Development of Organisational and Business Models
for the Long-Term Preservation of Digital Objects

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Abstract

The number of digital objects (and digital collections) will increase rapidly within the next years since mass digitisation activities have started all over the world.

Although it is obvious that these objects are of enormous scientific and cultural value, some crucial aspects of ensuring their long-term preservation and access to them have so far not been thoroughly addressed. This means that there is an urgent need for developing (and implementing) new and reliable models in order to deliver a sound organisational and financial framework for institutions (and enterprises), that are concerned with digitisation and long-term preservation of digital objects.

To this purpose the Bavarian State Library (BSB) and the University of the Federal Armed Forces Munich, are carrying out a study, funded by the German Research Foundation (DFG), that explicitly addresses the perceived shortcomings by analysing the current state of long-term preservation in Germany, developing solutions in the form of scalable business and organisational models and clarifying the agenda for further research.

Background/Motivation

Today, the access to digital cultural heritage is a granted service of the traditional memory organisations. No longer only small projects on the digitisation of specific scientific and aesthetic values of the stocks of our organisations are realized. The focus is rapidly shifting away from pure boutique to mass digitisation projects with several thousands of titles. To secure the availability of this content for the long term is one of the priority tasks of memory organisations.

Long-term preservation of the underlying data has been recognized as an absolute necessity, yet infrastructures can change, funds run dry. Therefore sustainable structures have to be created to ensure the preservation of our digital heritage in every case. Apart from reusable technical solutions, in particular stable organisational, legal and financial models have to be developed, which can be harmonised in a strategy for long-term preservation of digital content.

Objectives

For that reason, the Bavarian State Library (BSB) and the University of the Federal Armed Forces, Munich are carrying out the study 'Development of and Organisational and Business Models for the Long-term Preservation of Digital Objects from DFG (German Research Foundation)-funded digitisation projects'. The intention is to demonstrate how organisational and Business Models can be designed and realised for the long-term preservation of digitised material and where further research and development has to be done.

Comparing the general aims and the current state of the art of long-term preservation (LTP) shall provide the needed guidelines for an in-depth investigation into the four dimensions organisation, technology, finance, and law.

Therefore the first sub-goal of the study is a detailed description of the actual situation in digitising and archiving institutions in Germany. Besides the analysis of relevant reports and studies a purpose tailored questionnaire serves as a basis for deepened research in the named dimensions.

Concerning the dimension organisation we are planning to present possible Organisational Models for long-term preservation. A methodological framework in form of a Process Model is going to be designed first in order to create the basis for the development and evaluation of Organisational Models.

In a next step existing technical solutions for long-term digital archiving and their advantages and disadvantages are presented and assessed. In the area of finance the possibilities of income generation should be explored and potential savings identified. A corresponding examination of the legal framework for innovative business and Organisational Models is also part of the study.

In a final step the need for further action in the dimensions of organisation, technology, finance and law will be pointed out. The developed models will thereby provide the opportunity to clearly pinpoint and define the problems of long-term preservation. Finally, a roadmap for planning studies and projects can be drawn more precisely.

The scheduled timeframe is from January 2008 to January 2009. This article gives an overview of first results of the study and further expected outcomes.

Approach

Development and assessment of organisational and Business Models require a solid methodological foundation since the long-term preservation of digital information is a quite complex task. Different business goals as well as technical, legal and financial opportunities and constraints lead to numerous possible system configurations with many interdependencies. Adequate and clearly defined models will assist to describe, analyse, and design complex technical and organisational systems. Fortunately, we can build on models and frameworks already applied or under development in economics, administration, or even in long-term preservation.

Methodological Approach at a Glance

First, we adapt basic definitions of published Business Models in order to get a generic Business Model appropriate as starting point for our study. Business Models mainly provide methodological support for achieving business goals. They also consider the context of a business like the situation for market and for competition. As memory organisations generally deal with public goods, we have to bear in mind that their situation is extensively shaped by national and international legislation. The legal dimension will be investigated by a corresponding expertise.

