

# Electronic Records and Business Process Oriented Management

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## SUMMARY

The paper presents some ideas on how to make use of the methods to *describe business processes* within the change work (the organizational development) as a part of business process oriented management strategy for different aspects of the management of electronic records.

Special attention is paid to the possibilities to co-ordinate the development of the methods for the description of business processes from the general management perspective with the need to develop the records management methodology in two different aspects.

The first aspect is the possibility to develop the methods within the *records creation* area through the interaction with business process oriented management methodology. The belief of the author is that it is not possible to develop the methods for the creation of electronic records, without getting involved in the development of workflow and document management applications. The business process oriented approach to general management gives a lot of opportunities for the records manager, to define the interface between records management functionalities and other connected areas, such as workflow and document management.

The other aspect discussed in the paper is the possibility to develop the methods within the *records description* area. As electronic records can be seen as the self created tools of the business processes within the organization and the scheduling and description of electronic records has to be a scheduling and description of these tools, the starting point for this description could be the description of the business processes made by the organization itself from a general management perspective, if the organization chooses a process oriented management strategy.

**KEYWORDS:** Electronic records, business processes, management, information systems, workflow, document management.

## INTRODUCTION

In this paper I will give my view on challenges, problems and solutions in the management of electronic records, especially in relation to process oriented management methodology of today.

After introducing my discussion with a general background on different aspects of the management of

electronic records – the physical management and the intellectual management of records -- I will first of all give an introduction the problems in managing *business processes* in general.

Then I will present some experiences in the field of describing business processes within the *Swedish Government*, the IDEF method family, Information Engineering (IE) and the Unified Modelling Language (UML).

I will finally discuss the possibilities with process oriented management regarding two important aspects of the management of electronic records; the *records creation* and *the records description*.

## THE PHYSICAL MANAGEMENT

Historically the management problems of electronic records has been focused primarily on the *physical* management of electronic records. Records managers and archivists studied the technical literature regarding storage of electronic records in terms of durability, storage capacity, climate and temperature conditions for different media etc.

In the late 1980's and in the beginning of the 1990's still most text books focused almost completely on these physical aspects of electronic records management [1]. At that time, indeed the physical management of electronic records could be a real problem. The Swedish National Archives spent, for instance, quite a lot of money in constructing a special building in the underground for the storage of a very large amount of magnetic tapes, and even some governmental and municipal agencies did the same.

Due to the rapid development in information technology this focus on physical management of electronic records has to be seen as history, and nothing else. The challenges, problems and solutions have very little to do with the physical management of electronic records. Of course there is still a need for physical storage of electronic records, but these management issues are not specific for electronic records. Therefore it is not motivated to focus especially on these issues as a records manager.

## THE INTELLECTUAL MANAGEMENT

Instead I will focus on the *intellectual* management of electronic records. There has been a lot of important theoretical development on the concept of records in itself

during the 1990's and still a lot of research is going on in the world [2].

### **InterPARES and the Archival Perspective**

Not the least in the archival society there has been a positive development during the 1990's regarding the management of archival electronic records.

If just mentioning one important project it has to be the InterPARES Project, based in the School of Library, Archival and Information Studies at the University of British Columbia. This major international research initiative in which archival scholars, computer engineering scholars, national archival institutions and private industry representatives are collaborating to develop the theoretical and methodological knowledge required for the permanent preservation of authentic records created in electronic systems will hopefully, when their concrete findings will be presented in December this year be a substantial contribution to the records managers as well [3].

However, the InterPARES project is focused on the *long-term* preservation of electronic records. The goal of the research is primarily to identify the elements of electronic records which are necessary to maintain the *authenticity* of those records over time and to determine whether the evaluation of electronic records for permanent preservation should be based on theoretical criteria *different* from those applied to traditional records. An important question for the InterPARES Project to be answered is what are the procedural methods of authentication for preserved electronic records.

