

# Organizing for Future Access to the Cultural Heritage

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**Abstract.** How to organize with the aim of securing the digital cultural heritage is the main interest of this paper. We provide a description of the current situation at an authority that deals with this question, and its personnels' view of their assignment. The objective for our analysis and discussion is to explore the suitability of the Viable System Model as organizing principle for long-term digital preservation. We have found that the model elucidates several important aspects, such as coordinating functions and information and communication channels. In addition it provides the advantage of a holistic perspective, as well as attention to the environment. These aspects are crucial for long-term digital preservation. Therefore, we find the model suitable since it clarifies necessary processes and functions if the digital cultural heritage is to prevail.

## Introduction

No one really knows how to preserve digital information for long-term<sup>1</sup>, and no one is able to guarantee the longevity of digital information. Even so, this situation is expected to be changed with technological means. Yet, digital preservation is so much more than a technical issue. This is recognized among many, but not all, of those involved in digital curation and long-term preservation. Nevertheless, in many organizations there still

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<sup>1</sup> How long different official documents are to be preserved varies from about 3 years to forever, depending on what information they hold. The problems concerning long-term preservation, however, concerns the time period when digital objects no longer can be accessed and understood in a routinely manner, with simple means.

prevails a belief that technology alone is the answer for addressing this problem (Heath and Luff, 2000).

In contrast to this, research has shown that it does not solely matter whether information systems are innovative and reliable etc., many of these systems fail when implemented in the organizational setting. One reason for this is that neither organizational conditions nor qualifications and skills among personnel are considered (Bødker, Kensing and Simonsen, 2004; Heath and Luff, 2000; Markus and Benjamin, 1996; Wang and Paper, 2005). This implies that to assure the longevity of the cultural heritage we have to involve other things besides technology, such as social and organizational issues, including relationships between professionals. This is important, not least since different professionals hold different views on technology (Runardotter, 2007). People have underlying assumptions, expectations and knowledge about technology – technological frames. It is vital to understand this, if we are to fully understand technological development, use and change in organizations (Orlikowski and Gash, 1994).

Today many organizations are organized solely in accordance with functions. Digital curation challenges this, since long-term digital preservation cuts through functions, including supportive functions, and therefore demands another approach to secure the longevity of digital material. This imply that organizations need to create an organizational framework – a structure for how to organize the work – that supports the work with long-term digital preservation, in addition to the existing structure for how to organize work related to the paper-based archive. This new organizational framework should embrace processes, activities, functions and routines i.e. that which must be conducted if digital material will continue to exist. Moreover, to understand and guide techno-social development knowledges of technological systems, social processes and their interaction are required (Orlikowski and Barley, 2001).

In this paper we will describe the Swedish National Archive of Recorded Sound and Moving Images (SLBA) that is actively working to bring forth a preservation strategy for their audiovisual material. Besides increased consciousness and experience of audiovisual preservation, SLBA aims at facilitating future work. This they intend to do by creating methods that involve processes, activities, functions and routines that support and safeguard preservation and accessibility over time. Moreover, the intention includes considerations of economical sustainability.

Our main interest is organizing of the work with long-term digital preservation. Therefore the aim of this paper is to describe and analyze the current situation at SLBA by referring to Viable System Model (VSM) and its theories (Beer, 1979; 1981; 1985). Thereafter we discuss the suitability of VSM as organizational approach. This implies that the questions at issue here are not limited to governmental authorities, but are to a great extent of importance for all authorities or organizations that have digitalized their services. These enterprises will also be forced to consider current processes, activities, functions and routines.

The paper is disposed as follows. We start by introducing VSM, followed by the methods used when gathering and analyzing the empirical material. Then we describe the

authority and what regulates its activities. Next, the empirical material is reported through the lenses of VSM. In relation to this we analyze and discuss what VSM provides and enables. Based on this we draw some conclusions regarding the suitability of VSM for organizing long-term digital preservation in organizations. We end with some suggestions on further research.

## The Viable System Model

The Viable System Model (VSM) is a model that deals with how to organize an enterprise with the aim to keep it viable. The theory around VSM revolves around organizing and making explicit what is required if the enterprise will be able to change and adapt in line with its environment. Since the model clarifies processes, activities and functions needed for this survival, we think that VSM could be useful for organizations working with long-term digital preservation. VSM hopefully can elucidate which processes, activities, functions and routines humans or machines will have to perform in order to secure the longevity of digital information.