Figure 1: Methodological Approach

Then we present a procedure to get a generic Process Model which enables us to describe the numerous results of prior conceptual work in a consistent and structured way. For example, several models for digital libraries as well as for long-term preservation are already published, but in general they use their own languages and focus on different aspects. Of course, we also consider prior work that is not specific to long-term preservation or digital libraries like generic models for activity based accounting or information lifecycle. The standardised description helps us to find out gaps, inconsistencies, and useful results of prior work relevant for developing Business and Organisational Models. Moreover, the Process Model provides an additional schema for describing the elements of a specific Business Model precisely.

In order to develop Business Models for memory organisations we need another set of procedures that assist to introduce aspects specific to long-term preservation and to map the current practices of the numerous DFG-funded digitisation projects to the elements of a Business Model. Therefore, we refine the generic Business Model. In order to get a realistic picture of current practices we designed a questionnaire which reflects the elements of process and Business Models. The questionnaire should also provide future visions for the distribution of information.

So we think to obtain an adequate set of tools as well as enough information from practice to develop and to assess Organisational Models. Thus, we will be able to take into account individual business goals as well as technical, financial, and legal dimensions. The Organisational Models will show how static and dynamic structures can be designed and implemented.

Approach in Detail

Procedures for Deriving Generic Business Models

Of course, we initially need a basic understanding about Business Models. We found definitions in literature that seem to be adaptable for our purposes. Timmers[1] defines a Business Model as architecture of product-, service- and information-related business processes. It comprises a descr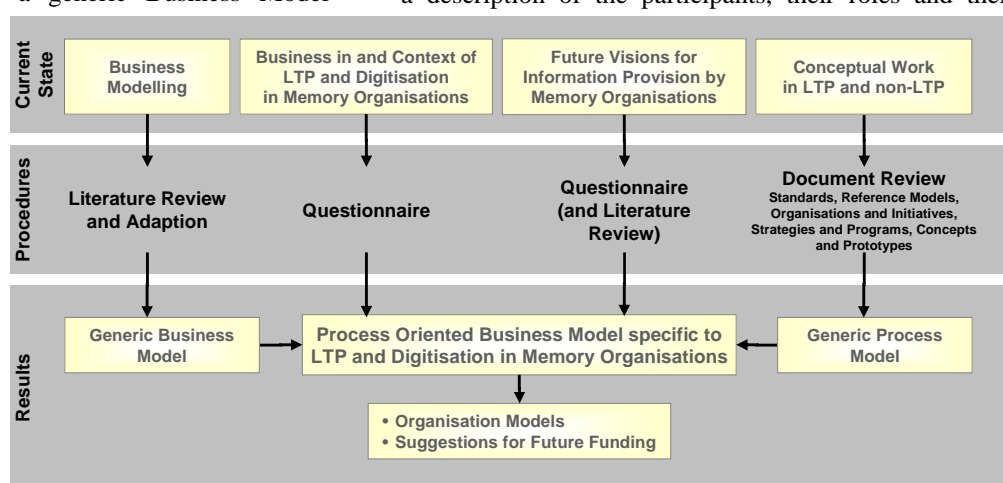iption of the participants, their roles and their potential of benefit as well as a description of sources of proceeds. According to the definition of Porter[2] a competitive strategy is the precondition for a Business Model. Here, competition is considered as the continuous process of seeking new and better ways of satisfying needs in order to increase one's own prosperity. The competition strategy and the business goals are prerequisite for a Business Model whereby the situation of competition has to be considered. Finally, the business plan specifies how the business goals should be realised. Figure 2 gives an overview of our adaption called generic Business Model.

