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Slobodan N. Babić, PhD¹

Head of Project Management Service, IT Function, Dunav Insurance Company a.d.o.

Zoran J. Kecman,²

Software Architect, „ETRACE“ d.o.o., Beograd

ARCHIVING SYSTEM BASED ON A MODEL FOR EXCHANGE OF ELECTRONIC FINANCIAL DOCUMENTS

Abstract

The paper presents a phenomenological analogy of disparate systems models: electronic operations of financial systems based on addressable business messages and systems for archiving records of an organisation. The paper shows known benefits from models of financial systems. Current systems for storing of archival materials are defined so that acquisition and distribution of records, their images and metadata on records are mostly different for various projects within an organisation. Therefore, a need arose to unify access to scanning of materials, microfilming and electronically signed materials and metadata. The paper contains a proposal for defining of a protocol for exchange of scanned and microfilmed materials and a corresponding schema for delivery of scanned materials with metadata, as well as a corresponding interface for integration with the existing and future application systems. Proposal refers to applications of standards in archival science that rely on the standard SRPS ISO15489, and creation of good conditions for further development of records systems. Thus, planned archival and other projects gain great flexibility and adjustability to a business system.

1 slobo@snb.in.rs

2 zoran@snb.in.rs

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Instead of Introduction: Meaning of Organisation

The term organisation is derived from the Greek word *organon*, when translated in Serbian means *tools, tool, device*. And the word *organ* when means a part of a body or an entirety, an organism, has the same root. Behaviour of organs is subject to achievement of an objective that is set for an organism and the word *organisation* is an indicator of arrangement of a set of organs. In this paper, organisation means a company or any business segment of the state. The group of companies cannot be deemed as an organisation because each company can behave in two manners: a) as a company dedicated to achievement of its own objective, b) as a company dedicated to achievement of an objective set by a group of companies that can be in conflict with achievement of objectives of each individual company.

Analysis of Archiving Systems

In the Serbian market archiving systems are closed and cannot exchange data. They cannot even use metadata on records and scanned materials of other systems. Therefore, organisations their business processes mostly a) do not base on any system, or base them b) on two systems or c) on more than two systems for archiving of records. What is surprising is the fact that in organisations, which seemed to use only one archiving system in various segments of a system, other systems were found that were either archiving or, in most cases, imitated functions of archiving systems. Pursuant to the needs of an organisation for establishment of electronic records and archive of records, which arise from business operations, organisational and technical preparations are performed for scanning with signatures or microfilming of archival materials in a manner prescribed by the corresponding legislation. Having in mind a long history, organisations that have a noticeable need for establishment of proper electronic archives by a rule have great number of records, so in order to perform such activities they engage renown companies (hereinafter referred to as suppliers). A supplier can be an organisation if independently performs microfilming or if delivers records to another organisation. Suppliers mostly scan the accepted materials and make microfilm out of them. Secondary product of microfilming is mostly a base of scanned materials. Microfilming of scanned records, instead of recording documents with a camera and making of microfilm and electronic copies of microfilmed materials, provides an opportunity for various forms of manipulation of scanned materials.

Material received by an organisation from suppliers is a microfilm (original and copy), scanned material and metadata repository, and delivery into an archiving system is performed from an external magnetic storage or an optical storage, while very often, one more copy of DVD is delivered that contains metadata and images in different, often obsolete formats from each supplier. Format of files received by a supplier of scanned materials is by a rule a JPEG or TIFF. The size of the file per category of records ranges from 2 kb to 300 kb, average is 64 kb with about 45% of blank pages because the law prescribes that each and every page of a document is scanned. Duplex scanning of records is the main reason for blank pages, and that is necessary due to court expertise. The size of blank pages is mostly less than 5 kb. Files are in most cases black and white, and certain categories are in colour. Order of magnitude of the total number of organisation's files in electronic archive is ten million documents. Each document is manually assigned with a corresponding, standard number of attributes where the main archival attributes are the following: number of a roll microfilm (if possible document's position on a roll), year and category of a document. A statistical sample of records is created and control of delivered materials is performed for each delivery. Only supplier's applications are used for pointing (searching per corresponding criteria) and distribution of a corresponding document from electronic archives. It is surprising that even today in some cases supervisory state institutions and bodies require from an organisation to provide original documents in paper during control, thus discouraging an organisation to use a legally recognised microfilming and electronic archives in its administrative procedures.