VSM provides both a model and a method to diagnose and develop an effective organization that is flat in hierarchy and includes channels that are necessary for connecting different objects or subsystems. VSM is a tool for all organizational levels since management of complexity<sup>2</sup> is spread throughout the entire enterprise (Espejo, 1989). Furthermore, it is our conviction that it is *information*, not merely data, which should be preserved for long-term (Runardotter, Nilsson, Quisbert, Hågerfors and Mirijamdotter, 2006). Therefore we find it sympathetic that from a VSM point of view, organizations are treated as information-processing systems (Björkqvist, 1996).

## The Origin Found in Cybernetics

The underlying ideas behind VSM are found in cybernetics, the science of effective organization. Cybernetics is an interdisciplinary subject that deals with the structure of complex systems and their regulations, and has to do with communication, control, and feedback principles (Beer, 1985; 2004). Effective organization and human beings are at the heart of enterprise (Beer, 1979). The challenge for an organization is thus to create a cohesive whole while at the same time assure autonomy for its individuals (Espejo, 1989).

To use VSM when diagnosing organizational systems is to study management of complex flows of information and communication. In its entirety VSM is a holistic model, embracing individuals, organizations or communities that are embedded in larger systems. The model explains how organizations are viable, that is, how they are capable of independent existence. By this is meant that they can operate in their own right while cooperating with their environment (Beer, 1979; 1981; 1985; 1989; Leonard, 2000).

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<sup>2</sup> The term “complexity” is here used in the meaning of “a compounded whole that is difficult to overlook”.

An important feature of viable systems is that they are self-referential – their logic closes-in on itself. In this characteristic lies the explanation for the maintenance of identity, self-awareness, the facility of self-repair and finally, recursivity itself (Beer, 1985).

There are (at least) two elementary concepts for VSM – variety and recursion. The first, variety, concerns measurement of the complexity that the system has to handle, which makes Ashby’s law of requisite variety crucial (Beer, 1979; 1985; 2004). In short, Ashby’s law states that only variety can destroy variety. Every system must equal its incoming variety with as much variety in its transformation process, in order to reach a desired goal (Beer, 1979). Today when speaking of these matters they are often expressed as complexity (Björkqvist, 1996). Even if the concepts to some extent could be regarded as quite similar, variety point at the amount, while things might be complex even if they are few in numbers. Thus we will use the concept variety for this paper.

The second concept – recursion – means that each independent viable system is embedded in other systems, such as e.g. the plant is embedded in the division, which is embedded in the company, which is embedded in an industry, which is embedded in... and so forth (Leonard, 2000). Hence, every system is a subsystem of another system – the system-in-focus<sup>3</sup> is a subsystem in a higher recursive level while in the same time it consists of subsystems on lower recursive levels. Beer claims that “It is vital to understand that the typology of recursion demands an exact replica in each case” (Beer, 1989, p. 22).

## The Model Described

The viable system is shown to the right in Figure 1, and the relevant environment with which the system communicates and interacts is illustrated as “clouds” to the left. Figure 1 shows that the system-in-focus consists of subsystems, that is S1-S5 and if the system-in-focus is to be viable then all its subsystems must function in coherence. In the circle S1 (see Figure 1), there are three systems at another recursive level, which consist of *their* S1-S5 but which are not in focus for the moment.

Every subsystem has a certain function that has to be fulfilled if the viability is not to be threatened (Beer, 1981). The subsystems S5, S4 and S3 in the square at the top in Figure 1 make up the metasystem that leads the system-in-focus and have different tasks in this mission. Through the systems S5, S4, S3 and S1 runs a central command axis, shown as vertical black lines. Through this command axis information flows, such as reports upwards and instructions downwards (Beer, 1981).

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<sup>3</sup> The term “System-in-focus” is used for a chosen system, at a specific recursive level, that is being focused/diagnosed/analyzed.

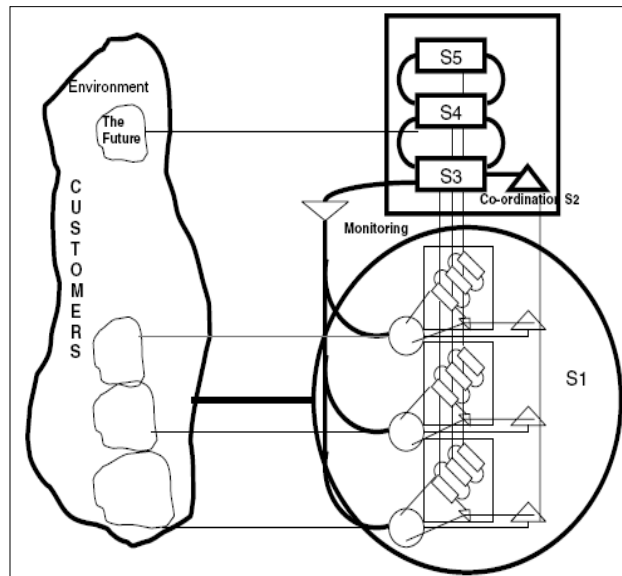


Figure 1. The Viable System Model, with two recursive levels.

