licensing models for publicly-funded archival material can bring new life to material languishing within collecting organisations under the dead hand of copyright and licensing restrictions. The licensing component of our framework is designed to address some of these issues and explore options for greater flexibility, taking into account each of the different potential elements of the core components and combining them in new ways as potential e-business models.

Cooperation is identified as a complementary component, as it may be useful but not essential to sustaining an e-business model. Many collecting organisations have close relationships with various government funding agencies as well as with corporate and philanthropic donors. Similarly, media organisations, universities, artists and creative producers often run collaborative research projects and public events in conjunction with all four types of collecting organisations. These partnerships and networks have the potential to provide access to new markets and distribution channels.

Figure 4 presents our preliminary C+ business model framework for digital collecting organisations, but the composition of core and complement components may well change during the course of this research project. By way of illustration, Figure 4 includes one hypothetical example of how an e-business model might be constructed and evaluated. Core and complement components have been linked together (highlighted in the diagram) to indicate a possible e-business model for art-based content, delivered as image files on a subscription basis, targeted at end users in education, offering a range of licensing options with possible co-operation with philanthropic or corporate sponsors,

In the next section we outline the future research stages of this project in which we will refine the framework and investigate its usefulness empirically with Australian organisations.

FUTURE DEVELOPMENT OF A BUSINESS MODEL FRAMEWORK FOR DIGITAL HERITAGE COLLECTIONS

We have argued above that Krueger et al.'s (2003) C+ Business Model Framework has the potential, conceptually, to assist collecting organisations such as archives, galleries, libraries and museums with diverse collection types, staffing/funding structures to identify an e-business model which suits their unique needs to develop and sustain their digital heritage collections. Our future empirical work, in conjunction with the Collections Council of Australia, will refine and investigate this framework further. The Collections Council is the peak body for the Australian collections sector and is dedicated to preserving the stability and sustainability of organisations within the sector. Future development of the framework will follow a design research approach which focuses on business needs and problem-solving – a popular approach within the Information Systems research domain, which uses an iterative process to gain a deep understanding of the investigated problem (Hevner et al., 2004; Rossi & Stein, 2003) as shown in Figure 5.

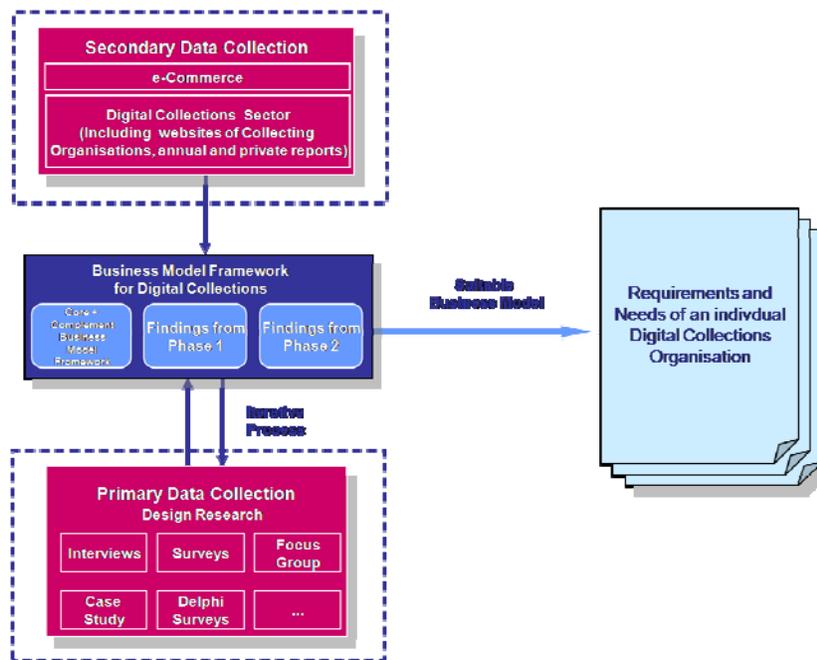


Figure 5: Overview of the research project

Figure 5 includes both existing and proposed components of our research project. The initial phase, which is already complete, involved the in-depth secondary data research upon which we based both our modified version of the C+ model, as well as the second phase which we describe below.

Phase 2, the empirically-based Primary Data Collection, will utilise Design Research to investigate the needs and requirements of Australian collections sector organisations. This phase will apply several data gathering techniques, including surveys, case studies, interviews, focus groups and Delphi surveys etc., in an iterative process to obtain in-depth data from various Australian collecting organisations to define these organisations' requirements for digital sustainability, and to determine whether the framework can fully address these identified requirements. The findings from Phase 2

will, we anticipate, quite possible lead to additional core and/or complementary business model components (and corresponding sub-components) for the framework.

The final version of the business model framework resulting from Phase 2 will then be examined with a sample of collecting organisations to determine whether the framework can be used to create a suitable, sustainable e-business model specifically designed for the needs and requirements of each organisation. This final stage is important both in terms of validating the findings from the first two phases, as well as evaluating how effectively the resultant framework can be used by collecting organisations of varying sizes from all four types: archives, galleries, libraries and museums.

CONCLUSION

Goerke (2003) highlights the crisis facing not-for-profit organisations in an increasingly competitive environment: *“The need to deliver more essential social services is accepted by most professionals working in nonprofit organisations. Yet, having to become more competitive, increasingly ‘businesslike’ and to start creating partnerships with profit-driven businesses may require a quantum leap to take place”* (p. 317).

Organisations managing digital heritage collections are also caught on the horns of this dilemma, having an increasing need to combine traditional custodial and access responsibilities with the expectations of governments and the public in relation to the use of digital ICTs. The move to online service delivery by libraries, archives and museums is placing ever greater pressure on organisations which have not in the past been expected to develop either the technical or the commercial skills necessary to compete successfully in cyberspace.

In this paper we have examined the need of Australia’s 3,000+ heritage collecting organisations to define and adopt business models for their e-business services. We have argued the case for a flexible e-business model framework as a more useful approach than the search for a singular business model based on one of the many available typologies. We have proposed a preliminary framework for this task based on Kruger et al’s Core + Complement Business Model Framework (2003). Finally, we have outlined a research project to develop, test and refine the framework through empirical work with Australian collecting organisations.

The project outlined in this paper is designed to enable organisations within the collections sector to benefit from the development of a business model framework, which will assist them in analysing the options required to sustain a digital presence and to overcome barriers to effective participation in the digital economy. Using the Core + Complement Business Model Framework, which was designed to support digital content providers, as the starting point for our research project will enable us to provide a theoretically grounded and empirically validated account of the important components needed to develop and sustain digital content in this sector.

Our framework has been developed to address the specific needs of this extremely diverse sector, which is predominantly comprised of small and micro-sized SMEs – many of whom depend heavily on the work of volunteers and few of whom have experience with the development of business models. This work will lead to a modified version of the basic Core + Complement Business Model Framework tailored for the specific needs of Australia’s libraries, archives, galleries and museums. The project will enable us to cater for the specific issues faced by these organisations – which vary so widely in terms of size, financial resources, expertise (both human and technical) and goals. The lessons learned from this research should also have relevance for SMEs in other industries facing similar challenges in adopting and adapting to ICT-based innovation, particularly in terms of their

development of e-business activities. In future publications we will report on the progress of the project and present our final business model framework for the Australian heritage collections sector.

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