2. Rationalisation of Archival Activities of an Organisation

Based on analysis of given archival materials and delivered scanned, electronically signed materials and metadata, it can be easily concluded that rationalisation of scanning and microfilming activities should be done in every organisation. There are various formats of scanned documents and different sets of metadata on documents, there is no option for an arranged and standardised exchange of electronic documents from electronic archives between organisations. To that extent architecture of information resources should be considered, an adequate method for exchange of scanned documents should be found, elements of information security policy should be realised, and certain changes and supplements should be performed in required data on documents. Supplement of data can be done for business or technical purposes. For business purposes it can be done by manual upgrade of metadata repository based on corresponding privileges and ownership over a document. Automatic upgrade of metadata repository is done for technical purposes by supplementing contents of description

of documents with data recognised by using various information tools, for example, tools for optical recognition of characters in documents. Rationalisation is achieved by defining standards under which suppliers are obliged to deliver records and metadata with standard attributes, standard formats, standard obligatory data and the like. Proposal for rationalisation is to standardise, in the existing systems, contents of metadata and the method of delivery by suppliers. Along with extension of number of attributes, a more reliable search system and easy control of volume and quality of performed classification, scanning and microfilming of submitted archival materials would be enabled. Proposal can be specified as follows:

- A) to define within an organisation a protocol for exchange of archival, scanned and microfilmed materials that require changes in accordance with standardisation and rationalisation of information resources; this protocol should envisage statistical controls of acceptance of scanned and microfilmed materials, as well as contents of extended set of document metadata in order to achieve independence from a supplier of scanned materials;
- B) to perform in an organisation a centralisation of electronic archival materials; centralisation of scanned archival materials will enable greater availability of archival materials of an organisation to dislocated users and organisations that have the right to access segments of electronic archives and better control of access by a defined privileges system for access to metadata and scanned records;
- C) to provide in an organisation a single platform for search of metadata and archival materials of an organisation that will enable independence of use of scanning and microfilming of archival materials compared to the search and its use; application system for search, access and management of scanned records is unified for all scanned archived materials of an organisation;
- D) to organise, within an organisation, central storage of all electronic exchanges of electronically signed documents and confirmations of receipt by a specially formed registration authority in order to archive original exchanged records for any subsequent court expertise or obtain corresponding comparable reports on performed obligations;
- E) to define an electronic document, including the form of a record in the database, with all accompanying elements and defined method of use.

3. Defining of Financial Systems

Why even talk about defining of financial systems? Financial systems are strictly defined [8], payment operations are most precisely defined, and phenomenological approach enables us to get acquainted with almost unrecognisable systems and events and compare them with the known ones, and

in that manner discover their features, behaviour and learn to manage various types of systems [1]. Adequate combination of disparate systems is efficient regardless of the degree of complexity and diversification, i.e. disparateness they possess, by using a common core of analogy [2]. In the past in Serbia there were efforts made for finding analogies between diverse systems [9]. Kosta Stojanović was searching for analogies between economic and thermodynamic systems, which he described in detail in *Osnovi teorije ekonomske vrednosti* [10], Mihajlo Petrović described in his works elements of mathematical phenomenology [11] of diverse systems and their phenomenology [12]. This paper is only one of many that shows that determination of a common analogy core in a mechanism of diverse events is of essential importance, and especially in information systems that would solve problems concerning finding, defining, applying and using of such systems with common features due to which they function by using common principles. Researches conducted so far and systems based on them [3] show positive results and effects of application in systems which contain common analogy elements. Development of modern standards in archival science, insurance industry, information technologies and progress of communication technologies, caused automatisisation in the area of stated business systems to become more up-to-date. Tendency for automatisisation of development of business systems' segments is more prominent, as well as standardisation of business processes and corresponding datasets as basis of standardisation of development of informatization in all, and even in the stated areas. In the special chapter, in continuation of this paper, there is a description of a bureau for placing in the process of business systems as basis for integration through exchange of standardised messages between participants and for processing of main data on participants and products of a business system; a method for managing development of IT system was proposed by defining, analysing and applying of business systems supported by information technologies [19].

3.1. Managing Development of IT System for Support to Business Processes

Many papers written by this author present a standard for analysis, definition and application of business systems supported by information technologies [13]. The standard supports industrialisation in software production [14]. The standard clearly separates roles and tasks of all technologists in the business during analysis, definition and implementation that should be supported by information technologies by technologists with IT knowledge [15]. Required documents for definition and implementation of such systems are responsibility of IT technologists and technologists in charge of the concerned business for which a system is defined. Technologist of a business defines operational rules, format