S5 checks out and ‘masterminds’ the metasystem, it is here we find the norms and values for the system in focus. The concentration lies in where the organization is going and consists of the thinking part of the whole organization. In other words, its function is **Policy** (Beer, 1985).

S4 has the function **Intelligence** and this system is the one who communicates with the environment, does the strategic planning and defines how the system-in-focus is to reach its goals. Thus, it is concerned with managing the outside-and-then and to provide self-awareness for the system in focus (Beer, 1985).

S3 is the system which monitors and controls the production, allocates resources and performs the tactical planning. In short, it is about audit. It “is responsible for the internal and immediate functions of the enterprise: its ‘here-and-now’, day-to-day management” (Beer, 1985, p. 86). Its function is primarily to govern the stability of the internal environment of the organization, that is, its function is **Control** and S3 is responsible for, although it does not conduct the anti-oscillatory functions of S2.

To the left, outside the metasystem square we find S3\* (shown as a triangle) which is part of S3. The reason that it lies outside S3 is that it operates apart from the command axis. Here the function is **Monitoring** and this system is responsible for “sporadic, high-variety, intra-operational, ‘task force’ activities” (Beer, 1985, p. 86).

S2 (shown as the triangle to the right) has the function of **Co-ordination**, which means that this system co-ordinate the operational systems S1. The purpose of S2 is to make the system-in-focus stable, thus it has an anti-oscillatory function. This system also lies outside the central command axis because its function is “not to command, but to damp oscillations” (Beer, 1985, p. 68). It takes part in both S3 and S1 and is the only means whereby uncontrolled oscillation between divisions can be prevented.

*S1* consist of the elements that produces the system, Beer (1985) carefully points out that the system is what the system does, and what the system does is done by several *S1* systems. The *S1* function is thus **Implementation** of the system-in-focus' operational work. Each of them can consist of one or more subsystems and each of them are viable by themselves.

Regarding the communication and interaction with its environment, the organization needs to make sure that it is the correct and adequate information that flows between the organization and its environment. This means that important information must be emphasized, or in VSM terminology amplified, and irrelevant information should be filtered out, or attenuated (Beer, 1979).

## Methods

We start with a short description of how the empirical material from SLBA was obtained. Then we show our method for analyzing the suitability of using VSM when organizations consider organizing their activities in order to facilitate digital curation and long-term digital preservation.

### Gathering the Empirical Material

In November 2007, one of us spent one week at the Swedish National Archive of Recorded Sound and Moving Images (SLBA). Besides walking around at SLBA, and talk with personnel at different departments in a very informal way, two group interviews, and two individual interviews were conducted, with personnel at the authority. All the interviews, group or individual, had the same basic structure: today's situation, how it functions previously and lessons learned. The interview structure was thus inspired by three basic themes: the authority's history *what was*, the current situation *what is*, and lessons learned, including *what could/should be* (Ståhlbröst & Holst, 2006). The focus was on SLBA's strategies, processes and other organizing issues, including responsibility. All the interviews, individual and group, were semi-structured, i.e. it was not a totally free discussion. Instead the researcher was making sure that the interview participants were kept on track, in a role as moderator introducing new aspects when the discussion declined. The advantage of this approach, inspired by focus group interviews, is that it provides insight into people's ideas, attitudes and values (Wibeck, 2000).

The interviews have been transferred into written text. Since our interest was in their descriptions of their situation, not how they expressed their views, we have not written down repeated words, not marked if a participant hesitated, and so forth.

### Analyzing Through the Viable System Model

Material from the interviews that people at SLBA have provided, regarding the work and its accomplishment at the authority today, will be used to mirror whether VSM

contributes to an improved way of organizing SLBA. The basic question for our discussion points is what phenomena VSM makes obvious, i.e. what can we discern when diagnosing the authority with the help of VSM.

In practice this involves to analyze and discuss the situation at SLBA by referring the personnel's accounts to VSM. Besides that, we also discuss requisite variety, and other important aspects, in the end of this chapter.

## The Authority

The section introduces the Swedish National Archive of Recorded Sound and Moving Images (SLBA) and gives some background information on regulations that govern the work.. This is followed by a description of their departments.

Then we describe their current situation and activities, with reference to the Viable System Model (VSM). Following this, the chapter focuses on organizing an authority for long-term digital preservation.

