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Business Models related to Digital Preservation
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***Briefing Paper***

## Introduction

The impact of digital information, its management and persistence in many organisations is still barely understood. In spite of information technology (IT) being implemented for several decades, the awareness of the consequences of its use is growing rather slowly. The emergence of PCs and networking facilities has accelerated the change, but the human mind and behaviour are still in a process of adapting themselves to the new opportunities that are opened up. The sheer depth and scale of the changes make it difficult for many to see what is happening, where to start, and how to deal with it. The transition from the existing procedures or working processes based on the use of paper to new and other innovative ways requires time and a lot of effort. The rapid sequence of new versions of software applications is, for example, an indication of their immature and makes people cautious to take steps, afraid of going in the wrong direction.

In essence, there is a distinct lack of knowledge on how to organise the traditional functions of information management in all its aspects within the new dynamic world of digital information. What impact does the new and underlying technology have on these functions and the way they are organised (including economic issues)? What opportunities or possibilities are opened up to organisations that have a role and responsibility in managing and preserving information?

The new evolving digital order requires organisations, both in public and private sector, to adapt and change themselves. It is not only the content, e.g. digital resources, that changes, it is the whole. That relates to organisational structures, funding mechanisms or business models, roles and responsibilities, and technical infrastructure, and may include mandates as well.

This training seminar will explore these issues in relation to the topic of digital preservation. That topic, however, does not stand on its own, but needs to be embedded in a broader context.

One of the largest challenges for organisations is undertaking changes required, and at the same time seamlessly implementing these changes without affecting the processes of the organisation. Those changes may have an impact on the position of the organisation itself, because the new order may entail new division of responsibilities among organisations, or changes in mandate. Such a process of transition therefore may even require self-denial, the toughest aspect of all, since nobody wants to loose power and identity.

Three decisive areas must be tackled to successfully make the leap to electronic process and preservation: funding must be found and properly allocated; organisational structures must be redefined internally, but may also include repositioning of an organisation in relation to other parties; and cultural issues must be addressed to ensure the correct environment for the daily processes.

Organisations are often still in an experimental phase, establishing small projects and doing testing. The first need is to overcome issues such as choosing standards, defining metadata sets, finding practical tools and acquiring the necessary knowledge and expertise. Without them no progress can be made at all.

## The situation

Business models depend on understanding work processes that is, of digital preservation and the related costs. It is this very issue however that still requires more research and experience. Experience with digital preservation is very recent and still evolving. There is no common practice yet. It includes also some agreement about the scope or the domain we should take into consideration. Should that be limited to digital preservation itself or should that also include work processes related to creation or access and end-user services, to mention only two other important areas of the life cycle?

The individual organisation must identify its position in terms of objectives with respect to managing digital information. Such an assessment has to be done within the framework of the mandate of the organisation and the context in which it is working. Based on the outcome, a related programme for capacity building has to be developed. An example of such an exercise can be found in a recent research report for the New Zealand National Library.[1] Each organisation may have of course its own criteria, but any choice will entail a kind of business model.

This report also shows that organisations are still starting to explore different approaches. Such a conclusion can also be drawn from the case studies carried out by ERPANET (see www.erpanet.org). Organisations often are aware that organisational challenges are more critical than technological. What has to be done and what workflow and processes are needed? How should tasks and responsibilities for a preservation programme be distributed within the organisation? How to implement preservation procedures, to ensure their quality and to make them sustainable for the long-term? What staffing is needed? What costs are involved, both in investment and revenues? What expertise and knowledge is needed? Many questions have to be answered, but there is not yet enough experiential information available for reliable answers and for taking solid decisions. There is an amount of risk as well as courage involved in moving forward in this area.

It is not only dependent on organisations though. At the other end of the spectrum governments and even society are influencing the directions that should be taken. The policy of free and open access to public sector information has fundamental consequences from an economic perspective. The approach taken in the USA on one hand and in Europe on the other clearly shows that different business models will lead to different outcomes.[2] The cost recovery policy generally adopted in Europe seems to be in the long run less profitable on a macro-economic scale than the open and free access policy in the US.

It raises the question what interests should prevail, those of an organisation that may benefit more from cost recovery policy or those of government (and perhaps society) that will benefit from higher taxes because of increased economic activity? Who will decide on these issues?[3]

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[1] Seamus Ross, Digital Library Development Review, Final Report, July 2003, p53-61.
To be found at: http://www.natlib.govt.nz/files/ross_report.pdf

[2] Peter Weiss, Borders in Cyberspace: Conflicting Public Sector Information Policies and their Economic Impacts. *Summary Report.* See http://www.nws.noaa.gov/sp/Borders_report.pdf.

[3] See also the European Directive on Public Sector Information (2003/98/EG), which endorses the issuing of licenses for re-use of information.