Procedures for Deriving Generic Process Models

Process modelling is an additional method for controlling the complexity of long-term preservation. Process modelling is a well established method for designing and reengineering complex systems in administration and industries. In order to get input for our models we are analysing current conceptual work from the LTP community as well as from other areas with assumed relevance for long-term preservation. In order to analyse

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[1] Timmers 1999, p. 23-27.
[2] Porter 1996, p. 23-28.

all the documents and their content (a first inventory has revealed some thousand documents) and to facilitate the mapping onto the elements of a Process Model and finally of a Business Model we have introduced the following categories:

- Reference Models are relatively abstract and general models, which are also characterised as conceptual frameworks. They form a basis for a common understanding and for specific models, e.g. OAIS[3].
- Standards represent the state of the art built on the principles of fairness, consensus, and documentation. They simplify the comparability, assessment, and interoperability of products, systems, and services, e.g. XML, ISO 9000.
- Organisations and initiatives reflect domain specific as well as integrative aspects having the big picture (missions) in mind. They develop strategies and cooperations, e.g. DFG[4], Library of Congress[5], Nestor[6].
- Strategies and programs form the frame for concrete activities or projects, e.g. the National Digital Information Infrastructure and Preservation Program (NDIIPP)[7].
- Basic projects develop concepts and prototypes, evaluate concepts and practices, and conduct research, e.g. LIFE[8], TRAC[9].

The next step deals with the mapping of the conceptual work onto the elements used in Process modelling. These elements cover tasks, task performers, resources as well as static and dynamic structures (the organisational structure and the procedural organisation), managed information, and finally spatio-temporal and quantitative aspects. Therefore, Process Models provide a consistent description of the concepts in memory organisations. We

FIGURE 2: Generic Business Model

also consider concepts that are not directly related to long-term preservation like information life cycle models or service oriented architectures.
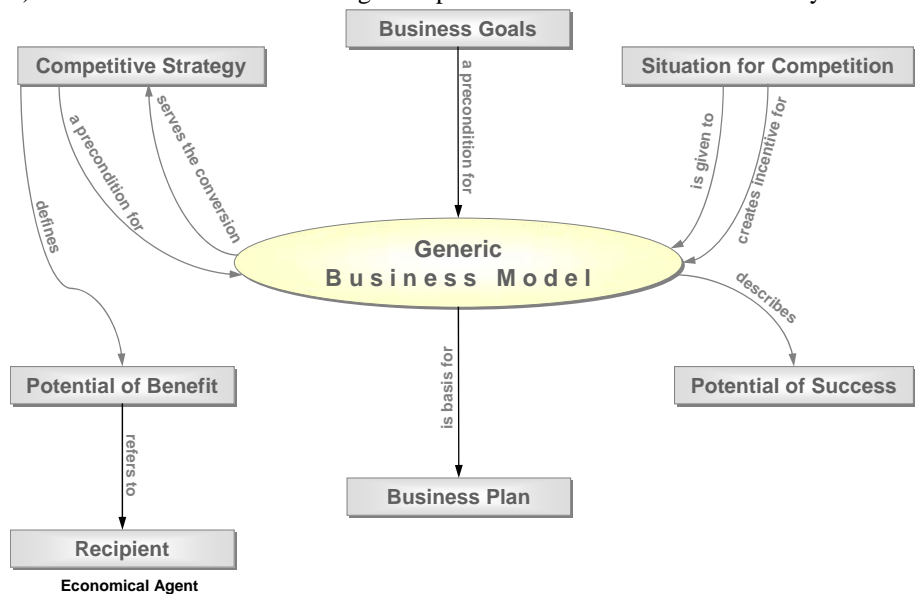
So we will get a structured description that allows us to recognise interdependences, gaps, and inconsistencies. Especially, we are interested in parts that can be reused for Process modelling. For example, the functional entities and sub-functions as specified in the OAIS reference model can be transferred into a generic Process Model. According to common practices we introduce three different types of processes. First, management processes direct and control all the other processes[10]. Second, core processes realise the goals of an
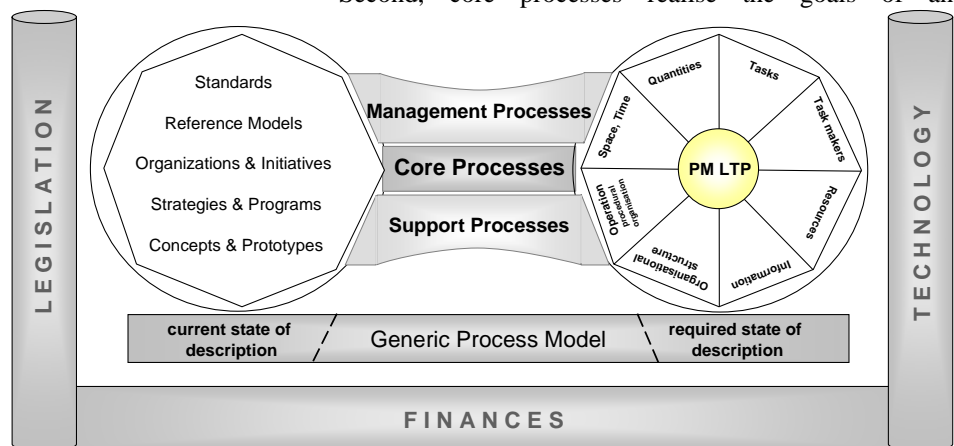
Figure 3: Procedures for deriving generic process models for LTP (PM LTP)