### Regulations That Govern the Authority's Work

Even if all organizations need to preserve information for long-term, governmental authorities are obliged to do this according to the law. SLBA, as a national archive, is a governmental authority that collects and preserves copies of film, recordings of radio or television, or other documents for electronic reproduction. The fundamental idea is to preserve for future generations, thus, no limitation of the preservation time, and no appraisal of the material is conducted. Hence, SLBA is obliged to follow the Swedish laws and regulations that concern governmental authorities, while other authorities such as municipalities and county councils are not as strictly regulated.

The foundation for official archives is found in one of the four fundamental laws in Sweden, the Freedom of the Press Act (SFS 1949:105). This act states that every Swedish citizen has the right to free access to official documents, a fundamental right for an open democratic society (Gränström, 2005). In the Archives Act (SFS 1990:782) the aim and purpose of archiving is declared, and it is also emphasized that archives are part of the national cultural heritage.

The more specific activities at the authority are governed by annual Budget Documents, which describes the objectives set out for the authority. With the Budget Documents follows the financial means along with a declaration of how these means should be used. The authority's objectives are based upon the Swedish government's intentions. No one at SLBA have any opinion about these. On the other hand, more specific objectives, such as demands for reports, are worked out together with officials at the Ministry of Education. This means that before SLBA receives the Budget Document they are able to influence its content in dialogue with the ministry. Furthermore, the more specific objectives in the Budget Document constitute the foundation for the authority's

operational plans and objectives. Consequently, the specific objectives are translated and adapted for every department at the authority.

According to the interview participants, what mostly governs the authority's work in practice is the Law of Legal Deposit (SFS 1993:1392). This law regulates the obligation to submit deposit copies of documents either to selected libraries<sup>4,5</sup> or to SLBA<sup>6</sup> for research and study reasons (SFS 1993:1392, §1). The records that are expected to be submitted (in accordance with the Law of Legal Deposit) should have been made public by e.g. selling, rental or lending, and be regarded to concern Swedish conditions. This is valid if the information in whole or in part is in Swedish, in whole or in part contains work of a Swedish originator or performance of Swedish artist/s, or if it is mainly meant to be spread in Sweden.

The interview participants refer to the Law of Legal Deposit (SFS 1993:1392) as the reason for the authority's existence, and the most governing principles for its activities. There is only one little trouble – all interview participants stated that the law is out of date, outmoded and difficult to interpret, or translate to today's situation when SLBA has to deal with digital material. This is experienced as a frustrating situation, since it is not a matter that is within reach for the authority. They have brought forth their opinions, not least in an official report at the end of the 1990's, but nothing has happened so far.

## The Organization at the Authority

At the authority there are in total six departments, where the three supportive departments are IT, Economy, and Personnel (see Figure 2 below).

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<sup>4</sup> When two or three copies are asked for, these should be sent to the National Library of Sweden, and Lund University Library. When asked for seven copies, these should also be sent to the National Library of Sweden and Lund University Library, but also to the university libraries at Stockholm, Uppsala, Linköpings, Göteborg and Umeå Universities (SFS 1993:1392, §24).

<sup>5</sup> Written or combined material.

<sup>6</sup> Copies of film, other documents for electronic reproduction, or recordings of radio or television.

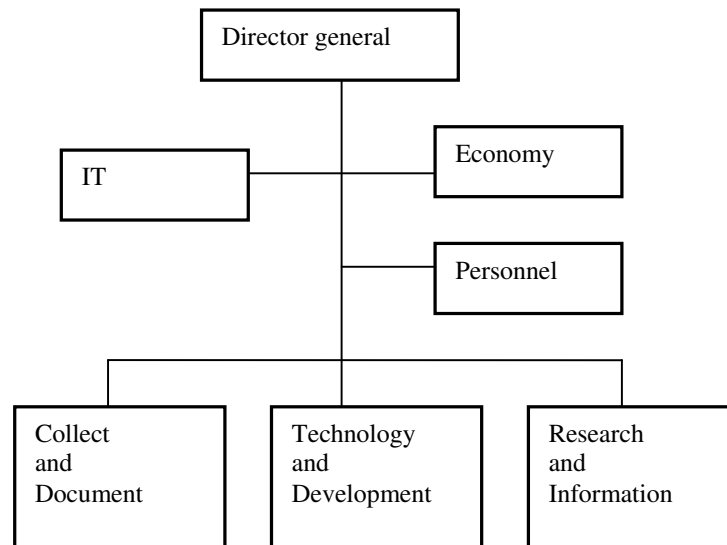


Figure 2. The organizational chart at SLBA.