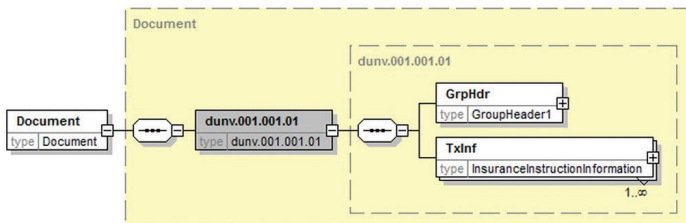
and purpose of messages and the schedule [5]. IT technologist defines technical instructions, business rules, schemas and instances. The stated documents are necessary but also a sufficient condition for commencement and realisation of a functional specification as the first step for a functional system [6]. They arise from industrial standards, legislation, normative acts and other various standards that need to be taken into account during analysis required for their creation [7]. Behaviour of systems is defined by operational rules and all standard elements required for a system are taken into account. Technical instructions define the system structure. The schedule defines frequency of events as well as time when it is possible for an event to happen in the system. Structure and behaviour in the system is connected to the format and purpose of messages [4], i.e. operational rules are connected to technical instructions. Schemas and instances of messages defined according to XML standards are practical artefacts that can serve for realisation of specific categories in the system (forms, interfaces, structures for acceptance of specific system instances).

3.2. Exchange of Data in Insurance Industry

Exchange of data in modern business systems is performed by standardised messages defined by adequate open standards for exchange of business records (addressable messages with a business logic). Standard ACORD (Association for Cooperative Operations Research and Development) is one such example in insurance industry. ACORD organisation consists of numerous insurance and reinsurance companies, agents and brokers, software manufacturers and related industries in the world. ACORD should provide easy exchange of data between participants. That organisation's standard is described in detail in the paper "Upravljanje razvojem IT sistema za podršku poslovnim procesima" written by the first author of this paper.

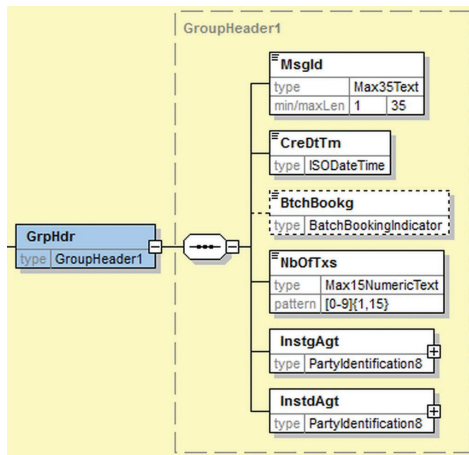
4. New Generation of Standards

The biggest information project RTGS system was commissioned in Serbia in 2003, within the Directorate for payment operations of the National Bank of Serbia, which was supported by a modern standard for financial messages ISO 15022. Based on that standard's platform, other payment systems were developed in banks and in the Association of Serbian Banks. In the Association of Serbian Banks another payment system was developed, a Direct Debit system, intended for direct debit. It was developed based on successor of the standard ISO 15022 in financial industry – standard ISO 20022. The logic premise in development of standards in Serbia would be that other systems using exchange of business messages should be based on similar standards.



Picture 1: Own schema of a business system message

Direct Debit system has a set of own messages created over system ISO 2022 messages, such as messages that support work with mandates. Logic assumption is that experience acquired in defining those segments can be used for definition of new systems' messages in financial industry and other business systems.