organisation. These processes are also value adding from a customer's point of view. Ambitious business goals usually require interdisciplinary core processes. Third, support processes do not directly add value for the customer, but they are necessary for the core processes to work properly. These types of processes are primarily elements for outsourcing.

The generic Process Model enables us to make substantial statements concerning the dimensions,

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[3] CCSDS 2002.

[4] http://www.dfg.de/en/index.html.

[5] http://www.loc.gov/index.html.

[6] http://www.langzeitarchivierung.de

[7] http://www.digitalpreservation.gov.

[8] http://www.life.ac.uk.

[9] CRL 2007.

[10] Management processes are directly addressed by ISO 9001.

technology, finances, and law. But the model is still largely independent of concrete Business Models. Figure 3 illustrates the procedure for deriving the generic Process Model.

Procedures for Deriving Process Oriented Business Models Specific to LTP and Digitisation

In order to move from the generic models to models specific to the digitisation and long-term preservation of digital objects further procedures are required. First, we need a clear picture of the current practices and existing visions, and second, we have to adapt and populate the generic models.

Questionnaire

The questionnaire is an important milestone in our approach to get a realistic picture of how memory organisations currently manage and operate their digitisation projects and long-term preservation. The design of the questionnaire mainly considers aspects relevant for business and Organisational Models. But for reasons of acceptance we reduced the explicit use of technical terms. Especially, we assume that publicly funded memory organisations do not think primarily in abstract terms common in Business modelling. Anyhow, we are convinced that good practices and even future visions concerning these subjects already exist.

Recipients of the Questionnaire

Whereas the analysis of existing conceptual work was highlighting and outlining mainly theoretical aspects of long-term preservation, the questionnaire is supposed to give us a more practical view on the current situation in digitising and long-term archiving institutions. As a result tangible input for the development of organisational and Business Models can be provided.

By selecting the projects to be surveyed an intentional effort has been made to cover the widest possible range of digitisation and preservation projects. So the varying characteristics of internal organisation, process cycles and workflows can be detected more clearly. Although initially the focus of the survey had been limited to single digitisation projects, it soon became clear that the scope had to be extended to the institutions as a whole as stable organisational structures can only be identified and evaluated in an overall context.

Selection criteria were inter alia the nature of the institution responsible for the project (library, archive, museum, research institution) and its experience in the area of digitisation and long-term preservation. Furthermore it was important, when and for how long a project was realised, how many digital objects were produced, what was the original material for the digital media and how it is made accessible for the designated user community.

Since the study aims to develop widely usable business and Organisational Models, the survey did not only address the well known players of long-term preservation in Germany but also specific small and medium-sized organisations with limited budgets and lower levels of experience in this field. It was also relevant whether the projects were conducted independently or in cooperation with other institutional partners and private enterprises.

The coverage of the institutions surveyed ranges from the highly specialized digitisation centres in Munich and Goettingen to medium-sized institutions such as research institutions with special interests in digitisation to smaller foundations which have until now just converted and archived parts of their photo stocks into digital forms.