When it comes to the IT department they work partly with the authority's own internal IT systems, and partly with the (public) archive. The other three departments are found at the bottom of Figure 2. These are: Collect and Document, Technology and Development (responsible for the preservation process, although in cooperation with the IT department) and Research and Information (responsible for access of the archived records). A more detailed account of what each department accomplish is described below.

## A Viable Way of Organizing an Authority

The origin for our investigation at SLBA was their aim to facilitate future work, and create methods that involve processes, activities, functions and routines that support and safeguard preservation and accessibility over time, in an economically sustainable way. They also wanted to increase consciousness and experience of audiovisual preservation. Therefore the question now is; in what way could VSM be of help in this work? Here we will discuss the suitability of using VSM as their new organizational approach (Beer, 1979; 1981; 1985). Our intention is to describe and discuss the authority's current situation with reference to VSM, starting with the systems S1 to S5. Thereafter we will round off with some general reflections.

### The Authority through a Viable System Perspective

Our system-in-focus is an archival creating organization, i.e. the entire authority (see Figure 3 below). As mentioned earlier, the system is what the system does, and what it does is done by several S1 systems (Beer, 1985). SLBA's objectives are "in the long run

collect, preserve and make the entire Swedish production of recorded sound and moving images accessible”, as formulated in their own words<sup>7</sup>. What then, is done at SLBA?

An archive must take some action in order to collect the material. At SLBA to collect involves, besides managing deliveries to the authority, to actively search and acquire material that is published on e.g. the Internet. When the material is collected it must be arranged and documented. These functions and processes are at SLBA taken care of by the department Collect and Document (see Figure 2). Digital archives need traditional archival metadata in accordance with the provenance principle, which states that the arrangement of archives must reflect the context in which the record/s was created. The arrangement should therefore correspond to the original order of the collection – hence it concerns to know where a record was created, in what process, to what end, for whom, when and how it was received by the addressee and how it came to us (Cook, 1997; Dollar, 1992). In a digital archive technological metadata must also be available, that is, description of which technological requirements that must be fulfilled in order to make it possible to access and “read” the record/s in the future (Nilsson, 2006). We will use the concept ‘Document’ as a term for both arranging and documenting, since we regard these actions to be closely connected.

Then the records must be preserved – which concerns actions taken for the records’ continued existence and survival. Here is migration and refreshing of the records involved, among other things. At SLBA it is the department Technology and Development together with the IT department, that accomplishes this (see Figure 2). And finally, once preserved the records should be possible to access. The department Research and Information (see Figure 2) is responsible for this part of the preservation process. This leaves us with four processes that constitute the “doing” which makes up the system SLBA – collect, document, preserve and make accessible. The latter concerns accessibility now and in the future since the law states the citizens’ right to free access to official documents.

The first indication provided by taking a VSM approach, before any analysis at all is done, is that it forces one to take a systems perspective, and a view of the organization in its entirety. The concept of recursion assures that processes and functions are placed where they belong. Hence, it is a kind of ‘sorting things out’, and thereby dealing with matters at the right instance (Bowker and Star, 1999). This means that using VSM as organizing principle involves a holistic perspective. This in turn, broadens the personnel’s view of what is going on in their organization, and their understanding of their own parts in the processes is likely to increase.

Now we continue by describing the situation at SLBA by using VSM as a diagnostic device.

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<sup>7</sup> In Swedish: ”Myndighetens mål är att på sikt samla, bevara och tillhandahålla hela den svenska produktionen av inspelat ljud och rörliga bilder”. <http://www.slba.se/05omSLBA/omslba.html> [2008-05-21]