The objects for research by the InterPARES Project, and other similar projects around the world, are very important as it develops the fundamental principals of archival management in the digital era

### **The Definition of a Record**

Of vital importance for the management of electronic records is the understanding of the concept of a record. The International Council on Archives (ICA) Committee on electronic records defines a record as 'a specific piece of recorded information generated, collected or received in the initiation conduct or completion of an *activity* and that comprises sufficient content, context and structure to provide proof or evidence of that activity'.

Using the words of Dr. Angelika Menne-Haritz one can define the characteristics of a record as *emerged and stabilized tools* for the construction of *processes*. It came into being because it served as an instrument for the organization of collaborative decision making. As Menne-Haritz stresses the records are not the product of the activities, but their *self created tools*. In practical work the representation of the purposes of actions may be reduced to almost complete invisibility, because people took their papers to meetings or used the telephone. But even then, the common operations created the links that tie together the writings and give them their structure. The copies of outgoing answers cannot be understood without knowing the incoming letters. The links are especially hidden in the case of electronic records, but they distinguish them nevertheless from machine-readable data [4].

This rather *abstract* concept of a record is independent of its shape and physical form and the understanding of this concept is very important for the management of electronic records.

### **The Records Management Perspective**

For me, as a records manager, it is important not just to look at the records from the perspective of long-term preservation and the connected issues of authenticity. As a records manager it is necessary to include even the earlier stages in the records life cycle; the daily management of electronic records as working information resources and even the records creation itself.

The challenge is to integrate the management of electronic records within the management of information in general, without "losing the records" among all the other information and knowledge.

### **THE MANAGEMENT OF BUSINESS PROCESSES**

An important piece bringing us closer to a solution could be to develop the relationship between the records management methods and those business process management methods used in general management and information technology management of today, such as Total Quality Management (TQM), Business Process Re-engineering (BPR) and Process Management [5].

### **The Definition of a Business Process**

As already mentioned, the concept of record is closely related to the concept of *business processes*. To understand what a record is, it is necessary to understand what is a business process as well. As there are several suggested definitions of what is a business process, as a consequence there has to be several different views on what information is supposed to be a record, and what is not. One common definition of a business process in process management literature is:

*"A business process is a course of events consisting of one or more coherent activities (operations) which are necessary to deliver a product or service with a tangible value to a customer (client)." [5].*

Important is that this definition of business process is relatively wide ("*course of events*") on the one hand, in contrary to the definition of business processes of Dr. Menne-Haritz, as mentioned above ("*collaborative decision-making*") and on the other hand closely connected to the delivery of *products* or *services* to *customers* (clients).

This difference in definitions is fully understandable but very important to recognize, especially if working with records management within governmental organizations. The definitions of business processes within Total Quality Management, Business Process Re-engineering and Process Management have been developed primarily to suite the management of private enterprises. Common in these approaches is an interest in the vital and critical processes which flow through the business.

### **Three Levels of Change Work**

All of the three mentioned methods are mainly focused on

*organizational development*, that is the development of business processes within a company as order-handling and material-flow. Organizational development can be seen as the middle of three general levels of change work:

1. Corporate development
2. Organizational development
3. Information systems development [5].

Corporate development could be concretized as business plans and IT strategies and information systems development concretized as either in-house application development or the purchase of standard application packages. A widespread management problem today is that connections between the three levels do not always function satisfactorily.

As within most major organizations the Swedish Government Offices have experienced some difficulties related to the interconnection between the three management levels (corporate development, organizational development, information systems development).

*Zachman Framework*. There has been, quite a number of well-known, efforts to bridge this gap between organizational development and information systems development, not the least by researchers within the information systems development area. Especially worth mentioning could be the Zachman Framework which is an effort to define how major organizations view and communicate their enterprise information infrastructure. It draws upon the discipline of classical architecture to establish a common vocabulary and set of perspectives--a framework--for defining and describing today's complex enterprise systems [6].