Conception of the Questionnaire

The questionnaire has been split into a general area 'institution' in which general information about the digitisation and long-term preservation process in the various institutions has been queried and a more specific part with particular questions to the individual projects. Initially we asked basic questions about the institutions' general motivation for digitisation and long-term preservation, selection criteria for the material used, responsible departments and persons and the number of already digitised and archived objects. Issues of interest were also the orientation or adherence of special guidelines and the development of institutional digitisation or long-term preservation policies.[11]

The answers to these questions should give us a basic overview of the surveyed institutions and their experiences in this field. The aspects relevant for the development of our models like fields of activity, specific tasks, tasks managers, financial means, human resources, used material, internal process structures and workflows, time, space and quantity have been queried according to the dimensions organisation, personnel, technology, and finance in the course of the questionnaire.

Apart from these fundamental issues, we have put special emphasis on the subject of customer orientation of digitisation organisations by asking for offered services and products. In this part of the survey we were also interested in possibilities of exploitation of digital objects, generation of revenues and ways of refinancing digitisation and long-term preservation.

In the final part of the questionnaire, 'visions', the respondents were given the possibility to outline future prospects for their institutions and specify further general needs concerning the fields of R&D, cooperation and consultation services in long-term preservation.

Procedure for Deriving a Business Model for LTP

Now we are going to explain why and how the generic Business Model is specialised for long-term preservation. Of course, this may be a first step of iteration because the results of the questionnaire are not yet fully available. Let us start with elements for a LTP-specific Business Model that are already on-hand.

Fundamental Business Goals of Long-Term Preservation

The fundamental goals of long-term preservation have been articulated officially several times and are known among experts.[12] More particular targets derive of course from the general mission and legal obligations of the

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[11] IFLA 2002, DFG 2008 et al.
[12] UNESCO 2003, Nestor 2006 et al.

individual institutions. In order to identify the required fundamental business goals it is more useful to draw on the concepts of Trusted Digital Repositories, which specify the goals of long-term preservation much more precisely.[13] According to these concepts the overriding and action-guiding principle for digital repositories is to secure integrity, authenticity and availability of digital objects. To evaluate if and how a digital repository is able to fulfil this main task, its effectiveness and efficiency have to be analysed and in a second step optimised. While effectiveness deals with the question whether a repository can preserve digital objects for the long-term at all, efficiency rates the benefit-cost-relation of the used resources. Beyond these main business goals also other targets, such as the creation of transparent decision-making criteria for selecting the material to be digitised have to be taken into account, if strategic models for long-term preservation are to be developed. Sustainable organisation and cooperation structures have to be created and consolidated to enable memory organisations to carry out their duties in the field of long-term preservation in an effective and efficient way.

Of course, fundamental business goals are useful for

Wirtz[14] to facilitate the design of cooperative organisation forms. We separate the original Partial Model named 'Production and Procurement Model' in two models. We also split the original Partial Model named 'Organisation Model' in two models named Utilisation Model and Operator Model and add some extensions. In summary we have: Market Model, Product Offer Model, Production Model, Distribution Model, Utilisation Model, Procurement Model, Operating Model and Capital Model. Each of these Partial Models is described by the elements of the generic Process Model. Now we have the granularity necessary for scaling and tailoring systems according to needs of individual memory organisations.

The granularity allows analysts to isolate and consider specific aspects without losing track of all the interdependencies. Starting points for optimisations or innovations as well as externally induced changes can be identified and systematically assessed. For example, starting with tasks, processes including related actors can be identified, and required resources can be determined. Ideally, key figures allow analysts a quantifiable assessment of different configurations.
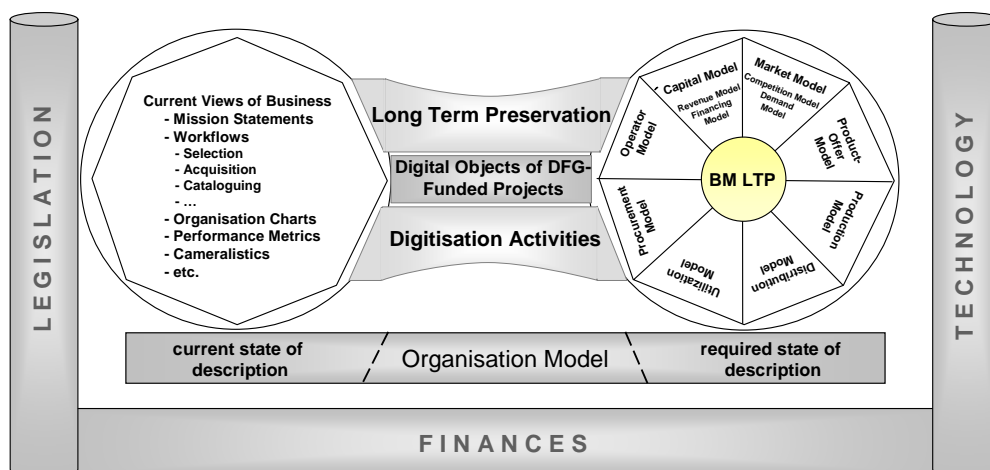