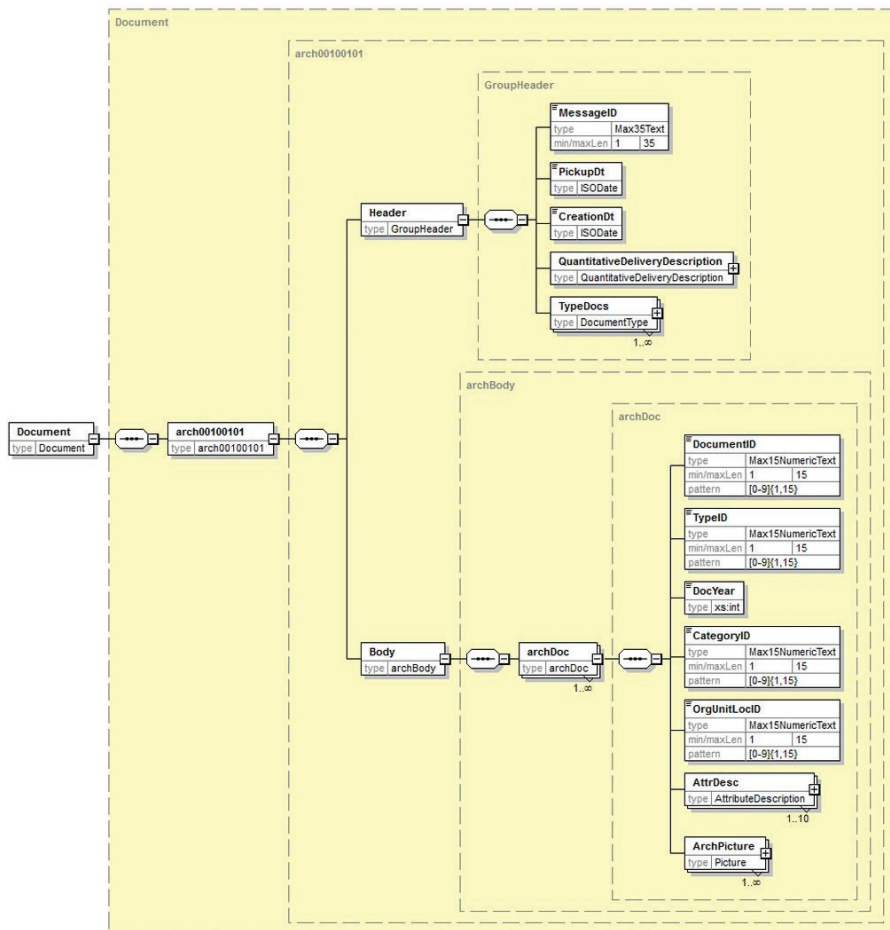


Picture 2: Schema of the header of a modified business system message

For example, modification of the message's header pain.001.001.02 of the standard ISO 2022 can propose a standard for headers of messages in one business system. Picture 1 shows a schema of a document made by a modification of a message ISO 2022, an electronic document which consists of a header and a body with data on transactions (e.g. policies). Picture 2 shows proposed look of the header that contains a single identification of the message, creation date, number of transactions, identification of the message's sender and recipient. Further elaboration and description of documents lead to the final set of required schemas for a certain business area.

5. Proposal for the Standard Message for Delivery of Archival Materials

Schema of a standard message for exchange that is proposed in this paper and that is analogue to the system of addressable messages with business logic in financial industry is shown in Picture 3.



Picture 3. Schema of a standard message for exchange of electronic archival materials

Corresponding description of standards based on rules and instructions for delivery of scanned records for the stated schema are shown in Table 1.

Table 1. Description of a format XML schema from technical instructions

Cardinality	Message element				Type	Description and business rules	
M1	+	Header			GroupHeader	Message header	
M1	+	+	MessageId		Max35Text	Single identifier of a shipment created by a message sender	
M1	+	+	PickupDt		ISODate	Date when a supplier takes over records	
M1	+	+	CreationDt		ISODate	Date of delivery	
M1	+	+	Quantitative Delivery Description		Quantitative Delivery Description	Quantitative delivery description	
M1	+	+	+	NbOfDocs	Max15NumericText	Total number of documents to be delivered	
M1	+	+	+	NbOfPages	Max15NumericText	Total number of pages to be delivered	
O1	+	+	+	NbOfBlankPages	Max15NumericText	Total number of blank pages	
O1	+	+	+	NbOfDefectPages	Max15NumericText	Total number of damaged pages	
O1	+	+	+	NbOfUnreadableDocs	Max15NumericText	Number of documents for which it is not possible to detect mandatory attributes	
M1-n	+	+	Type Docs		TypeFileNumber	Document type	
M1	+	+	+	TipID	Max15NumericText	Document type ID	
M1-n	+	+	+	DocCategory	DocumentCategory	Document category	
M1	+	+	+	CategoryID	Max15NumericText	Document category ID	
M1	+	+	+	CategoryNbOfDocs	Max15NumericText	Number of documents in category	
M1	+	+	+	+	ImportID	Max15Text	Number of the organisation's record during delivery of archival materials in paper to a supplier
M1	+	+	+	+	ExportID	Max15Text	Number of the supplier's record when returning scanned archival materials in paper
M1	+	Body			archBody	Message body	
M1-n	+	+	+	archDoc	archDoc	Document	
M1	+	+	+	DocumentID	Max15NumericText	Document ID	
M1	+	+	+	TipID	Max15NumericText	Document type ID (from codebook of document types)	
M1	+	+	+	DocYear	Max15NumericText	Document year	
M1	+	+	+	CategoryID	Max15NumericText	Document category ID (from codebook of document category)	
M1	+	+	+	OrgUnitLoc	Max15Text	Document locations (from codebook of organisation's units)	
M1-n	+	+	+	AttrDesc	AttributeDescription	Values of attributes assigned to a document	
M1	+	+	+	AttributName	Max35Text	Attribute ID (from codebook of attributes for ID category)	
M1	+	+	+	AttributValue	Max140Text	Value of attributes	
M1-n	+	+	+	ArchPicture	Picture	Picture of one page of a document	
M1	+	+	+	PicID	Max15NumericText	Picture ID	
M1	+	+	+	PicPath	Max500Text	Path on a medium being delivered	
M1	+	+	+	PicName	Max50Text	Picture name	
M1	+	+	+	PicExt	Max10Text	Picture extension (tiff or jpeg)	
M1	+	+	+	ScanTime	ISODateTime	Date and time of scanning	

