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Lanskoy Grigory N.[1]
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The paper is devoted to analysis of processes of professional activities of archivists in sphere of work with documents on button and electronic material supports. This theoretical and practical problem is studied in spheres of development of material features of these documents, of necessary skills in work with them and in conditions of changes in normative and in technological sphere objectively oriented to new types of archival systems and documents included in them. In theoretical part of the paper, the main attention is on the analysis of understanding of many objects in archival sphere after appearance of digital technologies in production of visual and audiovisual documents and the beginning of development of technologies in forming and presentation of documentary information with the use of computer technologies and program equipment. Also, there are presented specific features of open archival informational systems which become spheres of professional activity of specialists without necessary existence in terms of institutionally organized archival services. Practical part of the paper will be devoted to presentation of new skills necessary for archivists working with documents on new types of material that supports particularly the basis of the programs realized in actual professional training in higher education institutions in Russia, for example, the Russian State University for the Humanities, and in France, the National School of Chartes. In the context of the analysis of educational programs, we will analyze compositions of courses devoted to diplomatic analysis of documentary texts on new supports, organization of their preservation and description according to new generation of international and national standards and to the use of digital and other computer technologies in practice of their creation and organization of public access to them in archival informational systems.

Key words: *archival documents, informational systems, digital technologies, professional skills, new technical supports, computer programs, professional training.*

LA PROFESSIONE DI ARCHIVISTA NEL LAVORO CON DOCUMENTI ARCHIVISTICI SUI NUOVI SUPPORTI TECNICOLOGICI: NORME E PRACTICHE

SINTESI

Il documento è dedicato all'analisi dei processi di attività professionali degli archivisti nell'ambito del lavoro con documenti su supporti di materiale elettronico. Questo problema teorico e pratico è studiato nell'ambito dello sviluppo delle caratteristiche materiali di questi documenti, delle competenze necessarie nel lavorare con essi e nelle condizioni dei

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cambiamenti nella sfera normativa e tecnologica oggettivamente orientati a nuovi tipi di sistemi di archiviazione e documenti ad essi inclusi. Nella parte teorica dell'articolo l'attenzione principale è rivolta all'analisi della nuova comprensione di molti oggetti in ambito archivistico dopo la comparsa delle tecnologie digitali nella produzione di documenti visivi e audiovisivi e dell'inizio dello sviluppo di tecnologie nella formazione e presentazione di informazioni documentarie con l'uso di tecnologie informatiche e apparecchiature di programma. Sono inoltre presentate caratteristiche specifiche di sistemi informativi d'archivio aperti che diventano sfere di attività professionale di specialisti senza l'esistenza necessaria in termini di servizi di archiviazione organizzati istituzionalmente. La parte pratica dell'articolo sarà dedicata alla presentazione delle nuove competenze che sono necessarie agli archivisti nel lavoro con documenti su nuovi tipi di supporti materiali, in particolare sulla base dei programmi realizzati nella formazione professionale effettiva in istituti di alta formazione in Russia sull'esempio dell'Università statale russa per le materie umanistiche, ed in Francia sull'esempio della Scuola Nazionale di Chartes. Nell'ambito dell'analisi dei programmi educativi saranno analizzate le composizioni dei corsi dedicati all'analisi diplomatica dei testi documentali sui nuovi supporti, all'organizzazione della loro conservazione e descrizione secondo la nuova generazione di standard internazionali e nazionali e all'utilizzo delle tecnologie digitali ed informatiche nella pratica della loro creazione ed organizzazione dell'accesso pubblico nei sistemi informatici d'archivio.

Parole chiave: *documenti d'archivio, sistemi informativi, tecnologie digitali, competenze professionali, nuovi supporti tecnici, programmi per computer, formazione professionale*

POKLIC ARHIVISTA V DELU Z ARHIVSKIM GRADIVOM NA NOVIH TEHNIČNIH NOSILCIH: NORME IN PRAKSE

ABSTRAKT

Prispevek je namenjen analizi procesov poklicne dejavnosti arhivistov na področju dela z gradivom na elektronskih nosilcih. Ta teoretični in praktični problem se preučuje na področjih razvoja materialnih značilnosti tega gradiva, potrebnih veščin pri delu z njimi ter v pogojih sprememb na normativnem in tehnološkem področju, ki je objektivno usmerjen v nove vrste arhivskih sistemov in v njih zapisov. V teoretičnem delu prispevka je glavna pozornost namenjena analizi razumevanja številnih objektov na arhivskem področju po pojavu digitalnih tehnologij pri izdelavi vizualnih in avdiovizualnih zapisov ter začetku razvoja tehnologij pri oblikovanju in predstavitvi dokumentarnih informacij z uporabo računalniških tehnologij in programske opreme. V prispevku so tudi predstavljene posebnosti odprtih arhivskih informacijskih sistemov, ki postajajo področja poklicne dejavnosti strokovnjakov, čeprav slednji morda v okviru institucionalno organizirane arhivske službe ne obstajajo. Praktični del prispevka je namenjen predstavitvi novih veščin, ki jih tisti arhivistom, ki delajo z novimi vrstami gradiva, potrebujejo, kar je zajeto programe usposabljanja, ki se izvajajo na visokošolskih zavodih v Rusiji, na primer na Ruski državni univerzi za humanistiko ter v Franciji na The École Nationale des Chartes. V okviru analize izobraževalnih programov, je v prispevku podana analiza sestave tečajev, namenjenih diplomatski analizi zapisov na novih nosilcih, organizaciji njihovega ohranjanja in opisovanja v skladu z novo generacijo mednarodnih in nacionalnih standardov ter uporabi digitalne in druge računalniške tehnologije v praksi njihovega ustvarjanja in organizacije javnega dostopa do njih v arhivskih informacijskih sistemih.

Ključne besede: *arhivsko gradivo, informacijski sistemi, digitalne technologije, strokovne veščine, novi tehnični nosilci, računalnipki programi, strokovno usposabljanje*

1 INTRODUCTION:

Archival science with its orientation from one part to the sphere of forming informational base for objective historical studies and from another angle to the forming of methods and skills of work with archives (as informational systems) and archival documents exits in conditions of permanent development in each of these two directions. In real terms of industrial and of post-industrial society it is possible to indicate appearance of new technologies in creation of documentary information and the types of sources of this information as one of basic factors of development of archival practice and that of archival science. Firstly, in the period at the end of the 19th century, following the creation of cinema, documents were indicated by specialists in the sphere of production of visual documents as a «new source of history» which gives moving image real and sometimes of artistically prepared events. In this context, a well-known Polish photographer B.A. Matoushevsky proposed in his text (1, Matoushevsky, 1898) to organize a special committee of creators and other experts in the sphere of cinematic art for creation and then for realization of the project of archival depository for objects of cinema chronicle production. In result of this process all mostly important enterprises of cinema industry (for example, French enterprise of Pathe brothers, Russian enterprise of A.A. Hanjonkov) formed conditions for permanent conservation of objects of their production. New interest for cinema, photo and then for sound documents appeared in 1920 and in the beginning of the 1930s, when not only scientists but also political leaders wrote about large communicative possibilities of visual and audiovisual information presented in chronicle and deeply in documentary form. On this occasion in Great Britain and than in some other countries (for example in the Soviet Union) tradition of creation films and of radio programs composed according to scenario text from selected fragments of archival records of different events was introduced and adopted, along with artistic representations, interviews. Successful experiments in this sphere (connected, for example, with the creation of splicing films «Fall of Romanov dynasty» and «Russia of Nicholas II and Lev Tolstoy») became supplementary arguments for creation of specialized archival services for the needs of collecting, preserving, organizing and using the practical aims of cinema, photo and of sound documents. Existence of these services on the level of archival services on state level in quality of state archives and on level of such services in structure of enterprises in sphere of production of these groups of documents formed necessity in organization of professional training of specialists in sphere of work with them for assurance of their preservation and organization of their effective using. From the end of 1950, and especially actively from the 1960s, study of audiovisual and technical documents of graphical form became important part of professional training programs for future archivists. For example, in URSS of this period, first study books were published devoted to organization and methods of work with cinema, photo and sound documents (2, Kouzin, 1960) and with technical archives (3, Kouzin, 1956) created in the Moscow State Institute of History and Archives. The development of professional activity of representatives of different generations of specialists were connected with the development of two tendencies which take influence on the content and on practice of professional training. First of them was conditioned by organization and development of archival services specially adopted for work with audiovisual and technical documents on different new supports. For example, in the period from the end of 1960 up until today system of archives created by media services was actively developed. Second tendency was connected with the appearance of computer equipment and prepared for its using system of programs and data resources. Results of the experience of working with them in URSS were presented in the middle of 1980 years (4, Gelman-Vinogradov, Danilenko, Tanonin, 1986). These two tendencies were based on results of scientific and technical progress and particularly of development of informational technologies can

be seen in contemporary conditions. On one hand, in world practice of archival work and of professional training in last years appeared and were published scientific works devoted to the use of new technologies in work with photographic documents belonged to previous generation of documentary resources created on new technical supports (5, Lavedrine, 2013). On the other hand, main attention is paid to the study of electronic and digital documents that make possible the development of contemporary archival services in many countries of the world (6, Hajtnik, 2019).

2 METHODS:

The study is based on using of system and complex approaches. Use of system approach is firstly oriented to find and to indicate community of skills and knowledge that are necessary for organization of work with different documents on new technical supports in archival services. According to actual conditions of development of archival work it is possible to see practically in all industrially developed countries in the world composition of traditional and computer (for example) digital technologies in the work spheres of conservation, preservation of audiovisual and technical documents and of communication with them in traditional halls for lecturers and also certainly on distance by using Internet system. Transition to large diffusion of new informational technologies with using at the same time useful historically formed technologies oriented especially to forming system of archival description of documents was very active in the countries of Western Europe and Northern America in the period following the middle of the 1980s. Professional experience in this sphere was presented in special studies devoted to organization and practice of work with different types of audiovisual documents in France (7, Lanskoy, 2004) and other countries (8, XI International congress of archives, 1988). The use of system approach is oriented not only to the study of composition of computer technologies and traditional forms of work with documents on new supports but also to analysis of systematically connected processes in using these technologies and forms. It is not necessary to prove that in conditions of contemporary society archives not only in informational but also in institutional form must be presented as informational systems with permanent communication of computer, and, particularly, of digital technologies in the spheres of preservation, use and presentation of images of audiovisual, technical, and, finally, of electronic documents in open archival informational systems. The same connection exists between stages of traditionally organized work with documents on new, non-paper supports from the moment of their archiving and until the time of communication of different categories of users with them. Complex approach is used in paper for presentation of factors which have and take influence on work of archivists in institutions and services oriented to work with documents created and preserved on new technical supports. The role of them is deeply analyzed in contemporary studies of European scientists (9, Klasinc, 2019). Realization of complex approach gives possibility to find how different groups of archival services and archivists pass process of adaptation to new technologies in work with documents created on traditional supports for audiovisual and technical documentary sources. Experience in the study of this process shows that archival services created and developed in the system of the state are developed in this sphere on a lower level by comparison with the same services organized in the sector of private enterprises. On the other hand it is possible to see that in the countries with direct development of system or electronic records management between creators of documents and archivists, technological level of work with documents on new technical supports in state archival services is high or on the same level as private services. Complex approach is also important for an analysis of the system of profes-

sional training for archivists in different educational organizations. In many of them it is possible to see composition and connection of traditional education resources and new, especially computer and program equipment in the study of norms and practices of work with audiovisual, technical and in a smaller part with electronic documents. Presentation of the study of system and complex approaches gives basis for realization of basic methods of scientific study. Historical (retrospective) method is used for indication of influence of traditional technologies of creation, conservation, preservation and in some situations of using audiovisual and technical documents to organization of contemporary archival work with them with inclusion of new informational and for example digital technologies. Method of logical connection (synthesis) of information gives possibility to present connection of norms and practices of work with documents on new technical supports which existed before transition to conditions of information society and in process of this transition. The use of this method is also important to show connection between professional skills of archivists in audiovisual and technical archival services formed with using of new informational technologies and without their using. Method of comparative analysis creates conditions for demonstrating possibilities which appeared for work with different types of audiovisual, technical and electronic documents in the context of technological progress.

3 RESULTS

On the basis of historical, synthetic and comparative analysis it is, firstly, important to indicate that profession of an archivist in the sphere of work with documents on new technical supports develops on base of composition of traditional methods and of skills based on using of new technologies of work with documentary informational resources. At the time of appearance of new types of these documents connected with creation of different photographic technologies and types of images and some later of technologies of fixation and diffusion of sound information and then of different types of documents presented information in form of electronically created data and some later of electronic documents in their contemporary form main interest was firstly oriented to technological aspects. Engineers used theoretical achievements of different sciences (particularly of physical and chemistry sciences) and worked in the sphere of application knowledge presented in scientific works and in practical experiences to realization of new forms of registration, conservation, preservation and diffusion of documentary information fixed on new technical supports. Successfully realized and verified in specially prepared conditions technologies became norms of practical work of different enterprises and organizations which also had concrete and known origin indicated in patent documents and in other justified sources. Important condition of successful development of this permanent connection between created practices and based on norms verified by practical achievements existed in sphere of large accessible communication of public with new informational resources created on new technical supports.