Figure 4: Procedures for deriving Business Models for LTP (BM LTP)

Of course, this study cannot provide off-the-shelf Organisation Models. There are too many different individual situations and too many possible configurations. But the models, that we are developing, will enable institutions to design and to assess their business and to formulate business plans. The models will also help to evaluate practices and to design patterns that can easily be reused.

developing Business Models, but they cannot provide enough information for economical analysis. Moreover, the current state of describing business in LTP and digitisation is not suited for economical analysis in general. But often existing documentations of the running business comprise information that can be made explicit for economic analysis by applying adequate Business Models as depicted in figure 4. Finally, having the information in form of a process oriented Business Model allows individual institutions to assess if market needs are satisfied effectively and efficiently. This Business Model will then be combined with the Process Model. The next sections show more details.

The Process Oriented Business Model in Detail

In addition to the presented process oriented view (see figure 3) we adapt the generic Business Model (see figure 2) in order to cover the complexity of long-term preservation and to derive Organisation Models. Therefore, we adapted the Business Model published by

(1) The **Market Model** consists of the Demand and the Competition Model. The Demand Model identifies consumers and classifies them into market segments according to the Utilisation Model. The segmentation helps to optimise the offer. The Competition Model identifies for every sales market its competitors and its roles and relations. Profit centres represent the consumers on internal markets, end customer are the external demanders. The Market Model serves to determine for every sales market one's own opportunities on the market.

We have to take into account that the market for memory organisations is extensively regulated by the legal framework on the one hand and the fact that the awareness of existing markets is obviously not very high on the other hand.

(2) The **Product Offer Model** determines the service portfolio that is adapted to the individual needs of the actors. How actors can use the products and how the

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[13] CRL 2007, Nestor 2006.

[14] Wirtz 2000.

utilisation is technically and non-technically supported characterise the offered services. The Product Offer Model is closely linked to the Utilisation Model and shows the specific use by customers within different market segments. The required sustainability of the offered services in LTP is distinctive to usual product offers. The quality of service is endangered by technical obsolescence and loss of context.

(3) The **Production Model** describes the stepwise transformation of products or services adding value. For every transformation the input and output has to be specified. Additionally, all resources required by each transformation are listed in this model. Outputs have to fulfil the specified quality standards, which consider views form different Partial Models (e.g. costs or product properties).

In our case all transformation processes that maintain integrity, authenticity, and accessibility of information are also part of this model. Of course the enhancement of information provision, for example by adding descriptive metadata to the digitised objects, is also adding values.

In comparison to usual products the specification of information's quality is hard to formulate.

(4) The **Distribution Model** specifies how the offered products or services get to the customers, and it informs about costs, time, and quality of the distribution process. The distribution includes internal as well as external consumers. The model distinguishes the products into two groups: material and immaterial goods. Even in the digital world we have to consider the handling of extreme valuable masters.

Ubiquitous computing and growing bandwidth for communication will lead to new Distribution Models.

(5) The **Utilisation Model** serves for the identification and description of the actors in form of a role-model, with which the relations between actors and elements of the Process Model can be declared.

The model focuses on the internal as well as on the external users' view and bridges the gap between users' wishes and the products and services that can be offered economically reasonable. The model should help to recognise the willingness to pay for products and services and therefore provides input for the Revenue Model.

We assume that it will be hard for memory organisation to estimate the willingness to pay for public goods that were guaranteed by law to be free yet.