6. Bureau for Processing

Adequate systems for a reliable and undeniable exchange of messages must exist so that business partners could exchange messages. Within that system there can be corresponding systems for processing of messages, depending on activities that a system receives to perform from competent organisational entities belonging to owners and state institutions [16]. Bureau for processing is segmented into three main parts according to complexity of exchange and processing of electronic documents: a.) simple exchange of messages; b.) processing of data of the main system's documents; c.) processing of additional services. Such a bureau for processing can perform exchange and processing of electronic documents for several disparate systems [17], for example, system for insurance, banks, reinsurance, supply chains [30] and other [18], both in national and international business systems. Bureau for processing can accept, in a natural manner, activities regarding connection to other message exchange systems, such as SWIFT organisation, payment system of the European Banking Authority (EBA) or any similar system, in order to realise specific services required for business environments. Example of such system could be: a message exchange system of supply chains that could solve problems regarding purchase, sale and distribution, then business processes regarding payment of insurance of goods in warehouse and during transport. Business partners would in every segment be specialised for a corresponding business segment. Bureau for processing would be specialised for taking care of resources required for transport and processing of standardised messages, and would take care of all system's aspects: records, standards, methodology, technology, organisation, staff, system software and hardware.

Bureau for processing has an equivalent name – the clearing house, because that is where clearing or reconciliation of information on transactions, and not only financial transactions, is done. Bureau can be a non-profit organisation such as SWIFT or a profit organisation such as the Association of Serbian Banks [24]. In both cases, the processing company organises its activities in accordance with documents described in previous chapters. Based on the stated documents, software modules for sending and receiving of messages, clearing houses should determine other system elements: certificates required for signing and encryption of contents, corresponding XML sub-schemas and their models. In order to establish a consistent exchange, bureau for processing provides required resources, including required network resources, software modules for sending and receiving of standard messages, corresponding message routing, processing and storage of data on entities and processes, an option to search through permitted sets online, on the bureau's site.

6.1. Addressing of Participants

The first communication method is that the client sends a message only to the bureau for processing. Bureau for processing, depending on the message contents and authorisations, can perform corresponding processing that includes sending a message to its other participant – a client. The second communication method can be defined as a communication between bureaus, where one clearing house can send a message to the other clearing house. During this procedure, it cannot directly send a message to its clients, but only the clearing house receiving the message can perform a corresponding processing that includes sending a message to its participant. The third communication method includes the first and the second communication method. Thus, a client of one clearing house has an option to send a message to a client belonging to the other clearing house. And the clearing house gets an option to send messages to clients of the other clearing house. This leads to a consistent address space for participants in exchange of messages.

6.2. Processing of Documents

Processing of messages consists of the following activities: acquisition and control of administrative privileges for access to input data, storage of input information, application of technological processing, corresponding number of operations, storage of output information and granting of administrative privileges for access to output data. The stated process is treated as any technological process, e.g. from mechanical industry. Existence of XSD schemas (XML Schema Definition (XSD) is an XML structure used to describe and control contents of XML documents) determines storage of input data and thus determines system elements (classes and their relations), which can be used for writing of operation sequences for technologies required for creation of the processing module.

6.3. Realisation of System Elements

Realisation of system is performed in the same manner as realisation of a financial system for Credit Transfers – based on XSD schema and related documents [20]. It is possible, by using a XML schema, to create a database with XSD2DB tool [34]. Created database can be mapped with the schema out of which it was generated. It can be concluded, from the above stated, that any standardised message of a business system can be mapped with a corresponding generated database schema. The existing tool Altova Map Force enables generation of a corresponding dynamic library for entry of messages into database and extraction of messages from the database. All standardised messages that were received and sent can be stored

in database and certain operations, according to business requirements, can be performed on them. The stated elements can be generated for the purpose of the bureau for processing (processing company) or a partner. Nowadays, in practice there is a big, almost insurmountable problem – mapping from mostly own format into a standard format, or, which is worse, into another own format. It seems that such, almost trivial problem grew into a big and insurmountable problem of multiplication of mapping quantity. Without any tools that frequently presents a big operation, from analysis of a problem to implementation. In practice today one quits implementation of such systems during analysis of presented steps.