Experience with development of creation and of diffusion of audiovisual, technical and electronic documents shows that level of activity in production, archiving and of using different types of these documents depended on possibility of different social groups and people to have access and to use in their usual life these informational resources. The level of accessibility was founded not only in specific features of diversified visual and sound information but also in features of material and after creation of electronic documents of program equipment which could be used in different conditions of life and of professional activity. In this occasion in history of scientific and technical studies we can find practices and norms of creation and of using of documents on new techni-

cal supports which were successful or wasn`t accepted by large public and by professional society. For example, it is possible to indicate that creation of technical resources and informational features of visual and audiovisual resources in sphere of creation and development of cinema industry had evident and big success not only in its original form of chronic, documentary and artistic films but also in form of television media production. Global studies in sphere of history of cinema art show that this historical way was successful practically in all periods and in great majority of countries (10, Sadoul, 1958–1966). Between technologies of registration and using of sound information technology of photographic registration of sound on photographic button was largely and effectively realized in comparison with other all other technologies in this sphere. For example, it was used in the spheres of production of radio programs and registration of sound information accompanied visual information in films. Also, for physical conditions in many countries it was useful to organize conservation and preservation of sound documents (records) on photographic button support because in this situation it was possible to form common archival institutions for photographic and sound documents. This was present, for example, in the Soviet Union from the mid 1930s until the second half of the 1960s, when, until its separation into two special archival services, for photographic and cinema documents and for sound documents, was founded and successfully evolved by the Central state archive of cinema, photo and sound documents of USSR. It is also possible to make classification of electronic documents by criteria of their accessibility and communicative efficiency according to material and program equipment which must be used for organization of work with them for archivists and for different categories of users. For example, it is known in practice that documents created in pdf- format can be preserved and consulted in best conditions and with better result in comparison with some other formats.

Effective practices of work with mostly adapted for needs of preservation and public access types of documents on new technical supports become objects for studies for specialists in the sphere of archival work and in many situations can be presented in normative documents created by International council on archives, International federation of library associations and institutions and some other organizations and recommended for future using all countries which want to participate in activity of these organizations. In conditions of creation and of development of global communications in the context of conception of world information community it is also possible to find results of efforts for rapprochement between strategy of development of archival, library, museum, media organizations in sphere of choice of norms and practices of work with documentary resources on new technical supports. For example, for more active communication with different groups of these resources representatives of these historically different institutions use digital technologies for presentation of different audiovisual, technical and electronic documents in accessible informational systems. It is also possible to see elements of rapprochement in the sphere of registration and description of archival documentary information according to normative documents and for example to EAD standard for which now is recommended EAD3 version which was released in August 2015 (EAD (11, Encoded archival description standard, 2015). Mostly active work in this sphere is realized by archival and library institutions which do the task of preservation and of using of originals and of copies of different archival documents presented also on new technical supports. At the same time with preparation of universally adopted digital copies for these objects specialists of these organizations touch to prepare for their registration and description common program model and to use for this aim HTML program. This practical experience has big significance in our days and in the future can be presented as a methodical norm for large using.

At the same time, it is possible to indicate that archival documents on new technical supports from the point of their origin have a huge diversity. Between them it is possible to see informational resources of big value which is difficult to adapt to process of using new technologies. For example, between sound documents it is possible to find many sources with documentary information which were created by using mechanical technology of registration and of diffusion of sound. Organization of conditions of their conservation, preservation and accessibility in form of originals rests very important aim for archival, museum and library institutions and services in many countries (12, Kolyada, 2008). On this occasion professional skills of archivists specialized in work with documents on new technical supports must be based on possibility of practical work not only with new groups of electronic documents and digital copies of audiovisual and technical documents but also with their originals which were created with using of big diversity of technical and technological instruments and for which it is necessary to follow traditional norms and practices of archival work.

4 DISCUSSION

First problem is connected with the definition of traditional and new approaches and skills that are necessary for education and for professional training of archivists who want to take specialization in different types of work with documents created on new technical supports. The specific feature of this problem is determined on the one hand by the content of traditional development of archival science practically in the whole world, and on the other by the interests of the leaders of different organizations and enterprises who want to have in their staff specialists with possibility to do all basic forms and types of work with documents and to use in this process new technologies. In terms of decision of this problem it is firstly important to indicate that some norms of work with original audiovisual documents and technical documentation exist during all period of scientifically and methodically based work of archival institutions and archival services specialized in work with these informational resources. For example, according to this traditional norm it is necessary to make separate inventories for every specific type of documents on new technical supports not only for presentation of structure of documentary base of concrete archive but also for previewing of conditions of their conservation, preservation and using in different practical aims. That's why in description of content of archival collections in information resources of specialized archives we can see how many technological, projecting, constructing, photographic, cinema, sound and electronic documents are presented on conservation in these organizations. In occasion of existence of archival services oriented exceptionally for work with sound records, photos or electronic documents we can see on their guide resources more detailed information about all community of technical supports on which these services collect and preserve different groups of documents. It is also important that some norms and practical forms of work with documents on new technical supports do not change on methodical level in conditions of realization of computer technologies and are common for documents created in traditional and electronic form of recording concrete objects and events. For example, practically in all enterprises of cinema and television production description of films and programs on stages of their technological and other practical creation is forming by the way of presentation of content, plan, length and sound accompanying every concrete frame. Without following this norm and at the same time practical tradition it will be important for user to find information about presentation of concrete object or event in film or in television program.

At the same time, during realization of traditional forms of work with audiovisual and technical documents, archivists must be professionally prepared to use new technologies presented by computer and program equipment. For this reason, they need to combine professional training in traditional actions of archival work with the use of new technologies. For example, it can be more efficient to make description of cinema frames or of fragments of sound records with the help not only of traditional tables for demonstration of information on different types of buttons and tapes but also with using computer program equipment. For archivists specialized in sphere of preservation of documents on new and on ancient material supports it is certainly necessary to know and to use technologies of digitalization. It is also evident that computer technologies give new possibilities in sphere of communication with audiovisual documents and with technical documents. In the process of their publication in electronic sphere application of these technologies gives possibility to make more efficient and useful work in sphere of transition of visual, audiovisual and graphic texts to more accessible for many categories of users form.

Second discussing problem is connected with the existence of new information quality for audiovisual and technical documents, which can be produced in the process of their creation in electronic form. Scope of this problem is large because it can be diversified for organization of work with all types and groups of archival documents. For example, it is connected with conditions and possibilities of replacing scanning of original archival documents for their future conservation and preservation. It is important to indicate that during all evolution of photographic, cinema, sound and technical documents specialists and other categories of peoples discussed possibilities of appearance of new types of archival documents and disappearance of previous types. For example, from the 1960s there were different discussions about the possible replacing of cinema documents by films created with using of television media technologies. For the beginning of the 21st century, it is possible to see problem of existence of electronic audiovisual and electronic technical documents in the form of communities of documents separated from traditional audiovisual and traditional technical documents. For decision of this problem, it is necessary to use approach existing in the sphere of diplomatic science. According to the scientific studies from the early 1980s (13, Koval`chenko, 1982), the use of computer program technologies in the process of creation of historical documents cannot change specific features of visual, sound or written information originally previewed for their content. This means that appearance and the use of new information and particularly of computer technologies follows changes in practices of some types and stages of archival work with them, for example, in the sphere of their preservation and publication in information systems open for public access. But at the same time diffusion of information technologies doesn`t pass to evident results in the spheres of inventorying and description of audiovisual, technical and electronic documents because norms previewed for these directions of professional activity are basically oriented to their content and not to their external form.

Third problem in the work of archivists with archival documents on new technical supports is connected with the possibility of creation of common norms and practices for work with them in terms of world professional community. Origin of this problem is connected with the existence of two tendencies. First of them supposes creation by International Council on Archives and by other professional organizations and associations of general norms-oriented development of practical work with these groups of documents. This sort of norms can be devoted to global (for example to classification, inventorying and description of archival documents only on base of principle of respect of documentary founds) or to more particular problems connected, for example, with choice of more effi-

cient format for creation of digital copies of visual or of sound documentary records. Second tendency previews possibility, and, in some situation, desire of archivists in concrete countries to use their own, adopted on national level norms and practices of work with archival documents on new technical supports. For example, in tradition of work of archival services in Russia based on many methodical traditions of archival work in USSR and some other countries with socialist orientation of social development it is possible to see specific features of work especially previewed for work with audiovisual and with electronic documents. Elements of their separation from all other objects of archival classification and conservation it is possible to see in normative documents adopted by Federal Agency of Archives of Russian Federation in the beginning of the 21st century. This diversified contradiction between international and national traditions of work with archival documents on new technical supports is very important not only for expert scientific study but also to its demonstration on base of concrete examples and explications during process of professional training of archivists.

5 CONCLUSION

Problem of choice of composition between traditionally created and new information technologies in work with archival documents on new technical supports, which differ from traditional paper support is current for countries which have big traditions of creation and diffusion of these groups of documentary informational resources. From one-part, audiovisual, technical and electronic documents independently from time of their origin become objects of historical, cultural and documentary heritage in occasion of their evaluation in this quality and must be preserved in their original form because in some situation this form can be also indicated as a sign of their importance for society and for its members. On the one hand, it is difficult to conserve and to follow traditional technologies of work with technical supports on which these types of documents were created, for example, in the second half of the 19th century or of the first half of the 20th century. That is why in some situations photographic and sound documents become only objects of conservation only in quality of museum objects, which cannot be accessible for practical work of different categories of users. Decision for this problem can be found in composition between possibility of archivists to realize process of preservation historically important documents in their original form and to introduce new practices for enlarging public access to them. It is also important to develop norms of archival work on international and on national level in these both directions.

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Typology: 1.02 Review Article

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THE EDUCATION AND TRAINING OF ARCHIVISTS IN THE DIGITAL AGE: THE ITALIAN CONTEXT AND THE CASE STUDY OF THE 2nd LEVEL MASTER PROGRAMME IN "CREATION, MANAGEMENT AND PRESERVATION OF DIGITAL ARCHIVES"

ABSTRACT

Purpose: *This article aims at discussing the context of postgraduate education and training in the archival field, in Italy, highlighting new training needs that arose from the transformation of paper records in digital ones.*

Methods: *Starting from the Italian context concerning archival education and training, this article highlights how current teaching plans are still anchored to traditional content and are not able to provide the knowledge, skills and abilities necessary to deal with digital archives. This article then presents the case study of the 2nd level Master Programme in "Creation, management and preservation of digital archives in public and private sectors" at the University of Macerata, describing the characteristics and elements that have made it successful. Twelve editions have been organized so far and the thirteenth is currently underway.*

Results: *The levels of employment achieved by the Master's graduates and the levels of satisfaction revealed in the follow-up questionnaires show that there is a great demand for professionals with knowledge, skills and abilities provided by Master Programme like this. Furthermore, they show that it is necessary to work on renewing traditional teaching, providing more space to the topics related to the creation, management and preservation of digital archives to make them suitable for nowadays changing needs, while paying attention to not abandon traditional teachings that continue to be absolutely essential.*

Keywords: *archival science, education, training, digital archives, master.*

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L'ISTRUZIONE E LA FORMAZIONE DEGLI ARCHIVISTI NELL'ETÀ DIGITALE: IL CONTESTO ITALIANO E IL CASO DI STUDIO DEL SECONDO PROGRAMMA LIVELLO MASTER IN "CREAZIONE, GESTIONE E CONSERVAZIONE DEGLI ARCHIVI DIGITALI"

SINTESI

Scopo: *Questo articolo si propone di discutere il contesto dell'istruzione post-laurea e della formazione in campo archivistico, in Italia, evidenziando le nuove esigenze di formazione che sono nate dalla trasformazione dei documenti da cartacei in digitali.*

Metodi: *Partendo dal contesto italiano in materia di educazione e formazione archivistiche, questo articolo evidenzia come gli attuali piani di insegnamento siano ancora tradizionali, e non siano in grado di fornire le conoscenze, le competenze e le capacità necessarie per trattare gli archivi digitali. Questo articolo presenta poi il caso di studio del secondo programma livello master in "Creazione, gestione e conservazione degli archivi digitali nel settore pubblico e privato" presso l'Università di Macerata, descrivendo le caratteristiche e gli elementi che ne hanno decretato il successo. Finora sono state organizzate dodici edizioni, e la tredicesima è attualmente in corso.*

Risultati: *I livelli di occupazione raggiunti dai laureati del Master e i livelli di soddisfazione rivelati nei questionari di follow-up mostrano che c'è una grande domanda di professionisti con conoscenze, competenze e capacità fornite dal programma master in questo ambito. Inoltre, dimostrano che è necessario lavorare per rinnovare l'insegnamento tradizionale, fornendo più spazio ai temi legati alla creazione, alla gestione e alla conservazione degli archivi digitali per renderli adatti alle esigenze che oggi cambiano, prestando attenzione a non abbandonare gli insegnamenti tradizionali che continuano ad essere assolutamente essenziali.*