(6) The **Procurement Model** identifies and describes the raw materials (external inputs) and the factors of production necessary to run the transformations as described in the Production Model. In general, the procurement is also subject to market mechanisms.

It also includes masters, licences, and IT-components. Procurement and running of mission critical IT-infrastructure are not the original core business of memory organisations. Therefore they need the capability to specify their requirements and to manage and control procurement of products or services.

(7) The **Operating Model** in the broad sense describes alternatives of production as well as product offering by third parties. The model comprises the internal and the external relationship between partners.

Leveraging the specific competence of an external partner can lead to more efficiency and effectiveness. Partners can share innovations and resources as well as risks. Organisations can concentrate on core processes and can draw off resources as actually required by business. Even small units can benefit from partnerships, because they need not to operate a complete infrastructure.

Operating models are characterised by two types of relationships. Internal relationships are established to run a business as a whole, while external ones focus to the world outside this cooperation. Achieving a win-win-situation is usually the driving force for establishing cooperation. The types of cooperation may range from owner-operated units to the outsourcing of complete core processes.

All forms of partnerships require thorough consideration, especially if mission critical subjects are involved in the long term.

(8) The **Capital Model** consists of the Financing and the Revenue Model. The Capital Model requires a description how to manage and control the inflow and outflow of resources. It completely lists sources of revenue and facts that cause expenditure. Therefore the model has also to show all operational areas that are indispensable on the one hand and that cannot realise revenue on the other hand.

Such a level of transparency is the basis for a concrete business plan and the prerequisite for any kind of reengineering (cost-benefit analysis).

Some models focus on expenditures (e.g. Procurement, Production, Product Offer, and Distribution) whereas others focus on revenues.

With the help of the eight Partial Models innovative future business ideas in the field of information and communication can be identified in a method- and model-driven way. This multi-perspective view puts us in the position to clearly assign the constitutive elements within the framework of the Organisational and Business Model and to adapt them to different conditions by brainstorming.

The mentioned models have to be described in detail to enable substantial statements on the subjects of technology, finances, and law - either for the particular model or for the systematic combination of several models. In order to transfer the rather abstract model to an individual memory organisation the model has to be instantiated.

We call this instantiated form 'Organisation Model'. Now the actual tasks of existing institutions can be assigned to real task performers and interdependences between them and others elements of the Process Model, especially resources, can be recognised.

An Example - from Workflows to the Business Model at the BSB Munich

The following paragraph exemplifies two of the Partial Models by taking a deeper look at some aspects of the organisation of digitisation and long-term preservation at the Bavarian State Library (BSB).

Since the foundation of the Munich Digitisation Centre in 1997 the Bavarian State Library became one of the major content providers among libraries in German-speaking countries, now hosting already more than 30,000 volumes and approximately 10 Million pages. There will be an enormous growth of the collection within the next few years as several important new digitisation activities have been started in 2007. These digitisation activities include amongst others, the so-called VD-16-digital-project, in which automated scanning technology for the digitisation of books of the 16th century is applied and the public private partnership with Google. More than one million books out of the copyright-free holdings of the library are going to be scanned by Google and will be hosted by Google Books as well as in the Digital Collections of the Bavarian State Library for free access.

The Production Model at the Munich Digitisation Centre includes four main steps: a) Image Capture b) Indexing and Access c) Publication d) Storage and Preservation. Due to the limited context of this article only the part of Storage and Preservation can be described in detail.

After the first steps of the digitisation-workflow have been successfully completed, the digital master images and the corresponding metadata are being transferred to the Leibniz Supercomputing Centre (LRZ).[15] Its powerful technical infrastructure is being used for the archival storage of the Bavarian State Library and thus delivers a major contribution to the preservation of the added value that had been created by the transformation of an analogue into a digital object. This partnership of BSB and LRZ contains also basic elements of the Operating Model and has to be analysed from that point of view in a further step of our study.

The Leibniz Supercomputing Centre uses a TSM/HSM storage system based on a tape library for archiving BSB's digital content. Incoming digital objects are automatically stored in this archival system every day.