6.4. Services of the Bureau for Processing

In order for the bureau for processing to correctly perform its services, it has to take care of the site on a backup location, backup communication resources and similar aspects of a system. Services of a processing company are connected to exchange of messages and (or) processing services. Only some of possibly the most important services a processing company can offer will be listed in continuation: message routing, notification of receipt of processor (ACK/NAK), identification of a participant and his logging to a system, authentication of a participant by a qualified electronic signature, transfer of encrypted data, addressing with limited receipt, validation of the syntax, semantics and business rules, notification that a message is delivered to the recipient (ACK2/NAK2), storage of identification and address data, functional and commercial data on products, web-services on interface [29], support services and permanent archiving of messages. Functionality of encrypting of messages or its part on the exchange level is a significant process when a participant does not want that anyone, regardless of contracted confidentiality obligations, has an option to systematically and without the authorisation collect data. Restriction of receipt can also be presented as a service. It means creation of a database of participants and tables with communication authorisations. System for exchange of components and administrative console of a processor should have an access to that database through a corresponding interface. Notification of ACK2 and NAK2 as a service notifies the sender of a message that its recipient actually received the message. Creation of database on products and access through web-interface can also be offered as a service. Apart from search of information on products, one of services can be provision of creating and keeping of data, review of related contents, any conversion of documents, sending of documents, and other.

6.5. Registration Authority

When sending a message and replying to a message from all participants in the system, the Registration Authority receives the same message and stores it

[21]. Task of the Registration Authority is to archive messages and confirmations on receipt and thus, for third parties, upon a special request, e.g. for the purpose of court expertise, make processes of electronic commerce traceable and undeniable [23]. All documents are signed and have signed confirmations that the participant received the message. Archival categories such as method of handling and issuing of documents, document type, document category and category of time keeping are stipulated by the legislation and internal documents of a system. One type of an incomplete Registration Authority, according to contents of exchange documents, exists in the Association of Serbian Insurers in Belgrade, which is specialised for issuance of registration numbers of policies and keeping of documents of insurance companies regarding MTPL insurance policies, i.e. mandatory insurance of motor vehicles. System in the Association of Serbian Insurers, upon request of insurance companies, issues documents that are stored in the system and based on which the insurer realises a discount when contracting mandatory insurance of motor vehicles.

Services of the Registration Authority must comply with the legislation, observe aspects of economic efficiency, environmental protection and, above all, safety aspect. All processes within the Registration Authority should be continuously supervised and recorded by skilled staff. In that manner a closed safety system is established where all processes are continuously monitored. The Registration Authority should, in order to guarantee absolute safety of the operations flow, perform internal supervision, with periodical external expert supervision. Safety standards, regular training of employees, continuous monitoring of processes in accordance with international standards, classified destruction of data pursuant to DIN 32757, anti-burglary system, access control, video surveillance with digital recording of events, protected database with backup, with disaster site, easy search of records, advance indexing, monitoring of all operations, issuance of confirmations on destruction, continuous supervision and renewal of resources – present some of aspects that must be provided properly. It is necessary to provide monitoring of all operations, especially to leave a trace of access and review of documents that should be kept under special conditions.

Some secondary advantages of such treatment of records are optimal exploitation of space, reduction of protection costs, avoidance of costs for archive and its maintenance, stability of archiving costs, predictable archiving costs, easy monitoring of deadlines of records.

6.5.1. System for Control of Data

Processes that are permitted within the Registration Authority are insert, view, move. Process update does not exist, so if status of a record is corrected in the

Registration Authority then new records are made that are equal to the existing ones, and during court expertise all records are taken into account, as well as the reason for the process update [22]. Process delete is prohibited and if one wants to correct status of a file in the Registration Authority, then new files are made that are equal to the existing ones, and during court expertise all records are taken into account, as well as the reason for the process delete.

Process view is possible with special administrative permits and if one knows elements required for finding a document, i.e. if one knows number of confirmation of the receipt. Techniques of search and search of secondary databases with derived datasets provide greater flexibility during search and a possibility to semantically connect files with available technologies. Binary files are, before signing, converted into base64 format, which cannot be searched in a standard manner, but secondary databases generated from binary forms can be searched in a standard manner and connection to primary bases can be done. When creating secondary databases, techniques of optical recognition, recognition of speech, forms and other techniques can be used. In that manner multimedia information can be available and connection of multimedia artefacts with databases of primary records can be performed, which would enrich the existing connections between records, but also would create new ones that can provide new perspective of records stored in the Registration Authority. In the healthcare system, data necessary for business processes are multimedia, let's say, a modern healthcare file, so it is clear that it is of special importance for such a system to have a system administration that must satisfy all aspects of safety and protection of the system of the Registration Authority.

6.5.2. System for Control of Business Processes' Steps

Process view in the Registration Authority enables search of records, with special administrative permits and if one knows required elements, i.e. the reference number of a transaction. Reference number of a transaction enables search of all instructions and messages in which the stated transaction was located during execution, i.e. a complete reconstruction of process through which a transaction with requested reference number passed.