The Zachman Framework identifies not just three levels, but five levels. Each level has its own requirements on the description of business processes and information:

1. Contextual level
2. Conceptual level
3. Logical level
4. Physical level
5. Out-of-context level

From my understanding of the Zachman Framework the contextual level is supposed to be used within corporate development (first level above), the conceptual level within the organizational development (second level) and the remaining logical, physical and out-of-context levels to be used within information systems development.

The Zachman Framework has not been adopted as a Swedish Governmental standard, but it has influenced quite a number of information systems development activities in the country.

#### **Why Process Oriented Methods?**

Coming back to the process oriented management methods there can be various motives for an organization for a higher degree of process orientation. It allows, for example, better focusing on customers and how they experience the value of a product and also on the

co-operation between different actors within the organization.

A common method to increase the degree of process orientation in a company of today can be to work step by step according to a specific "ladder":

1. Describe the business in process terms.
2. Define and clarify the responsibility for the processes.
3. Assess the processes in terms of quality, productivity etc.
4. Convert to a process oriented organization [5].

An important element of process orientation is *describing* the business. Choosing an appropriate *description method* can be seen as crucial for the success of the later steps in the above-mentioned ladder.

#### **A STUDY WITHIN THE SWEDISH GOVERNMENT OFFICES**

The Permanent Secretary for Administrative Affairs within the Swedish Government Offices decided in March 2001 to execute a study on process description methods [7].

The main goal of the study is to facilitate the development of workflow management systems, document management systems and records management systems within the Swedish Government Offices. But a second goal is to facilitate the change work within the Government Offices in general.

The hypotheses behind the study is that the lack of co-ordination between the methods in use when describing the business in the three levels (corporate, organizational, information systems) could be a reason for the problems in coordinating the three management levels, especially in the development of information systems designed to support the core business processes within the ministries.

These problems with the lack of co-ordination have also affected the management of electronic records within the Swedish Government Offices. Especially the lack of co-ordination between information systems development and organizational development, but also the lack of co-ordination between corporate development and organizational development has led to major problems in identifying the electronic records within the information systems of the Government Offices as well as defining the responsibility for the management of electronic records between the Records & Library Department and the Information Technology Department of the Swedish Government Offices.

It is important to stress that there is no decision that the Swedish Government Offices, comprising of the ten ministries, the Prime Ministers Office and the Office for Administrative Affairs, should re-organize itself to full process orientation. And being a public and politically controlled organization, not a private enterprise, it is of course impossible to look upon the business processes just as something related to the deliver of a product or a service with a tangible value to a customer (client). There are other perspectives on business processes to consider as well, as the democratic values, the values of transparency towards

the citizens etc. But this does not make it less important to study the methods of process description. On the contrary, it increases the need to develop the methods.

### **The IDEFØ method**

Of course, there have been several different process description methods already in use in the Swedish Government Offices. To mention one specific method recently used, I can bring up the IDEFØ method, designed originally by the United States Air Force to model the decisions, actions, and activities of an organization or system [8]. It was used in 1999 to describe the major financial and human resources processes within the Swedish Government Offices. The decision to use this specific method was handed over, however, to the external consultants, hired to execute the description activity. Consequently, it has not been possible to use the result of the description in the information systems development. The result had also little impact on the corporate development in the area. Nor were there any connection at all with the scheduling of electronic records concerning the financial and human resources processes.

The above mentioned IDEFØ-method is derived from a well-established graphical language, the Structured Analysis and Design Technique (SADT) and is part of a whole family of methods, for different kinds of graphical description methods, developed by Knowledge Based Systems, Inc. in Texas. But as there has been no intention to use the IDEF method family as a governmental standard in information systems development there is always a need to describe the same business processes once again when developing a new information system, regardless of any previous description made as a part of the organizational development.

Also the experiences within the Swedish Government Offices shows that there is often a problem in general with methods including graphical descriptions when it comes to the communication with the corporate development level. Often these methods pay too little attention to the need to formulate a written description of the business in an appropriate way. The documents with these graphical descriptions does not always have the necessary qualifications for communicating with the top level managers of the Government.