Each digitised volume is been kept as an uncompressed master copy together with the complete bibliographical metadata and basic technical metadata information. Put together this makes a 'self-explaining' archival information package which remains usable even in case of loss of all external reference systems (e.g. the database or the local catalogue system). For the efficient storage of large amounts of data Hierarchical Storage Management (HSM) is being used. Several storage systems with different quality of services are integrated into a single file system view. According to defined rules the files are automatically and transparently migrated between the storage layers. Virtually there is no limit for the amount of stored data as the HSM file systems usually use magnetic tapes as final storage layer. However, especially when HSM is used for long-term archiving with a quickly and continually increasing number of files, the performance of meta-data operations (e.g. identifying files for migration) could become a critical issue. This means, that in order to keep the whole system manageable additional measures (e.g. survey of file formats and file numbers) have to be taken. The very efficient architecture of the archival system makes it possible to locate and retrieve every stored file in just about two minutes time. Only widespread and well documented file formats (TIFF, JPG, PDF/A and plain text files, e. g. XML) are being stored in the archive. For that reason, special preservation activities (e. g. format migration, emulation) have so far not been necessary, but can easily be implemented if needed. A first hardware migration of the complete data stock of the library was completed successfully by January 2007 (then 42 TB).

The Distribution Model describes the ways and modalities in which digital objects and associated services are brought to the user community. The basic means of delivering digital objects to the users of BSB is obviously the WWW. Several options of accessing the digital content are offered by the Bavarian State Library. The user can either use search engines on the WWW (e.g. Google), global or regional catalogues (e.g. WorldCat, Gateway Bayern) or he can search the library's local catalogue system (OPAC) where a link inside the bibliographic record will lead him directly to the digital object. Another way is to browse or search inside the digital collection's homepage.[16] There is a special server-infrastructure which processes user requests, so that it is not necessary to revert to the archived objects at the Leibniz Supercomputing Centre. Although the vast majority of digitised books is freely accessible on the web, in some cases access has to be limited to in-house-usage at the public Internet PCs of the library's reading rooms due to copyright restrictions. The basic access format is JPG, but the user can also generate a PDF version for a greater flexibility in handling and printing the objects.[17] Every image is available in two or three sizes for different zoom levels depending on the size of the book.

Besides online distribution of already digitised material the BSB also provides the opportunity of a 'Digitisation-on-Demand'-Service, which enables the user to order a digital copy of almost every printed book out of the library's depository. In this case the user can chose his preferred form of delivery: paper copies, CD / DVD or Internet Download. Additionally high resolution images can be ordered for special scientific or commercial purposes. Depending on quality, size, colour, quantity, processing of special requests, intended use and form of delivery fixed fees are charged. This basic pricing model can be a good first starting point for the further development of more elaborated Financing and Revenue Models for the BSB in particular as well as for memory organisations in general.

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[15] http://www.lrz-muenchen.de

[16] http://www.digital-collections.de.

[17] This service is in trial operation and is being introduced step by step for all digitisation projects funded by the German Research Foundation.

Conclusion

What we can see from the first questionnaires that have been returned so far, is that all our interviewees, asked for their future needs, first and foremost would like to have a source of specific advice on questions arising from practice as well as generally accepted standards in all the dimensions mentioned above - organisation, technology, finance, and law. That basically means feasible workflows tailored for day-to-day-business, suggestions for the adoption and application of metadata and technical standards and help with copyright issues. Furthermore financial support for the establishment of sustainable human resources structures for long term preservation is considered to be of special importance.

On the basis of the methodical approach – from the Generic Business Model and Generic Process Model to the Process Oriented Business Model for digitisation and LTP in memory organisations and through instantiation to a specific Organisation Model for a particular memory organisation -   we are able to get a holistic view on digitisation and LTP. Conceptual work and aspects of real memory organisations can be systematically analysed. New models for different contexts can be derived, and existing models can be optimised methodically. The process oriented approach facilitates a systematic reengineering.

Our approach is flexible enough that it can also be applied to other types of digital objects, like scientific data or multimedia contents, long-term preservation outside memory organisations and in an international context.

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