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Table of Contents

Abstract

The project explored the decision to outsource the storage of the digital content of the National Library of New Zealand's National Digital Heritage Archive to a commercial provider. Objectives of the research were to:

- Identify the motivations for the decision to outsource
- Investigate the perceptions of the key stakeholders involved, and their relative influence on the decision
- Investigate the consequences of the decision to outsource

A case study methodology was used, involving semi-structured interviews of key participants in decision-making. Findings included the recognition of clear benefits from outsourcing storage, but also demonstrated a lack of awareness of the impact of shifting costs to operating budgets, and the problematic nature of requirements that a cultural heritage institution has in terms of data quantity, longevity required and spikes in activity level being different from storage requirements in generic, everyday office situations.

Digital Preservation in the Cloud

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Background

Internationally, governments have seen the potential for cloud computing to enable the delivery of more efficient and effective public services, with compelling cost economies (Irion, 2012). It has been argued that cloud computing architectures are fundamental in the necessary transformation of governments to provide citizens with services in the digital age (Fishenden and Thompson, 2013). In 2009, the New Zealand government embarked on a programme of transformation of the public sector to achieve significant cost savings and economies of scale via the use of shared services.

Cultural Heritage Institutions and the Cloud
Despite the ubiquity of cloud computing and its promotion by governments worldwide, concerns about trustworthiness and the mandate for digital archives to preserve unique treasures in perpetuity have meant that cultural heritage institutions have scarcely been early adoptors of this innovation. New Zealand's NDHA is possibly the first, and perhaps the only, national cultural heritage initiative to outsource the storage of its collection. Nonetheless, the first published reports of outsourcing are starting to appear, notably from Britain. In 2014, the United Kingdom's National Archives released a set of guidance documents for archives considering taking this step (National Archives, 2014). The guidance includes three provisos which should be considered the bottom line – they must underpin any negotiation of an outsourcing contract:
"First, data held in archives must be expected to be both preserved and accessible beyond the commercial lifespan of any current technology or service provider.
Second, an approach to addressing serious risks, such as loss, destruction or corruption of data that is based purely on financial compensation will not be acceptable, as this takes no meaningful account of the preservation and custodial role of archives; and,
Third, in order to reinforce the criticality of the first two elements, explicit provision must be made for pre-defined exit strategies … and effective monitoring and audit procedures" (p.10)

The guidance document provides a long list of the benefits of outsourcing. Perhaps the most significant of these from a digital archiving perspective is the potential for improved capability in digital preservation. Because of the feasibility of automated replication in multiple locations and the specialized expertise of vendors in terms of digital storage and integrity checking, it may be possible to achieve improvements at bit preservation level (p.11).

The TNA guidance is accompanied by four case studies of outsourcing by cultural heritage institutions[1]. The settings of these case studies range from a local history centre to the British Parliamentary Archives, but do not include a national library or archives.

New Zealand

In 1965, the National Library of New Zealand (NLNZ) was established as a standalone government department. In 2003, New Zealand's legal deposit legislation was updated to include digital resources. This was significant as it meant that any New Zealand digital content created was required by law to be deposited at the national library, to be kept in perpetuity. Therefore it was necessary to build a repository to serve as a digital archive, and in 2008 the NDHA was launched (see Knight 2010 for background on development and implementation).

In 2011, NLNZ (together with Archives New Zealand) was subsumed into the Department of Internal Affairs (DIA). The Government Chief Information Officer (GCIO) is also part of DIA. The GCIO is charged with delivering sustainable business savings of NZ $100 million per year by 2017 (New Zealand Government, 2013). One strategy identified to achieve this is discontinuing in-house owned and operated technology assets, and moving to a service based model instead (New Zealand Government, 2013). As a first step towards this goal a contract was negotiated with three vendors to act as approved data centres – so effectively a private cloud. In effect, the DIA was tasked with leading the implementation of infrastructure as a service (IaaS) across the whole of government, and the NDHA agreed to be one of the initial pilot groups, with a specific focus on outsourcing storage.

The background to the decision to pilot outsourcing including the concerns identified by National Library stakeholders and details relating to the migration method have been documented by Cynthia Wu (Wu, 2013).

Objectives

Objectives of the research were to:
- Identify the motivations for the decision to outsource
- Investigate the perceptions of the key stakeholders involved, and their relative influence on the decision
- Investigate the consequences of the decision to outsource

Methodology

A case study methodology was used. Seven semi-structured interviews were conducted in May through June 2014 with key participants in decision-making, including the government officials responsible for the cloud outsourcing policy, culture heritage

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[1] Case studies can be downloaded from http://www.nationalarchives.gov.uk/archives-sector/digital-collections.htm

professionals, industry advisors and service providers. In addition, policy documents and contractual documents were reviewed. Snowball sampling identified those individuals who could comment from a strategic perspective, as opposed to a focus on operational detail. This was interpretive research, so the findings cannot be generalized

Findings

Clear benefits were articulated by interviewees:
- The opportunity to outsource storage to the Cloud was presented at a very good time – the existing in-house IT infrastructure needed to be upgraded, and its capacity to store increasing amounts of data was of concern.
- One respondent noted that the decision to outsource presented the opportunity to revisit original design decisions and to refine where necessary. This is a very significant factor given that the initial design and implementation of the NDHA was a pioneer endeavor – there were no pre-existing digital preservation systems that could be used as templates.
- In outsourcing the storage component it was possible to take advantage of the vendor's experience in managing large sets of data and load balancing.
- The hardware used would be state of the art, and of a consistent standard not likely to be seen in an in-house IT facility.
- Greater transparency about the costs involved in digital preservation activities, and consequently being able to make informed decisions about particular courses of action. For instance, whether to manage digitized content in the same way as born-digital content.

Offset against these benefits were challenges relating to the economic model (increased expenses charged to operating budgets) and the difference in requirements for storage for the cultural heritage sector and other government departments.   Requirements of cultural heritage institutions are likely to differ in terms of data quantity, longevity required and spikes in activity level from those expected in generic, everyday office situations.

Conclusions

Being able to articulate specialist requirements, and to explain stewardship responsibilities, will assist in negotiating appropriate service levels from outsourcing vendors. The ideal situation is one where a trusted individual can be identified, who can act as broker between information management and information technology professionals to assist in raising awareness of the different perspectives involved. The nature of the outsouring environment, where in-house operations can be delivered as a service by third parties, is one where opportunities can be threats if information managers are not equipped

Products

Journal paper: Oliver, G., & Knight, S. (2015). Storage is a strategic issue: digital preservation in the cloud. *D-Lib Magazine*, *21*(3/4).

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