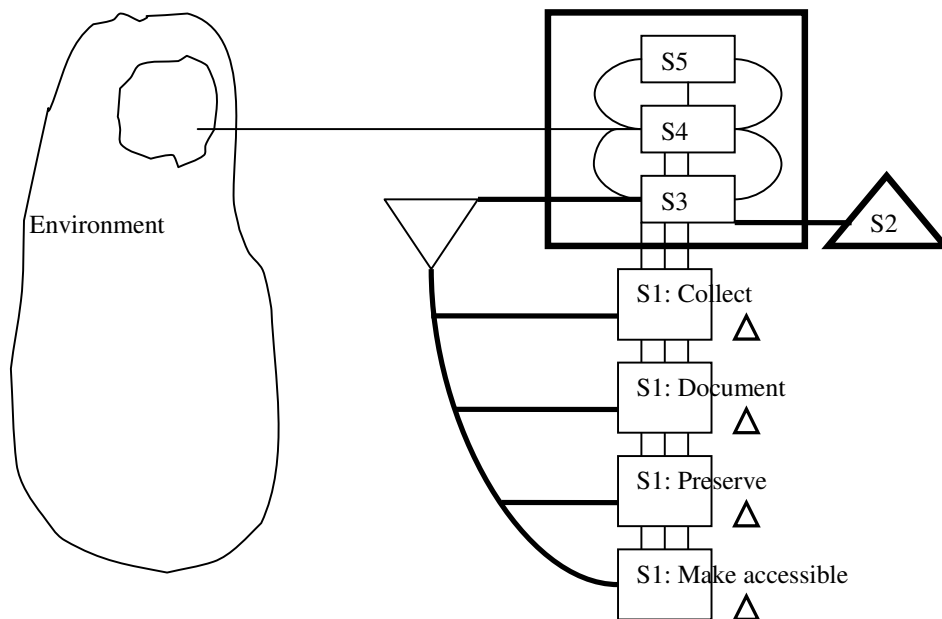


Figure 3. The Viable System Model applied on SLBA.

### The Systems S1

The four processes *Collect*, *Document*, *Preserve* and *Make accessible* thus constitute the S1 systems of SLBA (see the S1's to the lower right in Figure 3). These four processes are fundamental<sup>8</sup> and likely to pass for any organization that deals with digital curation and long-term digital preservation. The processes are closely connected, since what has not been collected, documented, and preserved cannot be accessed or understood. In turn, the processes each consist of other processes plus a number of activities and routines, but at another recursive level.

Therefore, cooperation and coordination should occur between the systems S1, and communication channels should be designed to facilitate this (Beer, 1985). At SLBA this also means over departmental, or functional, borders (see Figure 2). These communication channels should be made visible, so that actions taken are sanctioned and also in order to avoid confusion in the organization. This is often done in an informal way at SLBA, which means that the personnel have found their own communication channels. This is positive for the authority since the interview participants claimed that it leads to successful and interesting projects. It is also in line with the proactive approach of which all interview participants witnessed. Nevertheless it might create other problematic scenarios, e.g. influencing the social atmosphere negatively. Reasons for this are that the organization might become dependant upon one single, particular person. It can also split the personnel into formal and informal groups, and thus create informal leaders (Schein, 1988). In a prolonged perspective these informal ways might cause difficulties e.g. when

<sup>8</sup> In turn, each of them consists of several other processes, at another recursive level, but for the moment this is outside the scope of this paper.

new personnel is hired at the authority. It becomes hard for them to learn how the organization functions, whom to ask and where to turn, and how things are expected to be carried out.

This indicates that VSM clearly shows the need of communication channels that make it obvious how information flows. Knowing this makes it possible to track discussions, decisions, assignments and reports etc. through the organization. It also provides personnel with confidence of where to find information relevant for them, and thereby taking active part in what is going on at their department as well as in the organization per se.

When it concerns work tasks every interview participant were confident that they have great freedom to accomplish these as they thought would be best. They also knew what decisions they could take at their level, and which that should be decided elsewhere.

### The System S2

Emphasizing the necessity of cooperation also point to the need of a well-functioning system S2 in order to make the system-in-focus stable. As can be seen in Figure 3 to the right, system S2 is found outside the command axis, to co-ordinate the operational systems S1 and prevent uncontrolled oscillation. One of the system S2's function is to have knowledge of the whole organization, and the organization have several systems S2 at different recursions, and thereby with slightly different tasks (Beer, 1985).

The interview participants at SLBA expressed that today there is lack of routines and structured processes at the authority. They would like to see some parts of the work become more formalized as a way to safeguard that they do not loose sight of the comprehensive overall view of the work at the authority. In other words, there is need of internal services that structures the work and reflects managerial policies and decisions (Beer, 1985). This work concerns of course two recursive levels, the systems S2 need to be designed in each system S1 with their own process, and also in our system-in-focus for the moment – SLBA. One interview participant especially emphasized that what happens in e.g. one department might cause consequences in another. Since this is not always considered there is a lack of system S2 functions at SLBA. Nevertheless, this indicates that today the authority's systems S2 needs to be improved. This means that we have identified the need of an overhaul of how to better coordinate the different processes in as well as between the systems S1. Hence, VSM makes this obvious.

### The System S3

It is the Management Group at SLBA that deals with system S3 functions, that is the internal and immediate functions of the organization (Beer, 1985). The Management Group is the internal directorate, and consists of all the managers from the different departments at the authority. Hence, besides these managers responsibility for their respective departments, they are responsible for the functions of system S3. System S3 is the first of three Senior Management systems (Beer, 1985). The Management Group has a stabilizing function, since the members act as bridges between management and the

systems S1 and S2. If they did not have this dual role, it would be necessary to more apparently design the communication channels. VSM, once again shows this communication need in a clear way.