### **Information Engineering (IE)**

A good illustration to these problems could be the effort to introduce the method concept of Information Engineering (IE) within the Swedish Government in 1993. IE, being a well established method package within the IT business, originating from a former IBM engineer, Clive Finkelstein, and primarily developed in Australia, does also include a lot of traditional graphical description methods [9]. Some of these methods were used to describe the main "business functions" and the main "information areas" within a typical ministry. However the top managers within the ministries did not fully understand the relationship between these graphical descriptions and their traditional descriptions of the governmental business processes in internal regulations, manuals etc. This was probably part of the reasons why the IE methods never became accepted as a governmental standard.

### **Unified Modelling Language (UML)**

In the analyses and design phase of the information systems development field the Swedish Government recently has focused on another method instead, the well-known Unified Modelling Language (UML) [10]. This method originally being constructed for the specification, construction, and documentation of systems that use object-oriented software code such as Java, C++ or the Interface Definition Language (IDL) has its own notation and syntax. Its notation comprises a set of specialized shapes for constructing different kinds of software diagrams. Each shape has a particular meaning, and the UML syntax dictates how the shapes can be combined.

The UML was made in 1997 by the Object Management Group (OMG), a non-profit organization owned by the software companies in the world as well as the World Wide Web Consortium (W3C).

Especially in Sweden a recent trend has been to try to use the UML not only for information systems development, but also for organizational development including business process modeling as a method to integrate these two faces into each other. Two Swedish researcher's - Hans-Erik Eriksson and Magnus Penker - have developed so called *business extensions* to the UML making it possible to model business processes with the same graphical language as being used for information systems development [11]. However, these business extensions to the UML has not yet been in use within the top ministerial level of the Swedish Government, only within specific agencies dealing with government business on an operational level, such as taxation, social insurance etc.

The above mentioned study has just started its investigations. There are no decisions taken yet, on which methods to selected for an in-dept evaluation for the use within the top ministry level. These business extensions of the UML could be one of the methods of special interest, however. As the UML has its origin in the information systems development area, the most critical interface to study should in that case be the relationship between the corporate development level and the organizational development level.

### **PROCESS ORIENTATION AND RECORDS CREATION**

As already mentioned the main goal of the study within the Swedish Government Offices is to facilitate the development both in respect to *workflow systems, document management systems and records management systems*.

There are several obvious reasons for the Records & Library Department of the Swedish Government Offices to get involved in the ongoing efforts to find appropriate methods to describe business processes. One reason already mentioned is the challenge to integrate the management of electronic records within the management of information in general.

As a records manager, the use of the business process description method for the development of a common records management system is, of course, of special interest.

As far as I know there is still not much written literature on the application of business process description to records management procedures. The existing literature seems primarily to be written in the purpose of describing the records management procedures isolated from workflow management and document management [12].

### **The Swedish Tradition with Integrated Systems**

Sweden has a tradition in the public sector with a high degree of integration between these three types of information systems. The paper-based central Registry systems with a close connection between case management and the registration of official documents in diaries has led to the development of specifically Swedish diary applications. These applications often partly include both the workflow, document management and records management functions.

One idea behind the above mentioned study is that by developing the business process description methods and adapting them to the existing organizational and legislative situation within the Swedish government, it will be easier to develop the necessary workflow, document management and records management applications for the Swedish ministries.

### **European Commission MoReq Model**

In the 1990's some very useful specifications have been produced regarding the requirements for electronic records management system.

But from a European perspective a very recent generic specification is of special interest, of course; and that is the model requirements (MoReq) for the management of electronic records, recently presented by the European Commission and developed within the framework of the European Commission Enterprise DG's Interchange of Data between Administration (IDA) program and DLM-Forum, based on the conclusions of the European Council (94/C235/03) of 17 June 1994 concerning greater cooperation in the field of archives [13]. Most interesting with these new model requirement is the fact that not only records management requirements have been included, but *also* workflow and document management requirements, and their relations to each other.