Parole chiave: *archivistica, istruzione, formazione, archivi digitali, master.*

IZOBRAŽEVANJE IN USPOSABLJANJE ARHIVOV V DIGITALNI DOBI: ITALIJANSKI OKVIR IN ŠTUDIJA PRIMERA MAGISTERSKEGA PROGRAMA 2. STOPNJE NA PODROČJU »USTVARJANJA, UPRAVLJANJA IN OHRANJANJA DIGITALNIH ARHIVOV«

IZVLEČEK

Namen: *Namen tega članka je razpravljati o kontekstu podiplomskega izobraževanja in usposabljanja na arhivskem področju v Italiji ter poudariti nove potrebe po usposabljanju, ki so nastale s preoblikovanjem papirnatih zapisov v digitalne.*

Metode: *Ta članek izhaja iz italijanskega konteksta arhivskega izobraževanja in usposabljanja, zato poudarja, kako so sedanji učni načrti še vedno povezani s tradicionalnimi vsebinami in ne morejo zagotoviti znanja, spretnosti in sposobnosti, potrebnih za obdelavo digitalnih arhivov. Ta članek nato predstavlja študijo primera magistrskega programa 2. stopnje na temo "Ustvarjanje, upravljanje in ohranjanje digitalnih arhivov v javnem in zasebnem sektorju" na Univerzi v Macerati, ki opisuje značilnosti in elemente, ki so mu omogočili uspeh. Magistrski program se trenutno odvija že trinajstič in je bil do sedaj izpeljan dvanajstkrat.*

Rezultati: *Stopnje zaposlenosti, ki so jih dosegli diplomanti magistrskega študija, in stopnje zadovoljstva, razkrite v nadaljnjih vprašalnikih, kažejo, da obstaja veliko povpraševanje po strokovnjakih z znanjem, veščinami in sposobnostmi, ki jih zagotavlja tak program. Poleg tega kažejo, da si je treba prizadevati za prenovo tradicionalnega poučevanja, tako da temam, povezanim z ustvarjanjem, upravljanjem in ohranjanjem digitalnih arhivov, zagotovimo več prostora, da postanejo primerni za današnje spreminjajoče se potrebe, hkrati pa smo pozorni na to, da ne opustimo tradicionalnih naukov, ki so še naprej bistvenega pomena.*

Ključne besede: *arhivistika, izobraževanje, usposabljanje, digitalni arhivi, magister.*

1 INTRODUCTION

For decades, archivists have been appraising, preserving, and providing access to digital records by using archival theories and methods developed with paper records in mind (Marciano, 2018), but the enormous development of information and communication technologies, together with the introduction of digital records both in the public and in the private sector, has changed the processes of creation, management and preservation of documents and archives. Public administrations and private companies today need to manage, on one hand, a highly unsustainable output of paper based on conventional procedures which are unsuitable in the current organizational, regulatory and technological context, and, on the other hand, need to embrace technological innovation in order to provide more efficient procedures to users who regularly use computers, smartphones, PDAs and other devices.

Hence the need for professional figures who have the skills to streamline document management processes, make the most of the potential offered by new IT technologies and ensure the creation and preservation of digital archives along with paper ones.

Furthermore, in the digital archiving and preservation field, a significant increase in the demand for highly qualified personnel is expected due to the provisions contained in the Italian Digital Administration Code[2] and in the Agency for Digital Italy[3] Guidelines[4], which enforce on public administrations, those who intend to entrust the service of preservation of their digital archives on third party companies, to make mandatory use of accredited Digital Curators who are requested, in addition to prove their economic reliability, technical capacity and IT security, to employ personnel with specific knowledge and experience in the field of document management, digital preservation and IT security.

2 RECORDS MANAGERS AND ARCHIVISTS NEED NEW SKILLS

As a consequence of this transition from the analogue to the digital document, a great demand has arisen for professionals capable of satisfying the needs of public administrations and companies in terms of digitization of documents, dematerialisation of workflows, creation and preservation of digital archives (Kallberg, 2012). In essence, the advent of the digital age has forced archivists, lawyers, administrators, computer scientists, organizers, communicators to review perspectives, methods and work tools in a strictly interdisciplinary perspective, to a much greater extent than in the past. In particular, the job market requires professionals with the knowledge, the skills and the abilities to perform the following functions:

- promoting good practice in creation, management, archiving and storage of documents, regardless of the medium on which they are recorded (analog or digital);
- evaluating the characteristics of integrity, accessibility, stability, legibility and authenticity of digital records;

2 Legislative Decree of 7 March 2005, no. 82, Code of digital administration. See <https://www.agid.gov.it/it/ agenzia/strategia-quadro-normativo/codice-amministrazione-digitale>.

3 The Agency for Digital Italy (in Italian: Agenzia per l'Italia Digitale, AgID) is a public body which has the task of guaranteeing the achievement of the objectives of the Italian digital agenda and contributing to the diffusion of information and communication technologies, promoting innovation and digital transformation of the country.

4 The "Guidelines on training, management and preservation of digital records" have not yet been published in their definitive form and are available as a draft at: <https://docs.italia.it/AgID/documenti-in-consultazione/lg-documenti-informatici-docs/it/bozza/index.html>.

- collaborating with the designers of the information systems so that procedures for the safeguarding of documents and document management are incorporated from the beginning;
- redesigning the administrative processes and procedures of private and public organizations, with the methods and tools of Business Process Management (BPM);
- implementing Workflow Management Systems (WfMS) for the automated management of work flows;
- designing and managing complex archival systems in the public and private sectors, ensuring the optimal use of information and communication technologies;
- guaranteeing the long-term preservation, description and use of digital archives and hybrid archives, i.e. composed of documents created on different types of media (paper, magnetic tape, hard disk, microfilm, etc.);
- producing general and specific finding aids for preserved archives.

3 DEMAND FOR NEW PROFESSIONALS IN THE FIELD OF RECORDS AND ARCHIVES IS INCREASING

To perform these functions, new professional are needed; Italian legislation specifically requires that the following three experts be present in all public administrations:

- the Head of document management, i.e. the professional required by article 61 of Presidential Decree no. 445 of 28 December 2000, containing the consolidated text of the legislative and regulatory provisions on administrative documents5, and in the Ministry Decree of 3 December 2013, containing the technical and application rules for the electronic protocol register;
- the Head of digital preservation, i.e. the professional required by the Ministry Decree of 3 December 2013, containing the technical rules on the preservation system, where his duties and responsibilities are specified;
- the Head of the archival preservation function, i.e. the professional defined by the Agency for Digital Italy in the Circular Decree no. 65 of 10 April 2014, containing the methods for accrediting public and private subjects who carry out digital records preservation activities (the so-called "Digital Curators")[6]. An attachment of the aforementioned Circular specifies the tasks and the requirements in terms of training and experience of such professionals;
- The Head of the digital transformation, i.e. the professional required by art. 17 of the Digital Administration Code and by Legislative decrees no. 179 of 26 August 2016, and no. 217 of 13 December 2017, which has the task of operationally guaranteeing the digital transformation of the Public Administration.

More generally, a wide and growing range of career choices is available to archivists and records managers professionals, such as the following ones:

- Records manager, i.e. the manager of records management activities in public and private organizations, including medium-large ones;

5 Based on article 61 of Presidential Decree of 28 december 2000, no. 445, the Italian public administrations have the obligation to assign the role of Head of document management to an executive or an official, and, in any case an employee with suitable professional requirements in technical-archival subjects acquired following specific training courses.

6 According to Italian law, Digital Curators are public or private bodies that offer the service of preservation of digital archives produced by other creators. Public administrations are obliged to apply exclusively to "accredited" digital curators,i.e. those Curators who have undergone a verification by the Agency for Digital Italy and have obtained recognition of possession of all the requisites of expected quality and safety.

- Digital Curator, i.e. the professional (or the organization) that must guarantee the long-term preservation of digital archives, directing the staff, composed of experts in the archival, IT and legal fields, with competence and skill.

As Anderson (2009) shows, traditional employers are national and local archives, but there are many more opportunities for people specializing in different areas related to this profession and serving organizations linked to the archive business. Professionals with the necessary expertise required to manage digital services are in growing demand both in public and in private companies.

4 THE EDUCATION OF RECORDS MANAGERS AND ARCHIVISTS IN ITALY

The long-term preservation and management of digital records is a major concern challenging archivists. Preserving digital records involves various challenges, including policy matters, institutional roles and relationships, legal issues, intellectual property rights, metadata and other technical topics. The education of records professionals requires an update educational framework that draws upon diverse sources of knowledge (Lemieux, 2019).

So, archivists need new skills that are generally not provided by traditional educational programs of university courses and other training agencies.

For instance, in Italy the archivists' education and training has traditionally been entrusted to Universities on the one hand, and to the School of Archival science, Paleography and Diplomatics on the other hand. The latter are public schools, placed in seventeen State Archives Bureaus [7] and offering free para-university level training lasting two years[8]. Still based on the State Archives Regulations approved with the Royal Decree no. 1163 of 2 October 1911, the teaching plans of the Schools has undergone numerous adaptations over the years. Unfortunately, the attempts made to date to set the Schools on new criteria have produced no other result than to fuel a debate on the relationship between the archivist and his work, between the archives and society, between archival training and university courses. This kind of education is generally considered not sufficient to provide the skills required for the management of digital archives, nor are there other training agencies capable of providing adequate preparation. There are, however, some exceptions that should be remembered.

For example, at the Central State Archive[9] in Rome, a course of advanced training in contemporary archiving has been active for some years. It provides 150 hours of face-to-face teaching activities, divided into lectures, conferences and seminars, taught by professors of different universities and managers of various administrations. The studied topics concern general archiving, documentary information technology, computer document management and digital preservation and subjects related to the organization and functioning of the central and peripheral bodies of the state, the procedures for declassifying archival documentation and the right to confidentiality and privacy.

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7 In Italy, State Archives are preservation bodies whose competences consist in supervising and preserving the archival and documentary heritage produced by peripheral state public administrations, and in making them freely accessible to the public. They are 103 and, as a general rule, they are located in the provincial capitals and in cities of particular historical importance (they are called "detached sections" of the State Archives).

8 The teaching plans of the Schools of Archival science, Paleography and Diplomatics are regulated by articles 58-64 of the Royal Decree no. 1163 of 2 October 1911, and by article 14 of the Decree of the President of the Republic no. 1409 of 30 September 1963 (known as "Archival Law of 1963"). These programs are now largely obsolete.

9 The Central State Archive is an institution of the Ministry for cultural heritage and mainly preserves the documents of the central judicial and administrative bodies of the Italian State. It is based in the city of Rome.

Another positive mention goes to the Italian National Archival Association (ANAI) which for some years has undertaken an intense teaching activity on issues relevant to digital archives by carrying out numerous professional training and updating initiatives, such as study sessions, seminars and training courses.

Then there are some Italian universities that have well understood the need and urgency to train the new professionals now in demand due to the transition from analogue to digital archives, and have started to provide specific post-graduate training courses. In particular, in the 2019/20 academic year there are three 2nd level Master Programmes[10] that offer at least some specific teachings on the topic of digital archives:

1. the Master Programme in "Preserving and Ensuring an open goveRnment for a Smart access to sciEntific and cultural sOurces (PERSEO)" at the University of Calabria[11];
2. the Master Programme in "Archiving, Librarianship and Codicology. Rearrangement and inventory of archives and cataloguing of handwritten, printed and digital documents" at the University of Florence[12];
3. the Master Programme in "Creation, management and preservation of digital archives in the public and private sector" at the University of Macerata.

In the following we will focus on the latest training proposal that represents a best practice to be inspired by.

5 THE 2ND LEVEL MASTER PROGRAMME IN "CREATION, MANAGEMENT AND PRESERVATION OF DIGITAL ARCHIVES IN PUBLIC AND PRIVATE SECTORS" AT THE UNIVERSITY OF MACERATA (ITALY)

The 2nd level Master Programme in "Creation, management and preservation of digital archives in public and private sectors" at the University of Macerata (Italy)[13] is directed by Stefano Pigliapoco, full professor of Archival Science at the University of Macerata[14]. It aims at providing students with skills not yet provided by traditional and consolidated courses (Bonfiglio Dosio, 2015) and addresses mainly, but not exclusively, the issues of creation, management, and preservation of digital archives, as the name says. But alongside those topics, predominant in the current administrative scenario, the master's teaching plan deals with two other very interesting areas of application for the digital archives sector: the digitization of documents produced on traditional media (mainly paper and parchment, but not only) and the description of documents and archives in archival information systems.

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10 The aim of a Master Programme is to develop and strengthen the postgraduates' advanced knowledge, skill and expertise in specific field, provide them with further professional education and training to meet the demands of the professional world. To access the Italian 2nd level Master Programme, a 2nd Cycle Degree (Master's degree) or equivalent is required. It corresponds to the 8th level of the European Qualifications Framework. See <https://www.cedefop.europa.eu/en/events-and-projects/projects/european-qualifications-framework-eqf>.