Moreover, this also indicates that VSM can be used as a diagnostic device that makes it plain which personnel that acts in which systems. This diagnose might be used as a foundation for the organizational design, i.e. when assigning different roles and tasks to people, and for a deeper discussion of personal as well as organizational consequences. Among other things it can bring to clarity whether the organization is too dependant upon one, single person, and how to assure that the knowledge of this person is kept within the organization.

#### The System S4

For the moment it was not clear for the interview participants if the system S4 function strategic planning was conducted or whether any goals for the system-in-focus, SLBA, were set (Beer, 1985). The personnel did not know whether there were strategies and plans that guided their work and that described where they should be in five, ten or twenty years. This was something they wished for. Yet one strategy was well known, and had been expressed for years by management and the Director General – the authority should work proactively and be in a leading position in the area of digital curation and long-term preservation. The participants were positive to this and acted accordingly. They motivated their actions by saying that they, as a small authority with scarce resources in time and money, have to be alert and look ahead, if they are to be able to influence the development. This means that another system S4 function, communication with the environment, was taken care of (Beer, 1985). Therefore, VSM clarifies SLBA's immediate environment. Perhaps what is missing is a strategy for how the environment is to be surveyed, since we got the impression that this is done in an ad hoc fashion. Moreover, the distinctions between different environments at different recursive levels are not clear.

Today it is the Management Group that works with strategic issues and long-term objectives, and the decisions taken in this group are also those that are turned into practical work at the departments. The decisions are communicated to the departments by the department's manager, hence, the members of the Management Group also acts as bridges of decisions. As mentioned above, the Management Group influences the work at SLBA to a high degree, partly in their respective departments, and partly at SLBA as a whole.

#### The System S5

The Director General seems to focus on system S5 issues, which are the ethos of the organization, and policies concerning the same (Beer, 1985). He has a comprehensive view of the authority, while working in the systems S3 and S4, scanning and analyzing the environment. Our impression is that he is a modern leader according to the norms and

values he is expressing. He is also content that matters are taken care of at SLBA, and shows trust and confidence in his personnel.

The authority has had a board of directors, but it seems that this group's main tasks have been to sign the annual reports and agree upon the budget; their influence on the authority's work has been almost none. From this year the board is to be replaced by a Reviewing Council. Chairman in the new Reviewing Council will be the authority's Director General in contrast to the board that had an external chairman. The consequence of this is that the Director General gets increased power. How this is going to affect is still to be seen, one of the interview participants thought that there is a risk in providing one person with that much power, while another imagined that there would not be any difference in reality. That the board should cease was something that the interview participants calmly accepted – they did not express any worries over this. This could depend upon the board's anonymity. One person meant that it would be positive to have board or Reviewing Council that could support and act powerful in certain matters.

To conclude the specific systems and sub-systems analysis – it is (almost) the same people that acts in the management systems S3 and S4 that is the Management Group. It would be interesting to know whether it will be beneficial for the authority to have an external group of people that could provide different views and other perspectives on the authorities work. The work for this external group in the Reviewing Council has only just started, and therefore this is still to be seen.

On the other hand, there are also advantages with this scenario. Many in the organization have a comprehensive view and knowledge of the authority and its work. The question is how efficient this is. Do they have requisite variety? Let us investigate this matter.

#### A Little Note about Requisite Variety at SLBA

The issue of having a holistic view of the authority, must be balanced against the fact that the technological development happens in a rather fast pace, which presupposes flexibility, argued an interview participant. The variety with which SLBA has to deal comes in many forms and shapes. One is formats and technical issues, which range from very out-dated, to the latest advancements in technology. Another is the amount of material they should collect.

To continually survey the environment for the latest news within the area of digital curation and long-term digital preservation was regarded as very important at SLBA. This is a necessary task in order to assure that the authority does not work out own solutions, which leaves them outside the rest of the digital curation area. To avoid isolation the authority must attune their ways of accomplishing digital curation in line with international standards and recommendations. They must also pay attention to other organizations' way to work with this. The managers are those that assume full responsibility for having control over the digital curation area, and in order to keep up with what is happening they take active part in different networks. The managers thereby gather and filter necessary information before it is spread in the organization, which

means that “The variety attenuators to use here are not policy documents from the centre, but the managers themselves” (Beer, 1974, p. 74).