As this model, is written to be equally applicable to public and private sector organizations and designed to be entirely generic, it does not consider any platform-specific or sector-specific issues. Anyhow it will probably be very useful as a basis for the future work within the Swedish government, by adding specific functionality according to the nature of the core business processes within the Swedish Government Offices including their relationship to Swedish legislation and organizational structure.

### **Defining the Interface**

Of special interest for the ongoing study will be the definition of the *interface* between workflow applications within the Government Offices for specific business purposes, the applications for internal document management purposes, the applications for the registration of official documents (diaries) and the records management applications. What methods should be used

to describe the business processes within the Swedish Government Offices in order to understand their relation to workflow systems, document management systems and records management systems? To what extent should the workflow functionality, the document management functionality and the records management functionality be integrated into a common information system within the Swedish Government Offices?

### **PROCESS ORIENTATION AND RECORDS DESCRIPTION**

As has already been discussed by archivists around the globe there could also be some major advantages if the *descriptions* of business processes could be used as an integrated part of the records schedules, and finally as a part of the archival descriptions.

### **Australian Recordkeeping Metadata Schema**

The most promising development in this area today – as I see it – is the ongoing projects within the Australian Government. The research results from the *Australian Recordkeeping Metadata Schema* including the conceptual models for standardizing and defining recordkeeping metadata provides the records managers and archivists with a useful framework for the methodological integration of records description with business process description in general [14].

### **The Traditional Swedish Approach**

The need to develop the methods for the archival description of electronic records has been observed by the Swedish National Archives as well. Their main method had been to produce *regulations* on the management of electronic records, including rules on the documentation and description of electronic records [15].

### **The Need to Develop the Contextual Descriptions**

However, the National Archives has realized that the records-creating governmental agencies does not fully understand how to implement these regulations into the existing methods for document information systems or their traditional methods for the scheduling and description of records. The conclusions of a recent study within the National Archives on the implementation and us of these regulations was that

1. The degree of documentation of electronic records depends on the information systems development *method* in use.
2. There is a lack of implementation of the documentation regulations of the National Archives within the governmental agencies especially regarding the requirement for documentation on the upper contextual level and regarding the descriptions on the data (data models etc).
3. Normally, it is *not* possible to survey the documentation as a whole within a specific agency [16].

The study prepared by the Swedish National Archives underlines the necessity to integrate the records scheduling methodology with the methods in use for the description of business processes, especially in order to develop the descriptions on the upper contextual level and the

descriptions on the data level. Of special interest for the ongoing study will be the possibility to co-ordinate the development of business process description methods for the corporate level within the change work with the need to develop the methods for the archival description on the upper contextual level. To what extent is it possible to re-use the business process descriptions for records management – and archival – purposes?

## CONCLUSIONS

The main purpose of my presentation has been to present some ideas on how to make use of the methods to describe business processes within the change work (the organizational development) for different aspects of the management of electronic records.

I have paid attention to the natural connections between business process oriented management methodology and records management, through the fact that records can be seen as tools for the construction of business processes. A well-functioning inter-connection in general between the different management levels does facilitate the identification of electronic records within the organization.

I have also paid attention to the possibilities to co-ordinate the development of the methods for the description of business processes from the general management perspective with the need to develop the records management methodology in – at least – two different aspects.

The first aspect I brought up was the possibility to develop the methods within the *records creation* area through the interaction with business process oriented management methodology. As I believe that it is not possible to develop the methods for the creation of electronic records, without getting involved in the development of workflow and document management applications, the business process oriented approach to general management gives a lot of opportunities for the records manager, to define the interface between records management functionalities and other connected areas, such as workflow and document management.