11 See <http://www.labdoc.it/formazione/progetti-e-corsi/perseo>.

12 See <https://www.masterarchivisticabiblioteconomiacodicologia.unifi.it>.

13 See <https://www.masterarchividigitali.unimc.it>. In Italian the title of the Master is: "Formazione, Gestione e Conservazione di Archivi Digitali in ambito pubblico e privato (FGCAD)". At the moment the lessons are held in Italian, but plans are being made to gradually start supplying specific training modules in English.

14 Together with him, the Board of directors includes Giorgetta Bonfiglio Dosio, former Professor of Archival Science, Giulio Salerno, full professor of Public Law, Federico Valacchi, full professor of Archival Science, and Simone Calzolaio, associate professor of Constitutional Law.

This Professional Master Programme has reached its thirteenth edition in the 2019/20 academic year and currently has 65 students enrolled. The education is provided in a blended mode, that is, through both online and face-to-face lessons. To facilitate the attendance of lessons, the Master is delivered in three locations in Italy: in addition to Macerata, in the center of Italy, where the University of Macerata is based, students can follow the face-to-face lessons also in Milan and in Padua (in the north of Italy). To further facilitate attendance, face-to-face lessons are concentrated in a single monthly meeting of 12 hours each (approximately a Friday and a Saturday per month).

The teaching plan of the master is clearly based on multi-disciplinarity, in the belief that the creation, the management and long-term preservation of digital records and digital archives, requires knowledge and skills in different domains (Pigliapoco, 2015):

- in the archival field, to define organizational and procedural models that ensure the correct creation of the archive, prepare classification schemes and preservation plans, develop management and preservation manuals, carry out the selection or archive rejection operations in a digital environment, ensure the description of the digital archives and the provision of access and use services;
- in the IT field, to evaluate the technological aspects related to electronic signatures, guarantee the IT security and operational continuity of the systems, prevent the risks of technological obsolescence, verify the compliance of hardware and software equipment with the technical rules established at national level and internationally, to redesign processes and manage systems;
- in the legal field, to guarantee the production of digital records with legal validity and compliance with current legislation on the protection of personal data;

1.1 The teaching plan

For the 2019/20 academic year, the Master Programme includes 1,500 hours of total workload for the students which are divided as follows:

- 300 hours of teaching activity, divided into 84 hours of face-to-face lessons and 216 hours of on-line lessons accessible through the e-learning platform of the University of Macerata and corresponding to 50 university training credits (ECTS credits)[15];
- 300 hours of internship or project work
- 900 hours of individual study and workload for the final exam.

The internship or project work activity generally takes place in the period between July and November; this year, due to the Covid-19 pandemic, students will have additional time to complete it. Attendance is compulsory and cannot be less than 75% of the total hours provided for each module: in particular, attendance cannot be less 75% of the total hours of face-to-face lessons. The resulting overall teaching plan is shown in Table 1.

15 The European Credit Transfer and Accumulation System (ECTS) is a standard means for comparing academic credits for higher education across the European Union and other collaborating European countries. ECTS credits are used to facilitate transfer and progression throughout the Union. A single ECTS credit is equal to 25 hours of student workload, so taht one academic year corresponds to 60 ECTS credits that are normally equivalent to 1500 hours of total workload. ECTS also includes a standard grading scale, intended to be shown in addition to local (i.e. national) standard grades.

Table 1. Teaching plan of the Master Programme, 13th edition, a.y. 2019-20

Module name	ECTS credits	Hours
Module 1: basic knowledge of archival science	4	24
Module 2: documentary informatics	11	66
Module 3: legal aspects related to the creation, transmission, management and preservation of digital records	8	48
Module 4: electronic records management and digital archiving	16	96
Module 5: digital preservation	11	66
Internship/Project work	6	300
Individual study		900
Final exams	4	
TOTAL	60	1500

As shown in the teaching plan, in addition to the traditional archival teachings, this Master Programme provides a whole series of teachings that normally do not find a place in the teaching plans of the first and second cycle university degrees, but on which the concrete possibility of preserving long-term digital archives depends. All topics are addressed with reference both to the Italian legislation on digitization and dematerialization in the public and private sectors, and to the standards and reference projects at European and international level. This allows graduates to seize job opportunities nationally and internationally, by proposing to serve in entities and companies operating in other countries. To facilitate the inclusion of participants in the job market and complete the course of study with the exposition of practical cases and advanced technological solutions, synergies have been activated with various companies operating in the Electronic Document Management sector. In the following we will briefly analyze the contents of each of the 5 modules.

1.2 Module 1: Basic knowledge of archival science

Since students come from different training curricula (some are archivists but others are computer scientists, other lawyers, other accountants, etc.) the first module of the teaching plan provides them with the basic knowledge of records management, a necessary step to enable them to follow with profit the lessons of the following modules that deepen the specific issues of the management, archiving and preservation of digital records. The aim is to level the differences resulting from the different studies carried out by the students, in relation to the fundamental principles of archival science, and the methods and tools for the creation of archives. Table 2 summarizes the teachings provided in Module 1.

Table 2. Teachings of Module 1: Basic knowledge of archival science

Teaching	ECTS-credits	Hours
Records management: methods and tools	4	24
Total module 1	4	24

1.3 Module 2: Documentary informatics

The second module of the teaching plan is entirely dedicated to training in documentary informatics and in particular to the study of the technological tools that most apply to the production of digital records, their security and accessibility.

With the first teaching, students are provided general knowledge of computer security with an extensive examination of the possible risks and related countermeasures. The requirements imposed by the Italian legislator for the safety of the digital preservation system are geared towards ensuring maximum protection measures that concern not only the logistical and technological aspects, but also the organizational and procedural ones. This kind of knowledge is fundamental for the Head of document management and the Head of preservation to develop, in collaboration with the Head of the information system and the Head of personal data processing, effective plans for the security of the document management system and the preservation system.

The second teaching focuses on the problem of file formats obsolescence. It is necessary to choose those suitable for the production of digital records, both as digital native entities and as objects obtained from the digitization of analogic originals. The study of the characteristics of file formats, of their weaknesses in relation to technological obsolescence, in addition to being preparatory to the development of effective solutions for digital preservation, provides useful indications on how to best exploit the potential of computer systems. A good part of the second course is devoted to techniques for digitizing analog documents, not only paper documents but also photographs, sound recordings and audiovisual recordings, whose importance is increasing nowadays.

The third teaching is dedicated to XML (eXtensible Markup Language) that can be used to create self-descriptive, human and machine-readable documents in order to completely automate workflows and therefore minimize the work time. Many examples and case studies are discussed with the students.

Finally, with the last teaching, students are taught the knowledge of archival description - with a particular focus on ISAD (G), ISAAR (CPF), ISDIAH, ISDF and the new standards Record in Context (RiC) - and on archival information systems. Table 3 summarizes the teachings provided under Module 2.

Table 3. Teachings of Module 2: Documentary Informatics

Teaching	ECTS-credits	Hours
Computer security, databases and three-year plan for information technology in public administration	3	18
Digitization of analog documents and file formats	3	18
XML language: theoretical and practical aspects	3	18
Archival description software and archival information systems	2	12
Total module 2	11	66

1.4 Module 3: Legal aspects related to the production, transmission, management and preservation of digital records

Module 3 provides understanding of legal issues correlated to the production of electronic and analogic documents, as well as to the evaluation of the probative efficacy of electronic signatures affixed or associated to them and to the protection of personal data. Those topics are discussed not only with reference to the Italian legislation, but also to the European one.

The second teaching deals with the relationships between Italian Digital Administration Code and the eIDAS Regulation[16], which requires the establishment in each Member State of the European Union of an electronic identification regime managed by authorized entities and the notification to the European Commission of the systems activated to allow cross-border authentication of the online services of public sector bodies.

Finally, the third teaching deals with the GDPR and its effects on the management and accessibility of archives. Table 4 summarizes the teachings provided under Module 3.

Table 4. Teachings of Module 3: Legal aspects related to the production, transmission, management and preservation of digital records

Teaching	ECTS-credits	Hours
Methods and tools for the production and transmission of digital records	4	24
EU Regulation n. 910/2014 (eIDAS) and Italian Digital Administration Code	2	12
Accessibility, transparency and privacy: implementation of the GDPR for the protection of personal data	2	12
Total module 3	8	48

1.5 Module 4: Information Document management and digital archiving

The fourth module of the Master Programme's teaching plan is entirely dedicated to issues relating to the production, management and preservation of digital records, including methods for the design of workflows.

In particular, the first teaching analyzes the technological and legal tools necessary for the subscription and transmission of digital records. Students will become familiar with topics such as electronic signature, of which the Digital Administration Code defines and administers four different versions, each carrying at different legal value[17], in the awareness that digital preservation processes must be customized according to the tools used and the processes performed to guarantee the authenticity and integrity of electronics documents. A part of the course is dedicated to the study of the certified e-mail service (in Italian: Posta Elettronica Certificata, PEC), which is the system designed and built in Italy for the transmission of digital records with guaranteed delivery, integrity and confidentiality of messages. All these topics are developed by referring not only to the legislation in force in Italy but also in other European countries, in order to train professional specialists who are prepared and employable beyond the borders of Italy, in the wider international job market.

The study of Electronic Records Management System (ERMS) represents one of the fundamental topics of this teaching. From a technological point of view, the requirements are specified for: guaranteeing the security and integrity of the managed digital documentary heritage; ensure the tracing of the operations carried out on the document system and the identification of the authors; protect documents from

16 Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.

17 The Digital Administration Code outlines four types of signature for digital records: electronic signature, advanced electronic signature, qualified electronic signature and digital signature. Of the latter, two variants are allowed: the digital signature generated with the device issued to the holder and the remote digital signature that provides for the installation of the qualified electronic certificate of the signatory in an HSM (Hardware Security Module) system activated at an accredited certifier.

unauthorized access and therefore implement an effective policy to protect their confidentiality; develop advanced interoperability and application cooperation solutions between all components of the creator's information system[18].

Moreover in this case, all the topics described above are treated with reference both to the legislation in force in Italy concerning the electronic protocol register[19], and to the projects and reference standards at international level, like, for example, the MoReq (Modular Requirements for Records Systems) specifications[20], and the standard ISO 15489-1:2016 (International Organization for Standardization (ISO), 2016)[21] for the implementation of ERMS systems in public or private organizations is proposed in order to standardize the best international operating methods for the document management.

The second teaching is dedicated to the study of metadata for records management, both to facilitate its identification and recovery (descriptive metadata), and to create a structured, well-defined information base to support management and conservation activities[22]. It is also dedicated to a full archival description of the documentary heritage of cultural-historical interest (archival descriptive standards). The main metadata schemes analyzed are: ISAD (G), ISAAR (CPF), EAD, EAC, DublinCore and METS. For each of them, the purposes, the differentiations and the similarities with the other schemes, the prospects for evolution and the application profile are specified; the goal is to provide students with the knowledge to identify and apply the most suitable metadata standard according to the type of objects to be treated and the objectives to be achieved.

Since most of the current administrative procedures have been designed in the past years, when documentary production was exclusively on paper, and therefore they are characterized by outdated forms of communication, organizational models and procedural schemes, the third lesson focuses on the analysis and redesign of the processes in order to create an environment predisposed to the digitalization of documents, to their communication and archiving in digital format, without which the introduction of innovative tools for the production of digital records does not lead to efficiency, but on the contrary causes administrative time delays and generate increased disorder in document management. Table 5 summarizes the teachings provided under Module 4.

18 The latter requirement is particularly relevant as computer documents tend to remain stored in the systems used to produce them, receive them or transmit them electronically, while to ensure the formation of the digital archive they should converge, possibly automatically, with the mechanisms interoperability and application cooperation, in a unitary system accessible via the network.

19 At present, the Italian legislation on the electronic protocol register is defined in Presidential Decree no. 445 of 28 December 2000, containing the consolidated text of the legislative and regulatory provisions on administrative documentation, and in the Prime Ministerial Decree of 3 December 2013, containing the technical rules.

20 See <https://www.moreq.info/>.

21 ISO 15489-1:2016 defines the concepts and principles from which approaches to the creation, capture and management of records are developed.

22 This includes the administrative, management and preservation metadata together with the structural metadata that connect the various components of the resources to each other.

Table 5. Teachings of Module 4: Information Document management and digital archiving

Teaching	ECTS-credits	Hours
Records management and implementation of Electronic Records Management Systems: theoretical issues and application solutions	10	60
Metadata for records management: reference standards and application logics	2	12
Methods and tools for the description, re-engineering and automated management of administrative processes / procedures (Workflow Management System)	4	24
Total module 4	16	96

1.6 Module 5: Digital Preservation

The teachings of the fifth module of the Master Programme are focused on the theme of long-term digital preservation and didactic continuity, in connections with the subjects covered in the previous modules. In this module students begin to study digital preservation systems being already aware of the connected risks of technological obsolescence, the requirement to maintain the evidentiary strength of electronic signatures and the minimum set of metadata to be enhanced in order to outline the interdependence relationships that exist between the documents of a digital archive.