An important issue is how the knowledge of what is happening in the area of digital curation and long-term digital preservation, is spread in the organization. Once again it is a question of communication. Matters and issues which are chosen to be in focus after the ‘variety attenuation’ must spread among concerned personnel (Beer, 1985). The organization must assure that there are methods and routines for this.

#### Finally, Some Other Reflections

Outside the system-in-focus there can be supportive systems that are not viable themselves. What is done in these systems is of another character. Their task is to support the viable system and if the viable system ceases to exist, so will the supportive systems. In other words, supportive systems depend upon the viable one/s (Beer, 1985). The supportive systems Personnel, Economy and IT are obvious in SLBA’s own organizational chart (see Figure 2). When it comes to VSM, these supportive functions are spread, and active in different subsystems (S3, and S4) depending on what is in question. For example, economic follow up is accomplished in system S3, while the budget is made in system S4. This means that in traditional organizational charts the supportive systems are easily distinguished as *entities*, while in VSM their *functions* must be discerned.

At SLBA the formal division of departments does not reflect how the work is accomplished in reality. Since the authority now deals with digital material, digital curation and long-term digital preservation, and within this field is expected to be proactive, they run development projects around these issues. Many of their development projects had their origin from informal meetings and discussions over departmental borders. This was regarded positive and was said to often result in exiting and smart projects. Again, organizations have to face the challenge of keeping this creative atmosphere while at the same time establish formal, visible channels. It is a question of designing freedom (Beer, 1974). By this is meant that people in the organization must have autonomy and be trusted to act (Espejo, 1989). At the same time the system require a blend of central and peripheral regulatory information in order to stay viable (Beer, 1974).

Overall, cooperation and communication was well functioning at the authority, something that created a positive atmosphere among the employees. All of the interview participants declared that they knew how to act if they have an idea or suggestion of some kind that they wish to pursue, and also that the formal structure for a matter is well-known. The responsibility for digital curation is spread at the authority, and all employees shoulder their parts.

Nevertheless, the participants stressed that most of the responsibility rests with the technicians, and the IT and Technology and Development departments. If they fail material will be lost, while on the other hand, if the material is preserved the other departments can accomplish their part of long-term preservation work afterwards. Moreover, technology is involved in all parts of the long-term preservation chain since

the authority only holds material that is dependant on different technologies. Hence it is not possible for SLBA to collect, document, preserve or make its material accessible without technology. So, even if we in the beginning stated that long-term digital preservation is not solely a technological matter, the area is definitely imprinted by technology.

## Conclusions

Our intention with this paper was to describe and analyze the current situation at SLBA by referring to VSM and its theories. The main interest was to find out the suitability of using VSM as organizational approach when dealing with long-term digital preservation (Beer, 1979; 1981; 1985).

We have found that the Viable System Model elucidates the following:

- VSM forces a holistic perspective.  
When organizing for digital curation and long-term digital preservation this is an advantage. If personnel is acquainted with and used to refer to a holistic perspective of digital curation and long-term digital preservation in an organization, their understandings of their own parts in the processes increase.
- The importance of established communication and information channels.  
A traditional organizational chart does not observe this almost fundamental feature for organizations. This is especially important in times when information flows rapidly and (technological) development happens fast.
- The importance of making coordination explicit.  
Digital curation and long-term digital preservation involves processes that demand coordination of work tasks. These must be considered and VSM is useful for this.
- VSM elucidates in which processes and functions people are acting.  
The model can be of help in investigating how and in what systems personnel is assigned tasks and roles, and whether the organization is dependant key persons, whose knowledge is important to keep in the organization.
- VSM considers the environment, something left out in traditional organizational charts.  
Again, the fast pace of development demands a constant scanning of the environment, in order to keep up with the development. In the area of digital curation and long-term digital preservation, to keep up with the latest news is crucial.
- Finally, VSM focuses on processes and functions – not departments.  
Therefore an emphasis is on what is actually done and going on in the organization. Regarding digital curation and long-term digital preservation this is to be regarded as an advantage.

Altogether this makes us conclude, that VSM is highly relevant to consider, when organizing for long-term digital preservation. With the aid of VSM the organization get a

holistic view of its activities, and also a diagnosis of what their current situation is like, just as well as it is possible to clarify what could be improved.

## Further Research

The four processes collect, document, preserve and make accessible, are also found in the Open Archival Information System (OAIS) model (CCSDS, 2002). As we have shown, VSM could contribute by defining functions, activities and routines. Therefore, it could be fruitful combining those two models.

The Viable System Model is one way of organizing the work with digital curation and long-term digital preservation. In reality, however, things do not always happen as planned. A critical analysis of VSM as one plan for digital curation and long-term digital preservation among other possible plans is also a possible subject for our continued research.

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