The other aspect I brought up was the possibility to develop the methods within the *records description* area. As electronic records can be seen as the self created tools of the business processes within the organization and the scheduling and description of electronic records has to be a scheduling and description of these tools, the starting point for this description could be the description of the business processes made by the organization itself from a general management perspective, if the organization chooses a process oriented management strategy.

This means that by getting involved in the development of business process descriptions a records management division of an organization will gain a lot in the future management of electronic records.

The development of a corporate strategy in choosing the different methods for business process description is of vital importance, and should be a major concern, for the managers of electronic records!

## NOTES

1. WALLACE, P.E., LEE, J. A & SCHUBERT, D. R. – Records Management. ISBN 0-13-769936-0. USA: Prentice Hall, 3<sup>rd</sup> Edition, 1992.
2. The Concept of Record. Report from the 2nd Stockholm Conference on Archival Science and the Concept of Record 30-21 May 1996. ISSN 1402-4705. ISBN 91-88366-35-9. Sweden: Riksarkivet, 1998.
3. InterPARES Project Research Plan. USA: School of Library, Archival and Information Studies at the University of British Columbia, 1998. URL: <http://www.interpares.org/researchplan.htm>.
4. MENNE-HARITZ, A – Appraisal and disposal of electronic records and the principle of provenance: appraisal for access – not for oblivion. Principal of appraisal and their application in electronic environment. European models and concepts. Proceedings from the DLM-experts meeting in Tampere, Finland, November 11-12, 1999. URL: <http://www.narc.fi/dlm/index.html>
5. TOLIS Chr. & NILSSON A.G - Using Business Models in Process Orientation . URL: <http://www.hhs.se/im/efi/ctagne.pdf>
6. For further information on the Zachman Framework, see for instance The Zachman Institute for Framework Advancement (ZIFA) web site (URL: <http://www.zifa.com/>) in the USA.
7. Uppdragsbeskrivning för förstudie avseende processkartläggning (HELGA). Sweden: Regeringskansliet, 2001.
8. For further information on the IDEF concepts, see for instance the IDEF family of methods web site (URL: <http://www.idef.com/default.html>) maintained by Knowledge Based Systems, Inc. in College Station, Texas, USA.
9. For further information on the IE concepts, see for instance The Information Engineering Services (IES) Web site (URL: <http://members.ozemail.com.au/~ieinfo/>), maintained by Information Engineering Services Pty Ltd (IES) in Hillarys, Western Australia, Australia.
10. The entire UML specification and UML usage guidelines are available for viewing and download from the Object Management Group (OMG) web site (URL: <http://www.omg.org/uml/>) in Needham, Massachusetts, USA.
11. ERIKSSON, H.-E. & PENKER, M. - Business Modeling with UML - Business Patterns at

Work.. ISBN 0-471-29551-5. United Kingdom:  
Wiley & Sons, 0.

12. WILSON, R.W. & HARSIN, P. - Process Mastering. ISBN 0-527-76344-6. USA: Quality Resources, 1998.
13. Model Requirements for the Management of Electronic Records (MoReq Specification). Belgium & Luxembourg: European Commission; CECA-CEE-CEEA, 2001.  
[URL:www.ISPO.cec.be/ida](http://www.ISPO.cec.be/ida) &  
[URL:www.dlmforum.eu.org](http://www.dlmforum.eu.org).
14. McKEMMISH S, ACLAND G., WARD N & REED B. - Describing Records in Context in the Continuum: The Australian Recordkeeping Metadata Schema. Archivaria. The Journal of the Association of Canadian Archivists. ISSN 0318-6954. 48 (1999).
15. Riksarkivets föreskrifter och allmänna råd (RA-FS 1994:2) om upptagningar för automatisk databehandling. Sweden: Riksarkivet, 1994.
16. Dokumentation av IT-system – en kartläggning. Rapport från SysDok-projektet. MEMO – Riksarkivets otryckta skrifter nr 9, Sweden: Riksarkivet, 2000. URL:  
<http://www.ra.se/RA/Sysdok.pdf>