The first teaching focuses on the preservation process based on the OAIS model (Reference Model for an Open Archival Information System), which was developed by the CCSDS (Consultative Committee for Space Data System) and subsequently approved as an ISO 14721:2012 standard (International Organization for Standardization (ISO), 2012a). This is the conceptual model adopted in the main digital preservation projects carried out internationally and indicated by the Agency for Digital Italy as a mandatory requirement for the accreditation of conservators[23]. The study plan provides first of all the analysis of the peculiarities of the OAIS, which consist in being an open solution, independent of the technologies, applicable to any information object - digital or analog - based on the use of a predefined data structure, called the "information package", for the acquisition, preservation and consultation of digital documentary and archival units. During this course, the ISO 16363:2012 (International Organization for Standardization (ISO), 2012b) and ISO 16919:2014 (International Organization for Standardization (ISO), 2014)[24] standards dedicated to the auditing activities of digital preservation deposits are illustrated.

The second teaching is dedicated to preservation metadata, such as PREMIS and the Italian standard UNI SinCRO (Italian National Unification Body (UNI), 2020) which defines the structure of the data set to support the process of preservation and recovery of digital objects by means of the formal XML language.

To complete the fifth teaching module, the third course illustrates the technical rules in force in Italy regarding the preservation system, the accreditation methods of digital curators by the Agency for Digital Italy and the most significant achievements at national level. Ample space is dedicated to the analysis of the professional profiles specified by the Agency for Digital Italy for the staff that Digital Curators must have in order to obtain accreditation, underlining the full compliance of the teaching plan of the Master Programme with the qualification requirements established by the Italian legislator. Table 6 summarizes the teachings provided in Module 5.

23 Cfr. le regole tecniche in materia di sistema di conservazione emanate con il DPCM 3 dicembre 2013.

24 ISO 16919:2014 is meant primarily for those setting up and managing the organization performing the auditing and certification of digital repositories.

Table 6. Teachings of Modulo 5: Digital preservation

Teaching	ECTS-credits	Hours
Preserving digital material: purposes, critical issues, methods and conceptual model OAIS standard ISO 14721	3	18
Preservation metadata and UNI SinCRO standard	3	18
Digital preservation in Italy: regulations, accreditation of curators and surveillance activities, phases of the digital preservation process, professionals, preservation manual and case studies	5	30
Total module 5	11	66

It is worth noting that the analysis of the teaching plan shows that these teachings normally find no place in the teaching plans of most Italian university degrees in Archival Science.

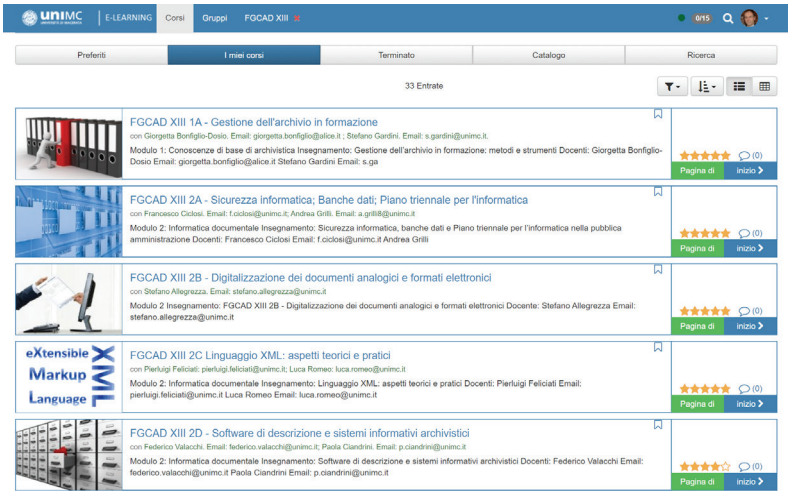
1.7 Internship and project work

The complexity of the topics covered, the highly innovative nature of the tools analyzed and the many elements that differentiate the preservation of paper archives from the preservation of the digital ones, make it necessary to complete the program with a work experience in organizations where their newly learned expertise is relevant, while confronting with real problems and putting into practice, at least partially, the knowledge they acquired. So, students are required to carry out a 300-hour internship at public bodies or private companies (eventually replaced by the students already employed with a project work to develop in their workplace on a theme previously agreed with the Board of directors) which represents a formative moment of fundamental importance.

1.8 The success of distance learning

One of the strengths of this Professional Master Programme - and certainly one of the factors that contributes to its success – is distance learning, which is provided through the e-learning platform of the University of Macerata (see Figure 1)[25] A personal account is activated for each student. Obviously, students must have an active Internet connection on their PC.

Figure 1. Screenshot of the e-learning platform initial page



25 The e-learning platform adopted by the University of Macerata is OLAT (Online Learning And Training), an open source and web-based Learning Management System. It has been customized to adapt to its needs and make it usable in all distance courses.

The teachings consist of one or more videotaped lessons, presented with synchronized slides and integrated with the materials provided by the teacher (which can be multimedia objects of any kind: texts, drawings, presentations, bibliographies, links to websites, audio and video files) and a series of additional tools, such as an online bulletin board for reports and notices; a discussion forum run by the teacher; wikis, blogs, podcasts.

Through this platform, students can follow online lessons, download teaching materials and access network resources, carry out self-assessment tests, intermediate and final verification tests prepared by teachers, etc. The material is available 24 hours a day, 7 days a week and this is particularly appreciated by students, who enjoy the freedom of choosing the time to connect to the platform and carry out their activities. In addition to video lessons and other resources that can be used asynchronously, the e-learning platform also provides collaborative tools in synchronous mode, such as chat and video conferencing.

The online teaching tools were particularly useful during the 2019/20 edition of the Master Programme because the evolution of the COVID-19 pandemic forced the Master's Board of directors to convert almost all face-to-face lessons to online lessons.

Each teaching requires a final verification test, which is also carried out via the e-learning platform. There are two types of tests: close-ended and open-ended; the latter typically consists in the development of a report on a subject selected by the teachers. While the close-ended test allows to evaluate the students' level of preparation on the teaching topics, the open-ended test provides indications on his ability to apply the theoretical knowledge acquired in typical working scenarios.

At the end of the course, students must take a final exam. It consists in the discussion of a short paper in front of a specially appointed Commission. The dissertation can deal with the same topics developed in the project work, or the issues addressed in the internship experience, but must have a scientific-cultural character and present an adequate level of depth with personal prospective assessments by the student.

6 APPROACHING THE JOB MARKET

Some of the Master Programme's students already have a job, but those who are unemployed easily find a job in both public and private sectors after graduating. In fact, public administrations are called to implement a set of rules that guide them in digital transition paths, towards the digitization of documents and the dematerialization of administrative procedures, providing for new professional specialists, such as those trained by this Master Programme.

Similarly, businesses and other private entities have a strong interest in cutting down the costs of paper documentary production and taking advantage of the opportunities offered, among other things, by the new rules on electronic invoicing and digital archiving of tax documents.

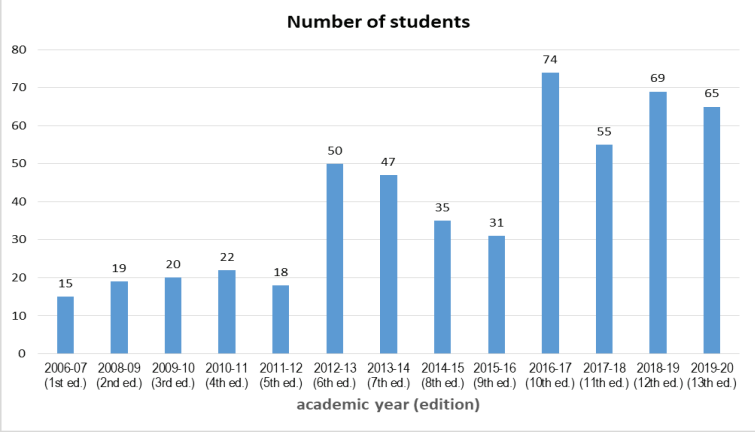
Finally, Accredited Digital Curators[26] have the obligation to have professional profiles such as those trained by the Master Programme; as a result, graduates easily get a job in these organizations.

26 The "Accredited Digital Curators" are "Digital Curators" that have undergone a verification process by the Agency for Digital Italy, and have achieved the recognition of the highest level requirements (accreditation).

7 CONCLUSIONS

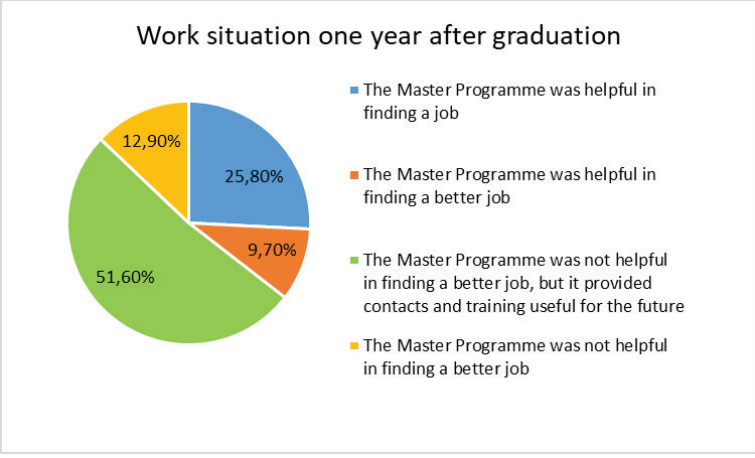
Some useful considerations can be drawn from the analysis of the Master Programme just carried out. First, the number of students enrolled has gradually increased to exceed the most optimistic forecasts. Figure 2 shows the progress of the number of students from the first edition to the current one. In recent years, the number of enrolled students has regularly been between 60 and 70, an extraordinary result considering that the average number of enrolled students in an Italian Master Programme is around 20.

Figure 2. Number of students enrolled per academic year



Secondly, the follow-up surveys that are regularly conducted show that the students consider the Master Programme useful for looking for a job or for improving their job position. One year after graduation, 25.8% of the students consider the Master Programme helpful in finding a job; 9.7% declare that the Master has been helpful to improve their employment status or change job; 51.6% think that the Master did not change their employment status, but it provided contacts and professional training needed in the future; only 12.9% does not consider it helpful to improve their working position (see Figure 3). Overall, 93% of the students found the master useful for looking for a job or improving their job position.

Figure 3. Work situation one year after graduation



The high levels of employment achieved by the Master's graduates show, on the one hand, that there is a strong demand for professionals with the knowledge, skills and competences such as those provided by the Master Programme and, on the other hand, that it is necessary to renew traditional teaching, giving more space to the teachings related to the creation, management and preservation of digital archives to make them suitable for new and changing demands, without neglecting traditional training which continues to be absolutely irreplaceable and provide the basis for understanding the new teachings.

Furthermore, since issues related to digital archives are highly dynamic and affected by rapid and frequent changes (due both to the evolution of the regulatory framework and the availability of increasingly advanced technological tools) any education and training action must be kept constantly updated and periodically renewed. The teaching plan of the Master Programme at the University of Macerata perfectly meets these requirements and is renewed and updated year after year. All these elements testify that it fully addresses the training needs of archivists in the digital age and represents a best practice to be seriously considered as a reference when planning new training courses and also when revisiting the traditional teaching plans of the university degree courses.

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Typology: 1.01 Original Scientific Research

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ARCHIVES AND THE DIGITAL AGE

ABSTRACT

This study explains the impact of digital age technologies on the archival science. and how we can enable these technologies to ensure the basic requirements needed for long-term digital preservation which is the key target towards the implementation of modern digital age archive. These basic requirements are: Accessibility, Applicability and Understandability, Authenticity, and Integrity. The method, approach used in this study is reviewing and reading different literatures in which it was demonstrated the benefits and the challenges of digital archive practices. Also highlighting Oman national archive approach in Data Management long term preservation. This study shares the views that digital technologies play a major role in archiving today and undoubtedly have a great impact on the basic functions of archives and the new methods that the archivist adopts in dealing and benefiting from these technologies.

The results of this study shares the thoughts that technologies related to digital archives are changing rapidly, and archiving institutes and archivists are required to deeply understand these technologies and make the most of it, to preserve the principles and the concepts of archival science.