7. Archival Science Systems as a Basis for Implementation of the Records Management System

Usability of the proposed methodology for realisation of support to business systems can be reviewed on the basis of the stated results. One such system is the one intended for records management – document management system. It can be

concluded from its importance and the stated that planning, creation, implementation and monitoring during production of such a system are of essential significance. When we talk about the records management system, a definition must contain the following necessary elements: registry office, electronic registry office, system and written standards for creation of electronic documents with all required elements a document must contain, defined case, scope of case – what is included in frameworks, defined movement of cases, archiving of closed cases, selection and other administrative activities in accordance with electronic commerce, laws on electronic document, electronic signature, time stamp. Essentially, it is not possible to consistently introduce any application system to support main business processes until records management system is not implemented, first of all in manual variant. What is evident is the fact that every administrative officer does not know the process of movement of cases, elements of office management and archival activities, which any officer should know. Therefore, during introduction, after initial arrangement of standards, a training of staff must be conducted and a detailed description of a system must be made. One must know that the records management system is not arrangement of physical and electronic archive. All these activities must be carefully planned and out of proposed solutions, the proper one must be carefully selected [28]. Due to possible big expenses, desirable control of solution segment is a pilot project, let's say, as a support to indemnity processes. After that it is possible to plan implementation of the controlled solution in the next segments that are selected in a manner that they have the biggest financial impact on the organisation. Implementation should be performed so that records in the database have all attributes satisfying one electronic document, e.g. according to ACORD standard. Documentation is of essential interest for every insurance company. Entrusting these activities to structures that do not have adequate knowledge in the area of archival science endangers business processes. It can be compared to selection of a dentist, where it can be concluded that we take care of contractors, qualifications and references even regarding less significant activities.

7.1. Preliminary Plan of Activities

When making a preliminary plan of activities it is necessary to perform a recapitulation of the list of categories of registry materials with deadlines for keeping, and the actual processes and actual records used in the organisation with a detailed overview of status and a specific proposal for further activities. Participants in that process are qualified representatives of all organisational segments, general affairs, archivists, an advisor for DMS, an expert, i.e. a technologist for archival science. After obtaining of approval by the regional archive it is necessary to supplement the list of categories of registry materials with deadlines for keeping and the decision on disposition of documents, rulebook on archiving, action

plan for arrangement of archiving of records and instructions for activities in that area. Then, to physically arrange, i.e. supplement archival storage and provide IT support. Result of such activities – sub-projects are, apart from arranged archival storages that after improvement contain only actual records (records with expired deadline is selected and destroyed), primarily information on the existing types and quantities of records in the company. Such information provide the basis for decisions on methods for archiving of different types of documents in the future. Such decisions determine the missing segments that present a hidden danger for the entire system, which must exist pursuant to the legislation and normatives and which had to exist under the legislation and professional rules. It is necessary that system quality documents define archival activities. For example, description of a creator of archival materials is the main job of an archivist, whether descriptions are kept in manual or automated systems. That requires a complete documentation and continuous maintenance of the context in which the records originated or were used, first of all regarding archival materials and records. The existing legislation in that area is insufficient.

The Decree on Office Management of the State Administration Authorities is effective in the Republic of Serbia (the Official Gazette of the Republic of Serbia no. 80/92) and within its 22 articles regulates issue of records management. The decree is accompanied by the Instructions on Office Management of the State Administration Authorities (the Official Gazette of the Republic of Serbia no. 10 from 5th March 1993 and no. 14 from 21st March 1993). Instructions are extensive. Instructions have 140 articles and 958 types of documents categorised within a single classification of cases according to the subject matter where the Universal Decimal Classification (UDC) system is applied. The Law on Electronic Signature is enacted (the Official Gazette of the Republic of Serbia no. 135/2004). Starting with an obvious need for records management standards, as well as insufficient legislation in that area, the Commission for Information and Documentation – archival science of the Institute for Standardization of Serbia concluded that it is necessary to enact standards in the area of archival science and that series of standards ISO 15489 should be first adopted. Thus, in 2007 the SRPS ISO 15489 was enacted, which consists of two parts: SRPS ISO 15489-1 Information and Documentation – Records Management – Part 1 (General) and SRPS ISO 15489-2 Information and Documentation – Records Management – Part 2 (Guidelines).

7.2. General Aspects of Information and Records Management

SRPS ISO 15489-1 Information and Documentation – Records Management – Part 1: General. It is a general standard on records management. It provides standardisation of policies and procedures within records management for their

protection, so that evidence and information they contain could be found more efficiently and effectively by using standard processes and procedures. That part of ISO 15489 contains instructions for records management in public or private organisations that create them for the purpose of internal and external users. It is applied to management of records of all formats and on all media, created or received during business operations of a public or a private organisation or any individual who has the obligation to create and keep records. It provides instructions for determination of liability of organisation regarding records and policy, procedures, systems and processes relating to records. It provides instructions for records management as a support to the framework for process quality in order to comply with ISO 9001 and ISO 14001. It also provides guidelines for design and implementation of the records management system, but it does not include management of archival materials by archival institutions.