## Roles and responsibilities

The previous section shows that it is important to realise the different perspectives that can be taken. They represent different interests. In this seminar, however, it will be mainly the perspective of the organisation that has an interest in preserving digital information.

In positioning themselves, organisations need to identify the playing field in which they are active. Who are the parties involved? What roles and responsibilities do they have and how do they relate to those of the own organisation? With respect to digital information at least the roles of creator, preserver, provider, user and supplier can be distinguished. They all contribute to creation, management, and access of digital information. Other than in a paper world closer co-ordination is needed to ensure the interoperability and sustainability of that information over time and across domains. Preservation actions for instance should be taken at the time of creation of the digital objects. This requires some awareness and co-operation of information producers. In the end a chain of management with respect to information may be needed that connects these different players under the same regime. The way it will be organised is dependent on the objectives. In the public sector selected information has to be preserved for cultural heritage purposes for instance. In the paper environment the mandate for preserving that information over time is assigned to special institutions, such as archives and libraries. For archives it requires adequate co-ordination with government organisations on the one hand and other cultural heritage information providers on the other. The same goes for libraries, though they have to co-ordinate with publishers as information producers. The nature of digital information in conjunction with IT, which allows location independent access, may require new approaches in management and re-allocation of responsibilities in the long term.

Organisations may internally assign a responsibility regarding preservation actions to information producers, that is staff members, which requires good communication with the information management and archives department. The Dutch Meteorological Institute KNMI[4] for example established a Digital Archiving Coordination Group that includes representatives from all departments. Representatives are responsible for the implementation of the corporate preservation programme in their departments, and also provide feed-back on the adequacy of the preservation programme in place. Many organisations when asked about digital preservation believe that it is purely an issue for the information technology department.

### Organisational issues

As already discussed, an important component of business models is how to organise work, its funding and position in the field. It is the ultimate outcome of considering and assessing the political, economic, infrastructural (technological) aspects and the responsibilities and functions involved. A reference model like the Open Archival Information System (OAIS) reflects most of the activities involved in digital preservation, it does not tell, however, how to organise this. The RLG/OCLC report on trusted digital repositories goes a little further in discussing attributes such as administrative responsibility, financial sustainability, organizational viability, and technological suitability. That helps in identifying the conditions and requirements, but still leaves open the organisational structure. That choice has to be made by the organisations involved within the context in which they are working. Perhaps economic, legal or political circumstances will favour one way or another of organising things. The question is, what criteria determine the choice or can support making it?

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[4] See the erpaStudy on the KNMI, the Dutch Meteorological Institute, at www.erpanet.org

Another related issue is that of sharing costs through collaboration in carrying out certain preservation activities or sharing certain facilities, e.g. storage facilities, migration processes, and even reference services. That may be easier within sectoral domains such as libraries and archives, but in the end may also occur across domains.[5]

Any organisational model also depends on a technology infrastructure that supports the model adequately. Emerging technologies such as grid technology and data grids open up new paradigms that have hardly yet been examined.[6]

What needs to be taken into consideration when designing a repository and what are the implications of architecture on the organisational model it should support?

A distributed system that can be accessed from multiple locations is becoming more and more essential in an increasingly globalised world. Such a geographically distributed digital archive may however raise security concerns. The European Patent Office[7] tackled this issue in their global, federated system by introducing smart-cards – chip-cards similar to credit-cards. Staff and EPO clients can only log into the EPO system by using this card, but can do this from any computer in the world that has a smart-card reader device and is connected to the internet.

In general it is acknowledged in the preservation community that the bytes and bits of archived information resources should be retained redundantly as a safety measure. To avoid natural or other disasters redundant copies should be geographically distributed. A good example of such an approach is the LOCKSS ('Lots Of Copies Keep Stuff Save') project.[8]

Distributed systems can also take the shape of a federation of various independent organisations with the same interest The driver then is to achieve synergy or economy of scale and making their work more cost effective. So there may be different types of cooperation in distributed systems:

Apart from co-operation among partners, can a number of tasks be outsourced to external services? More than 86 percent of the IT executives participating in a recent survey expect an increase in the use of offshore IT outsourcers over the next 12 months.[9]

## Finally

The above does not represent an exhaustive overview of all the issues with respect to business models. It has touched on some of them and reflects some of the perspectives that can be taken. As indicated, next to a thorough understanding of the issues involved, more experience is needed. This seminar intends to help organisations by further exploring the issues and by discussing the existing experiences.

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[5] See the erpaStudy on the Broadcasting Sector available at www.erpanet.org

[6] The application of data grids is investigated at the San Diego Supercomuter Center (SDSC) for NARA, see http://www.sdsc.edu/NARA/

[7] See the erpaStudy on the EPO, the European Patent Office, at www.erpanet.org

[8] LOCKSS - Lots Of Copies Keep Stuff Save: http://lockss.stanford.edu/

[9] DiamondCluster International: 2004 Global IT Outsourcing Study.

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