Key words: *Archival science, Digital preservation, Organizational strategy, Technical Strategy, and Long-Term Preservation.*

ARCHIVI E L'ERA DIGITALE

SINTESI

Questo studio spiega l'impatto delle tecnologie dell'era digitale sulla scienza archivistica, e come sia possibile consentire a queste tecnologie di garantire i requisiti di base necessari per la conservazione digitale a lungo termine, che è l'obiettivo chiave verso l'implementazione dell'archivio moderno dell'era digitale. Questi requisiti di base sono: accessibilità, applicabilità e comprensione, autenticità e integrità. L'approccio utilizzato in questo studio è quello di rivedere e leggere diverse letterature in cui sono stati dimostrati i benefici e le sfide delle pratiche di archiviazione digitale, evidenziando anche l'approccio dell'Archivio nazionale dell'Oman nella conservazione a lungo termine e della gestione dei dati. Questo studio condivide l'idea che le tecnologie digitali svolgano un ruolo importante nell'archiviazione moderna, e senza dubbio hanno un grande impatto sulle funzioni di base degli archivi e sui nuovi metodi che l'archivista adotta nel trattare e beneficiare di queste tecnologie. I risultati di questo studio condividono il pensiero che le tecnologie legate agli archivi digitali stiano cambiando rapidamente, e gli istituti di archiviazione e gli archivisti sono tenuti a comprendere a fondo queste tecnologie e a valorizzarle al meglio, per preservare i principi e i concetti della scienza archivistica.

Parole chiave: *archivistica, conservazione digitale, strategia organizzativa, strategia tecnica, conservazione a lungo termine.*

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ARHIVI IN DIGITALNA DOBA

IZVLEČEK

Ta študija pojasnjuje vpliv tehnologij digitalne dobe na arhivsko znanost. in kako lahko tem tehnologijam omogočimo, da zagotovijo osnovne zahteve za dolgoročno digitalno hrambo, ki je ključni cilj pri ustvarjanju sodobnega arhiva digitalne dobe. Te osnovne zahteve so: dostopnost, uporabnost, razumljivost, pristnost in integriteta. Metoda in pristop, uporabljen v tej študiji, je pregled in branje različnih literatur, v katerih so predstavljene dobre prakse in izzivi digitalnega arhiviranja. Poudarjajo tudi pristop nacionalnega arhiva Omana pri dolgoročnem ohranjanju upravljanja podatkov. Ta študija deli stališča, da imajo digitalne tehnologije danes pomembno vlogo pri arhiviranju in nedvomno močno vplivajo na osnovne funkcije arhivov in nove metode, ki jih arhivar sprejema pri obravnavanju in izkoriščanju teh tehnologij.

Rezultati te študije delijo misli, da se tehnologije, povezane z digitalnimi arhivi, hitro spreminjajo, in arhivske inštitucije ter arhivisti morajo te tehnologije globoko razumeti in kar najbolje izkoristiti za ohranitev načel in konceptov arhivske znanosti.

Ključne besede: *arhivistika, digitalna hramba, organizacijska strategija, tehnična strategija in dolgoročno hramba.*

1. INTRODUCTION

There is no doubt that the appearance of modern technologies specifically in the field of digital information has imposed the necessity to reconsider the old and traditional concepts of Archival Science. This has affected the various aspects of the known archiving functions, which include identifying archival materials, methods of obtaining them from various institutions or individuals, structuring and classifications of the records, storing, processing, managing and making them available to researchers, individuals, and specialists. The effect of digital technologies on the archives and how it has improved its core principles will be highlighted in detail in this paper and the strategies required to be implemented in order to establish a long-term digital preservation that include the basics of Applicability, Understanding, Authenticity, and Integrity.

2. ARCHIVES AND THE MODERN TECHNOLOGIES

Despite the changes and the development over the time, the main purpose of the archives all over the world remains unchanged. It remains the main source of nation's memories, and it remains the main source for researchers and those who document the history wherever and in whatever type it is. However, the science of archiving has faced many challenges in dealing with new technologies, and as per Ivan Szekely *"archives have gone through considerable changes, facing numerous challenges along the way. These changes have affected archival science and practice alike. Even in the recent past, a host of new archival concepts have emerged. Eric Ketelaar writes of archival turns extending beyond the boundaries of archival science" Ivan Szekely, 2017, pp1.*

However, challenges will always be there to achieve the best practices as per the stages mentioned above. It will remain the concern of the archivists around the world particularly with the appearance of new, fast, and dramatically changing technologies as humanity entering the digital era. Hence, and in order for nations to preserve the main function of the archive and to perform its services at all times to the fullest extent, some adjustments have to be made to the traditional archiving concepts and methods, thus to

cope with the digital technologies. Archivist must ensure that these types of technologies are understood and well-handled to preserve archival material in good conditions and for as long as possible.

Since many years ago specialists in the area of archives have learned how to preserve paper documents and physical materials in a traditional way, but due to the requirements of digital technology and the existence of new types of documents and records that comes in digital format, it was necessary to keep up the science of archives in line with the new digital age, coping with the vast amount of data that are generated every day and how to distinguish what needs to be archived and managed and what is not necessary. Also, it was necessary to develop Metadata which can include classification, coding, descriptions or any other important characteristics required to the archival materials. In addition, archive specialists should come up with new methods and concepts to protect this type of archive material, that can be done by laying the foundations , mechanisms and process such us the informational packages (SIP, AIP, DIP), to provide the appropriate environment and allow sharing it with the archival institutions and with those who need it.

Consequently, and with these new methods that need to be taken by the archives, many specialized companies in recent years have innovated equipment's and programs that supports archivists, equipment's and programs that allows archivists to convert physical documents into digital format. For example, digital scanning devices appeared, which allowed archivists to convert paper documents into digital format documents and save them in specialized programs such as the Electronic Document Management Systems EDMS programs that allowed storing them for long-term preservation and search through. These programs not only help archivist to store documents, but also to manage them perfectly and as required based on the standards and the specification given by the archive authorities. These technologies have also become extremely important in preserving old type of manuscripts and protecting the original documents and records from damage. It also allowed viewing them by a wide range of researchers within a reasonable time frame.

3. DIGITAL PRESERVATION STRATEGY

It is required for the archives to establish a digital preservation strategy before undertaking the implementation of any digital projects, to maintaining the basic requirements for long-term digital preservation which are Applicability, Understanding, Authenticity, and Integrity. And to achieve this goal archives shall depend on appropriate standards, specifications, proper tools and well-trained staff to ensure all archival materials are preserved for long terms and can be accessed and used whenever they are required. This strategy can be split in two main strategies Organizational and Technical strategies, details are as follows:

A) **Organizational strategy:** It relates to the administrative aspects required to implement the strategy including budget saving, training, establishment of policies, standards and procedures related to technical aspects. In this strategy the following important elements should be considered

- Establishments of digital archive policies and standards:

  Archival centers should be aware that sitting up Policies and Standards is an important aspect and should always come first whenever planning or establishing a system for shifting from physical to digital format. This will help archive institutes setup policies and objectives and manage the archive materials in a professional and reliable way for long-term preservation.

Currently there are many international standards, that can help archive institutes to implement the highest standards such as ISO 13008:2012 Information and documentation (Digital records conversion and migration process), ISO 13028 Information and documentation guidelines for digitization of records, and ISO 14721:2012 Space data and information transfer systems - Open archival information system (OAIS)–reference model, and many others

Moreover, national, and/or local standards, guidelines, and tools can be used too in this regard. In general, whatever policies and standards used, the archive institutes should include the following elements:

- Creating and managing digital records
- Storing digital records
- Transferring digital archives to the Archives Authority (records migration)
- Preserving and using digital archives

- Training and new capabilities for Archivists:

  With the emergence of new technologies, archivists are required to acquire new skills to deal with digital archives. Also, new jobs and specializations will be needed to the archive related to information technology and how to deal with the vast number of electronic data and information. This to ensure is preserving the archive materials, maintenance and follow up on the validity of the systems.

B) **Technical Strategy:** Relates to the technical aspects that should be undertaken to ensure usability and availability of digital materials whenever technological changes occur. With this strategy the following important elements should be considered:

- Preservation of physical copies

  Users sit in front of their laptops, computers, mobiles to view different types of documents and archival materials from their office, home, or anywhere else, as they view these materials with high resolution, check the details and the color depth, they can zoom in and out, scroll up / down the images, and search for words within the documents or the archival materials, these all happens easily and fast. All this would not been possible if there were no digitization technology present as it now. This technology has helped the archives centers and the users at the same time, it helps the archives centers to protect the original copies, save its details, and provide access to these materials to many users depending on their mandates. It also helps users as these archival materials become much easy to find though libraries, internet and from anywhere in the world and with a click of a button.

- Technology and digital preservation

  It is a series of measures needed to ensure that digital information or archival materials are remains accessible and usable whenever necessary. It combines policies, strategies, and procedures to ensure accessibility, usability of digital content regardless of the challenges to media failure and technological change. The goal of digital preservation is the accurate extraction of reliable content over time, considering migration of Information and data from one electronic system to another. This require a continuous intervention and it should be conducted every few years, depending on the setting policies, to ensure that the system updates the associated programs and devices.

  Moreover, one of the key elements for digital preservation is creating a proper Metadata, which includes technical information for digital objects, information about a digital object's components and its computing environment. It allows organizations or individuals to understand deeply the digital information

Backing up regularly is important element for digital preservation that need to considered too, data of the archival materials backups should be check and ensure that are safe, that's can be done for example by keeping multiple copies in distributed storage.

- Migration of information / documents

  As we know Migration is the act of moving records from one system to another, while maintaining the records' authenticity, integrity, reliability, and usability. Therefore, archival institutions must ensure that whenever documents or archival materials migrated, they shall be migrated with its full context and their digital contents completely and correctly without any loss of its Metadata.

  This kind of strategy requires transferring information or data in every period to other media that works with the new generation of technology, thus, to ensure these digital archival materials can be accessed and used with whatever new technology appears.

4. THE EFFECT OF THE INTERNET ON THE ARCHIVES

Having a website in the internet has become a necessity for any organization that wants to succeed, archives institutes do not deviate from this rule in their works. The Internet has provided easy access to archival materials and for a vast number of users around the world, from the internet users can view, download documents, discuss and many other services that internet can provide. Internet has shifted the archives to a new level that has never been possible as it is now. It has moved archive center to a level of information center and libraries. And below list most important services provided by the Internet that archives institutes benefit for it:

- Browsing websites.
- E-mails.
- Upload documents remotely.
- Dialogue and Instant Messaging (chat sessions).
- Electronic trade.
- E-learning

5. DIGITAL PRESERVATION CHALLENGES

Although the process of preserving archival materials and their containers are not a new challenge. This challenge has been there with the traditional archive since long ago, but the difference with the new digital age is that the challenge is taken into consideration much more than the traditional archive, this challenge can rely on several aspects, these aspects can be summarized as multiple risk on the digital information, it can go sometimes beyond the capability of one entity, for example financial issues, and also the challenge of keeping the digital preservation process running continuously.

The most important in this all, and the main purpose is to maintain the digital archival materials from loss, there are multiple reasons that can lead to digital information loss, the following are the most notable:

- Changes in the organization
- Reorganize the content
- The sponsor stops supporting for the system.

- The disappearance of the technology used
- Data destruction, or damage.
- Natural disasters

6. DATA MANAGEMENT FOR LONG-TERM PRESERVATION IN OMAN

In recent years many of archival materials are created in digital format under many types of software's such as PDF, TIF, Microsoft, AutoCAD drawings and Geographic Information System data (GIS). And these records are increasing continuously and dramatically every year. Therefore, government establishments and companies in Oman which are falling under the regulations of National Archive authority (NRAA) must implement the appropriate policies, standards, and procedure in line with NRAA requirements to ensure long-term preservation for its digital records and to adjust its strategy with the Oman National Archives.

The classification scheme and retention schedule issued by NRAA which describe the titles, function and content and the retention for the digital documents are important because its helps Oman archive institutes and companies to understands the whole life cycle of its documents.

6.1 Life cycle for the digital records

The life cycle for the digital records starts in all governments establishments and companies owned by governments in Oman according to NRAA from the creator who creates or captured the records, these records remain in the electronic system (EDRMS) during their active period, after this period and when the records becomes inactive, these records are transferred from being active records to another form of record status in which they are known as current documents for a period of time according to the retention schedule which was approved by NRAA. After this period, the records will move from being Current records to Intermediate records in which they are archived in the company storage area for a period as well, and according to the approved retention schedule. At last, the records which are selected for permanent archive will be transferred to NRAA. The choice of which disposition whether they are due to destruction, permanent archives, or transfer of selected samples these actions to execute must be in accordance with the retention schedule that is applicable to those records.

6.2 Long-term preservation

To protect digital records from for long-term preservation we should first understand the risks and challenges that could occur during long-term preservation, challenges such as rapid technology development whether they are hardware become absolute or software which change faster, for instant file format. Moreover, we should also understand the issues related to storage condition like temperature, fire, floods, humidity, and dust, in which need to be controlled.

Hence, to ensure a long-term preservation it should implement seriously the following points:

- Ensure in line with international standards such as (ISO 14721 Open archival information system (OAIS) , ISO 15489 Records Management, ISO 20652 Producer-archive interface, and ISO 13028 for digitization of records, ISO 16175-2:2011 Guidelines and functional requirements for digital records management systems and ISO/IEC 14496 Information technology – Coding of audio).