7.3. Guidelines for Information and Records Management

Standard SRPS ISO 15489-2 Information and Documentation – Records Management – Part 2: Guidelines define elements of records management and define results and outcomes set to be achieved, and provide methodology for implementation. They are intended for records' administrators and those who are responsible in their organisations for records management. That standard is just the first in series of professional standards that should comprehensively regulate records management, as well as enable new legislation in this area in Serbia based on new values of keeping and using of records. Electronic environment where most business activities and transactions are performed today made experts from the archival science and records management to reassess and change their traditional strongholds in theory and practice based only on paper as a traditional carrier of information. It is hard to provide usage of electronic records in future if efficient and effective conditions for that are not provided now. In that context, in a modern institution the result can be positive only if cooperation between several professions is realised: business managers, an archivist, an information specialist, a programmer, a representative of IT industry, attorneys and other. Cooperation must be complementary and not a rival one, and the archivist's role must be mandatory and not optional.

Standard ISO 15489 is not the archival standard, but is of essential significance for archives. Its great value lies in the fact that it treats all records equally, independently of media, and it is useful in situations where paper and electronic records are used simultaneously. Standard is intended for all legal entities, creators of records.³ Long ago a new profession was established in the world, a record manager, a professional who deals with records management. Analogous to database

³ Source: The Historical Archives of Belgrade

administrator or IT system administrator a new term was introduced – a records administrator in order to emphasize significance of the new profile of an employee working on administration activities, i.e. records management in an organisation. All the above stated is controlled in practice and it is what the co-author of this paper, in cooperation with the authorised archive, is working on and implementing.

8. Design and Implementation of the Records Management System

General guidelines for design and implementation of the records management system are divided into the next eight steps that should be carried out in order to ensure that the designed and implemented records management system would meet requirements of standard ISO 15489:

8.1. Previous Research

The first step of implementation of the records management system according to ISO 15489 standard is to enable a company to understand administrative, legal, business and social context in which it operates, with the aim to recognize the main factors that affect its need to create, keep and maintain records.

8.2. Analysis of Business Activities

This step includes a detailed analysis of the organisational structure, functions, processes and activities of a company. That would contribute to a better understanding of records and methods of their creation and their use by employees.

8.3. Identifying Needs for Records

Purpose of this step is to identify needs of a company to create, receive and keep records of its business activities, as well as to document needs in a structured and easily maintainable form. Needs for records are identified by a systematic analysis of business activities, legislation and normative regulations and all other liabilities in the community.

8.4. Assessment of the Existing Systems

Assessment of the existing records management systems and other information systems in a company is performed in order to determine their capacity

to receive, keep and maintain records on business activities. If any differences between the defined needs of a company for records and performances of the existing systems are discovered, then it would be the basis for development of new or restructuring of the existing systems in order to meet the needs identified in previous steps.

8.5. Identification of Strategies for Fulfilling Needs for Records

Purpose of this step is to define the most appropriate policies, procedures, standards, types of tools and other tactics that an organisation should adopt in order to provide creation and keeping of necessary records on its business activities.

8.6. Design of the Records Management System

This step translates strategies and tactics, selected in step 5, into the plan for records management system that meets all needs identified and documented in step 3, and corrects all deficiencies of an organisation regarding records management system identified in step 4.

8.7. Implementation of Records Management System

Implementation of records management system should be done gradually, in phases, with an adequate adjustment period in order to ensure that the system satisfies needs of its users and requirements of standards. Since the records system will have a direct impact on almost all employees in a company, it is necessary to conduct a corresponding and comprehensive training programme.

8.8. Assessment of the System after Implementation

Purpose of this step is to assess efficiency of the records management system, to assess system development so that detected deficiencies could be corrected, and to establish a supervision over the system during its duration.

9. Conclusion

This paper shows that business systems are defined by XML standards. Addressing, receipt, storing in database, processing, creation and sending of standard messages are activities performed within business processes and elements for their implementation can be created in a unique method for all systems based on standard addressable messages, and even on standardised messages of business systems. Presented phenomenologically identical systems

that are realised and in production in other segments of financial industry show possibilities and present an evidence of a proper modelling of a system, business processes and services.

The paper shows the phenomenological analogy of disparate financial systems by an example of systems in insurance companies as templates of systems in financial industry and systems for electronic archiving of archival materials of an organisation. The paper shows the main principles and elements upon which records system is based as well as a proposal for a method of implementation of the said system in an organisation.

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Translated by: **Jelena Rajković**