- Ensure in line with NRAA requirements, laws and guideline related to E- repository
- Develop best practice; internal rules such us Risk assessment, Information security policy, Records management policy and Digital preservation policy.
- Ensuring Metadata is being used and described for all archival digital records
- Ensure staff are well trained the have the knowledge and skills to perform tasks related to digital archive.
- Ongoing intervention should be performed every 5, 10 or 20 years "depends on the setting policies in the institutes to ensure updating the system software and hardware

Ensure coordination with NRAA when developing e repository system from the beginning and ensure E- repository system is certified by NRAA.

7. CONCLUSION

We have tried in this study, to highlights the new horizons opened to the archives by the new technologies, how information and the archival materials are managed by the specialists using new supporting methods and principles. Also, tools like IT servers, software, optical discs, digitizers, and networks all were used efficiently for the benefit of the archives. We have also seen some digital preservation challenges that archivists need to focus on, by understanding them well, thus to overcome the obstacles that may prevent long-term digital preservation ensuring Applicability, Understanding, Authenticity, and Integrity. Archive institutes should always practice the best methods and concepts known and keep up to date in dealing with the changing environment of the digital age, and as said:

> *"There is just one conclusion to draw: if we do not manage to handle digital resources properly over time, there will be no records of today or tomorrow left for coming generations. We will get a black hole in the history book" Börje Justrell, 2018 pp.3.*

Given the importance of document preservation and taking into account all the important aspects that are required in preserving digital records as mentioned in detail in this study, the question now is: to what extent can the governments that control the National Archives move to e-government. Many governments around the world are moving to e-government, but this will not be possible if some of the main principles of e-government are not considered. Important principles such as the ability to provide information transparently to all citizens regardless of age, gender, religion, color, and disability. Moreover, the accessibility of this information / archival materials every day of the week, and around the clock, regardless of where you are, or who you are, and this require effort and cost by covering internet all over the country. Also, the electronic platform of the archive web page should always be able to server everyone and adopting public services effectively that meet the needs of citizens, and this means providing integrated services through a unified electronic window.

Perhaps one of the biggest dangers facing the digital world today is the threat of hackers hacking into the information society: either for the purpose of extortion and making money; and that by destroying sites and sabotaging them by spreading various, or access to confidential files and data with intent to fraud. This is a big challenge for the National Archives authorities to ensure that all records which will be created by governments entities are classified ,coded, provided retention period and level of security before shifting them to the National Archive and then to be able to identify users and their needs, and to distinguish type of archival materials that need most to be protected, classifying these materials based on the level of record security of each Record /

Data, and setting method of protection. In addition, National archives has to ensure systems used such as EDMS are in line with their standard this is another challenging task as many government entities are not aware of the regulations from the national archive authorities , and these entities may face issues with the authorities when spend a lot of money to establish systems which are not approved by the authorities and that can be easly breached.

Therefore, procedures or technologies established by entities that their records follows the National Archive authority must be implemented effectively as required by the national archive, and as said mentioned *"Procedures and technology are the core of such a system when developing a record keeping system, one has to keep in mind that procedures and technology have to be implemented in the right perspective". Filip Boudrez 2005 pp. 126.*

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Typology: 1.02 Review Article

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CERTIFICIRANJE ZAUPANJA VREDNIH E-REPOZITORIJEV CERTIFICATION OF TRUSTED E-REPOSITORIES

ABSTRACT

Purpose: *The purpose of this paper is to determine whether trust in certified e-repositories is justified. In this paper, we focus on exploring different ways to establish trusted e-repositories. Through the prism of different ways of certification and auditing of e-repositories, we will compare the values of individual certificates and their values in the context of trust.*

Methods/approach: *In our paper, we used a descriptive method to compare the different standards required to set up a certified e-repository.*

Results: *An overview and brief description of the standards for the certification of trusted e-repositories.*

Conclusions/findings: *Certification of e-repositories is a very broad topic and it requires a lot of technical knowledge to understand it properly. To the first question „Is reduced trust in e-repositories justified?", We can quickly and clearly answer that it is unjustified. We can also add the critical idea that the high level of trust in classical archives is to some extent completely unjustified. The answer to the second statement in the article „Does a certified e-repository withstand long-term storage?" Is a little more complicated. With strict adherence to all good practice commitments, long-term storage is sustainable. On the other hand, we have the postulate of the current social system, which is profit. In this light, we must also consider the long-term storage of e-repositories and the associated potential problems.*

Key Words: *e-repository, archives, trust, standardization, archival science and the future*

CERTIFICAZIONE DI ‚E- REPOSITORY' CREDIBILI

SINTESI

Scopo: *lo scopo di questo documento è quello di determinare se la fiducia negli e-repository certificati sia giustificata. In questo articolo, ci concentriamo sull'esplorazione dei diversi modi per creare archivi affidabili. Attraverso il prisma dei diversi modi di certificazione e controllo degli e-repository, confronteremo i valori dei singoli certificati ed i loro valori nel contesto della fiducia.*

Metodi/approccio: *nel nostro documento, abbiamo usato un metodo descrittivo per confrontare i diversi standard necessari per impostare un e-repository certificato.*

Risultati: *una panoramica e una breve descrizione degli standard per la certificazione di e-repository attendibili.*

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Conclusioni/risultati: *La certificazione degli e-repository è un argomento molto ampio e richiede molte conoscenze tecniche per essere compreso correttamente. Alla prima domanda „La fiducia ridotta negli e-repository è giustificata?", possiamo rispondere rapidamente e chiaramente che è ingiustificata. Possiamo anche aggiungere l'idea critica che l'alto livello di fiducia negli archivi classici sia in una certa misura completamente ingiustificato. La risposta alla seconda affermazione dell'articolo „Un e-repository certificato resiste all'archiviazione a lungo termine?" è un po' più complicata. Con una rigorosa aderenza a tutti gli impegni di buone pratiche, lo stoccaggio a lungo termine è sostenibile. D'altra parte, abbiamo il postulato dell'attuale sistema sociale, che è il profitto. In quest'ultimo caso, dobbiamo anche considerare l'archiviazione a lungo termine degli archivi ed i potenziali problemi associati.*

Parole chiave: *e-repository, archivi, fiducia, standardizzazione, archivistica, futuro*

CERTIFICIRANJE ZAUPANJA VREDNIH E-REPOZITORIJEV

IZVLEČEK

Namen: *Namen prispevka je ugotovitev ali je zaupanje v certificirane e-repozitorije upravičeno. V prispevku se posvečamo raziskovanju različnih načinov vzpostavitvi zaupanja vrednih e-repozitorjev. Skozi prizmo različnih načinov certificiranja in revidiranja e-repozitorjev bomo primerjali vrednosti posamičnih certifikatov in njihove vrednosti v kontekstu zaupanja.*

Metoda/pristop: *V našem prispevku smo uporabili opisno metodo s katero smo primerjali različne standarde, ki so potrebni za vzpostavitev certificiranega e-repozitorija.*

Rezultati: *Pregled in kratek opis standardov za potrebe certificiranja zaupanja vrednih e-repozitorijev*

Sklepi/ugotovitve: *Certificiranje e-repozitorijev je zelo široka tema in za njeno pravilno razumevanje je potrebno veliko tehničnega predznanja. Na prvo zastavljeno vprašanje »Ali je zmanjšano zaupanje v e-repozitorije upravičeno?«, lahko hitro in jasno odgovorimo, da je neupravičeno. Ob tem lahko dodamo še kritično misel, da je visoka stopnja zaupanja v klasične arhive do neke mere povsem neupravičena. Odgovor na drugo trditev v prispevku »Ali certificiran e-repozitorij vzdrži dolgoročno hrambo?« je malce bolj zapleten. Ob striktnem upoštevanju vseh zavez dobrih praks, dolgoročna hramba vzdrži. Na drugi strani imamo postulat trenutnega družbenega sistema, ki je dobiček. V tej luči moramo upoštevati tudi dolgoročno hrambo e-repozitorijev in z njim povezne morebitne težave.*

Ključne besede: *e-repozitorij, arhivi, zaupanje, standardizacija, arhivska znanost in prihodnost*

1 UVOD

V digitalni dobi se količina digitalno proizvedenih vsebin povečuje eksponentno. Na podlagi zbranih podatkov podjetja »Raconteur Media Ltd.« je ocenjena dnevna količina ustvarjenih digitalnih podatkov na celotnem planetu do leta 2025, 463 EB[2]. Dnevno je odposlanih 294.000 milijard elektronskih sporočil in 5.000 milijard iskanj se dnevno opravi na spletu (Desjardins, 2019b). Ob pogledu na zbrane podatke, kaj vse se opravi v eni minuti na internetu v letu 2019, so nam le ti malce bolj domači z vidika merskih enot.

V letu 2019 je bilo v eni minuti odposlanih 118 milijonov elektronskih sporočil (Desjardins, 2019a). Ob tem ne smemo pozabiti na vso analogno gradivo, ki se skozi proces digitalne transformacije[3], digitizira[4] in pretvarja v digitalno gradivo.

V luči enormnih digitalnih vsebin, ki se ustvarjajo vsak dan je potreben tehten razmislek o načinu arhiviranja digitalnega gradiva v zaupanja vredne e-repozitorije. Zaupanja vredni e-repozitoriji morajo vzdržati vsem nenehnim informacijskim spremembah, prav tako je potreben tehten razmislek o varnosti in zanesljivosti podatkov. V prispevku se posvečamo raziskovanju različnih načinov vzpostavitvi zaupanja vrednih e-repozitorjev. Skozi prizmo različnih načinov certificiranja in revidiranja e-repozitorjev bomo primerjali vrednosti posamičnih certifikatov in njihove vrednosti v kontekstu zaupanja.

2 OPREDELITEV PROBLEMA

2.1 Ali je zmanjšano zaupanje v e-repozitorije upravičen?

V prispevku želimo prikazati, da so e-repozitoriji neupravičeno podvrženi manjši stopnji zaupanja. Neupravičenost manjše stopnje zaupanja ovreči skozi plastičen prikaz vseh postopkov pri pridobitvi certifikata o zaupanja vrednem e-repozitoriju. S tem želimo bralcu prispevka prikazati, da so vsi postopki vzpostavitve in preverjanja zaupanja vredni in opravičujejo zaupanje v e-repozitorij.

2.2 Ali certificiran e-repozitorij vzdrži dolgoročno hrambo?

Dolgoročna hramba arhivskega gradiva je poleg primarnega problema zaupanja drugi problem, ki ga želimo skozi prispevek obravnavati. Za nemoteno delovanje in dolgoročno hrambo vsebine v e-repozitoriju je ključnega pomena, da vsebina vzdrži vse izzive sodobnega časa.

3 NEKAJ O ZAUPANJU IN VREDNOTAH

Zaupanje je med drugim v slovarju slovenskega knjižnega jezika opredeljeno kot »biti prepričan, da je kaj dobro in da bo dobro vplivalo na uresničitev določenih pričakovanj: zaupati kakovosti izdelkov / zaupati svoji moči, spretnosti / zaupati svojim nogam / zaupati v razum, usodo« (*Fran/iskanje/zaupati*, b. d.).

S sociološkega vidika je zaupanje na ravni posameznika, pričakovanje na strani A-ja, da bo B v situaciji X naredil Y. To je osnovna definicija zaupanja, ki jo najdemo pri večini avtorjev (Iglič, 2018).

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2 EB – ExaByte (1.0006 Bytov)

3 Digitizacija je torej proces pretvarjanja analognih informacij v digitalne informacije. Ko se ta proces uporabi kot vzvod za izboljšanje političnih, ekonomskih, kulturnih ali drugih procesov, to imenujemo digitalizacija. Rezultat tega procesa pa imenujemo digitalna transformacija, ki jo lahko opredelimo kot proces preusmerjanja organizacije od starega pristopa k novim načinom dela in razmišljanja s pomočjo uporabe digitalnih, socialnih, mobilnih in nastajajočih tehnologij.

4 Digitizacja se nanaša na digitizacijo (ang. digitization), ki označuje pretvorbo analognih tokov informacij v digitalne bite.

Veljko Rus v svoji knjigi »Naše vrednote«, opisuje institucije s sociološkega vidika kot »koncentracija moči, ki je posebej posvečena določeni vrednosti« (Rus, 1971)» ter nadaljuje z učinkovitostjo institucij, »institucije so tem bolj učinkovite, čim bolj tesna je zveza med močjo in vrednoto« (Rus, 1971).

O zaupanju posameznika in institucij prikazuje analogija vrednot in posledično zaupanja na sledeč način »prav tako kot tiči v jedru posameznika vrednostna struktura, ki razvršča njegovo vsakodnevno dejavnost v trajno osebno usmerjenost, prav tako tiči v jedru sleherne institucije sistem vrednot, ki se z močjo aktualizira v normah, pravilih in predpisih. Če pogajajo osebne vrednote doslednost in predvidljivost posameznikovega ravnanja, lahko za institucije trdimo, da imajo analogno funkcijo v območju kolektivne, skupinske ali množične aktivnosti« (Rus, 1971).

Zaupanje v institucije je na nek način pogojeno z družbenimi vrednotami. Institucije svojo moč uveljavljajo z normami, pravili in predpisi.

3.1 Zaupanje v klasične in elektronske arhive

Klasičnim arhivom[5] zaupamo saj že s svojim institucionalnim ugledom omogočajo večjo stopnjo zaupanja. Svoje zaupanje v verodostojnost arhivske dokumentacije zagotavlja na podlagi predpisov, etičnih norm in standardov. Zakon o varstvu dokumentarnega in arhivskega gradiva zagotavlja zaupanje z načeli uporabnosti, trajnosti, celovitosti, dostopnosti in varstva kulturnega spomenika. Arhivski kodeks sprejet v Pekingu septembra 1996 opredeljuje visoke etične standarde za vse, ki so vključeni v arhivski poklic (*Kodeks etike | Pokrajinski arhiv Maribor*, 1997).

Avtentičnost arhivskega gradiva zagotavlja zaupanje, ki se tudi na podlagi fizične vidne opremljenosti posamičnega gradiva[6] še povečuje. Enostavno bi lahko dodali, da se človeško zaupanje povečuje s tem, ker lahko gradivo vidimo in ga občutimo. Morebitna poneverba arhivskega dokumenta bi bila vidna. Žig na takšnem dokumentu bi bil vidno prepoznaven (črnilo bi bilo iz novejšega obdobja). Podpis bi lahko preverjali s pomočjo strokovno usposobljenih in zaupanja vrednih strokovnjakov s področja grafologije. Avtentičnost nosilca v tem primeru papirja ali pergamenta bi lahko na ekvivalenten način pregledali strokovnjaki s področja materialov.

Popolnoma diametralno nasprotje v luči laične javnosti predstavljajo e-repozitoriji (e-arhiv)[7]. Komponenta zaupanja je v javnosti na podlagi vsakodnevnih bombardiranj kaj vse je mogoče poneveriti v osnovi zmanjšano. »Vendar pa v obdobju, ko postajajo tehnologije za ponarejanje e-zapisov vse bolj razširjene, ni presenetljivo, da ima javnost vedno manj zaupanja v te zapise« (Hajtnik, 2019).

Zaupanje v e-repozitorij je pridobljeno in zaupano na podlagi uspešnega certificiranja. Kako in na kakšen način se podeljuje, kaj vse je potrebno opraviti za pridobitev certifikata s katerim postane e-repozitorij zaupanja vreden je laični javnosti neznanka, čeprav je podvržena večjemu številu različnih mednarodno priznanih standardov.

4 CERTIFICIRANJE E- REPOZITORIJEV

Vse več ustvarjenih podatkov ima za logično posledico vso večjo zainteresiranost različnih tipov organizacij za vrednotenje lastnih e-repozitorijev. S tem nas avtomatično usmerja tudi na področje revidiranja in certificiranja e-repozitorijev.

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5 Klasičen arhiv v tem prispevku pojmujemo v pomenu arhiv kot institucije.

6 fizične vidne opremljenosti posamičnega gradiva v tem prispevku v tem prispevku pojmujemo vse fizične lastnosti in označbe na dokumentu, kot so npr. žig, podpis, podpis

7 Termin e-repozitorij v tem prispevku enačimo z e-arhivom.

Podelitev zaupanja v e-repozitorij dosežemo s certificiranjem. Certificiranje je del zaupanja, ki je podeljeno za določeno časovno obdobje, in se v določenem časovnem intervalu obnavlja. Ob tem je pomemben razmislek o tem ali uporabiti samooceno ali postopek revizije. Za potrebe certificiranja različnih tipov e-repozitorijev imamo na voljo različne tipe certifikatov. Certifikati se delijo med seboj glede na stopnjo zaupanja, način obnove in časovno obdobje.

4.1 E-repozitoriji in njihov namen

Kot smo omenili v predhodnem poglavju je v svetu več vrst e-repozitorijev, ki se ločijo glede na svoj namen in posledično je na njihov namen vezana stopnja zaupanja.

Organizacija ali posameznik na svojem zasebnem strežniku[8], ki omogoča hrambo digitalnih vsebin zasebne narave, zelo verjetno ne potrebuje vpeljevanja ISO standarda v svoje informacijsko okolje ali kateregakoli drugega standarda. V tem primeru gre za zasebni arhiv, ki ni podvržen vsem zahtevam javnega arhiva. Sama vpeljava ISO standarda je namreč velik organizacijski zalogaj kakor tudi finančni.

Z drugega vidika pa morajo javnopravne osebe[9] zagotavljati zaupanja vredne javne e-repozitorije, ki so podvrženi organizacijskim, tehničnim in finančnim zalogajem.

Delitev in ponovna uporaba digitalnih vsebin podatkov (»reuse«) je koncept, ki se hitro uveljavlja. Njihova zanesljivost in kvaliteta se zato vedno znova znajde pod drobnogledom. V duhu kooperativnosti in zaupanja moramo na nek način zagotoviti njihovo zanesljivost in verodostojnost.

Odgovor na zgoraj navedeno zahtevo se skriva v standardizaciji pravil ter njihovemu nenehnemu revidiranju.

4.2 Standardi in certificiranje s področja e-repozitorijev

Na področju javnih e-repozitorijev so javnopravne osebe podvržene uveljavitvi najrazličnejših standardov ter vsakokratnemu revidiranju.

V sliki 1 so prikazani različni standardi na področju revizije zaupanja vrednih e-repozitorijev. Tabela je razdeljena v skladu s predlogom evropskega okvirja za revizijo in certificiranje. Nanizane so tri stopnje certificiranja za zaupanja vreden digitalni repozitorij. Vsaka raven ima različne zahteve za reševanje različnih potreb. Tri stopnje certificiranja so Core, Extended in Formal, imenovane tudi bronasta, srebrna in zlata. (*A Primer on the Certifications of a Trusted Digital Repository (TDR) | Data Science at NIH*, 2017).

Vse stopnje se ločujejo med seboj po stopnji zahtevnosti pridobitve določenega certifikata, glede na zahteve e-repozitorija.

8 Zasebni strežnik v tem prispevku razumemo kot privatni strežnik zasebnega podjetja ali posameznika, ki hrani le privatne digitalne vsebine.

9 Javnopravne osebe so državni organi, samoupravne lokalne skupnosti ter pravne osebe javnega prava in zasebnega prava ter fizične osebe, ki so nosilci javnih pooblastil ali izvajalci javnih služb (ZVDAGA, 2. člen).

LEVEL	CORE	EXTENDED	FORMAL
Organization(s)	WDS: ICSU World Data System DSA: Data Seal of Approval	DIN : German Institute for Standardization	ISO : International Organization for Standardization
No. of Requirements	16	34	100+
Standards	Mandatory Requirements	DIN 31664	ISO 14721 (OAIS) ISO 16363 ISO 16919 ISO 17021
Audit Process	Self-assessment + independent peer review (2)	Self-assessment + independent peer review (2)	ISO certified audit with accredited auditors
Certifiction Cost	Free	€500	$10,000
Designation	World Data System logos or Data Seal of Approval	nestor Seal for Trustworthy Digital Archives	TBD
Certification lifespan	3 years	Indefinite	3 years
No. of Certified Repositories	130+ (WDS | DSA)	2	Coming Soon

Slika 1:Pregled različnih nivojev certificiranja (vir: https://datascience.nih.gov/trusted_digital_repository)

4.2.1 Core ali bronasta stopnja

Bronasto stopnjo revidiranja in izdaje certifikata CoreTrustSeal[10] predpisujeta organizaciji WDS[11] in DSA[12]. Certifikat ima minimalno 16 zahtev, postopki samoocenitve so opisani v dokumentu z naslovom, »Core Trustworthy Data Repositories Requirements«. Število certificiranih repozitorijev je impresivno. Pri pregledu kakšni repozitoriji so certificirani v tem skklopu je razvidno, da gre za podatke, ki so znanstvene narave. Zanesljivi podatki tipa, digitalnih storitev, produkti in informacije s področja družboslovja in naravoslovja.

4.2.2 Extended ali srebrna stopnja

Srebrna stopnja revidiranja in izdaja certifikata Nestor Seal of Trustworthy Digital Archives. Izraz "nestor" je sestavljen iz besede network in storage. Nestor je baziran na nemškem DIN standardu, uporablja ga kompetenčna mreža najrazličnejših organizacij[13].

10 CoreTrustSeal je mednarodna, nevladna, neprofitna skupnost, ki spodbuja trajnostne in zanesljive podatkovne infrastrukture.(coretrustseal.org, 2020)

11 Svetovni podatkovni sistem (WDS) je interdisciplinarno telo Mednarodnega znanstvenega sveta (ISC; prej ICSU), ki ga je leta 2008 ustanovila 29. Generalna skupščina v Maputu v Mozambiku. (icsu-wds.org, 2020)

12 DSA - Data Seal of Approval

13 Seznam najpomembnejših partnerjev v Nestor mreži so: Bayerische Staatsbibliothek, Library Service Centre Baden-Württemberg, Federal Archive, Deutsche Kinemathek – Museum für Film und Fernsehen German National Library, FernUniversität Hagen, GESIS - Leibniz Institute for the Social Sciences, Goportis - Leibniz Library Network for Research Information, Hochschulbibliothekszentrum des Landes Nordrhein-Westfalen, Göttingen University/Göttingen State and University Library, Humboldt Universität Berlin, Institut für Deutsche Sprache, Institut für Museumsforschung (Stiftung Preußischer Kulturbesitz) Zuse Institute Berlin, Landesarchiv Baden-Württemberg, Landesarchiv Nordrhein-Westfalen, PDF/A Competence Center, Rechenzentrum University of Freiburg, Sächsische Landesbibliothek – Staats- und Universitätsbibliothek Dresden

Nastanek nestor mreže ima svoj začetek projekta v letih 2003 – 2009 pod okriljem BMBF (Zvezno ministrstvo za izobraževanje in raziskovanje). Nestor mreža se osredotoča na dolgoročno hrambo in razpoložljivost digitalnih virov v Nemčiji.

4.2.3 Formal ali zlata stopnja

Zlata stopnja revidiranja in izdaja ISO certifikata. Predpisuje in izdaja ga mednarodna organizacija ISO[14]. Predstavlja najzahtevnejšo stopnjo certificiranja, saj mora prosilec izpolnjevati preko 100 zahtev in je povezana z večjim finančnim, organizacijskim in kadrovskim vložkom. Podelitev certifikata za zaupanja vreden e-repozitorij vključuje različne ISO standarde, ki so opisan v nadaljevanju.

4.3 Opis ISO standardov

Pred predstavitvijo vseh relevantnih standardov na področju revidiranja e-repozitorijev, ki jih predstavlja avtor Dr. Dawei Lin v članku z naslovom »A Primer on the Certifications of a Trusted Digital Repository (TDR)«, je vredno razložiti potek nastanka ISO standarda.

ISO (International Organization for Standardization) je mednarodna organizacija za standardizacijo, sestavljena je iz nacionalnih organov za standarde. Delo za pripravo novega standarda vodi tehnični komite v sklopu ISO. Komite je sestavljen iz nacionalnih organov, ki so zainteresirani za pripravo in uveljavitev novega standarda. V komite so lahko vključeni tudi drugi deležniki, katere sprejem novega standarda zadeva. Poudariti je potrebno, da ISO zelo tesno sodeluje z IEC[15] na področju elektrotehnične standardizacije. V nadaljevanju komite pod okriljem ISO pripravi osnutek novega standarda, ki mora biti potrjen s 75% glasov članic komiteja. (*ISO 16363:2012(en), Space data and information transfer systems – Audit and certification of trustworthy digital repositories*, 2012).

4.3.1 ISO 14721 (e-repozitorij)

ISO standard 14271 med drugim zagotavlja okvir za razumevanje in večjo ozaveščenost o arhivskih konceptih, ki so potrebni za dolgoročno hrambo in dostopnost do digitalnih vsebin (*ISO - ISO 14721:2012 - Space data and information transfer systems – Open archival information system (OAIS) – Reference model*, 2012).

4.3.1.1 Kratka zgodovina nastanka standarda ISO 14721

Sprehod skozi zgodovino certificiranja nas vrne v leto 1997, ko je profesor planetarnih znanosti John Lewis z univerze v Arizoni objavil knjigo z naslovom »Mining the sky«. V dlje časa trajajoči raziskavi za knjigo se je podal med drugim tudi na lov za načrti nosilne rakete Saturn V[16]. V svoji knjigi je med drugim objavil, da so načrti izgubljeni. Michael Paine je na spletni strani space.com v članku z naslovom Saturn 5 »Blueprints Safely in Storage« povzel izjave vseh vpletenih (Paine, 2000). Paul Shawcross, uradni predstavnik Nase[17] je navedbe o izgubljenih načrtih demantiral in podkrepil z dejstvom, da je vsa dokumentacija o nosilni raketi Saturn V shranjena na mikrofilmih v Marshall Space Flight Center. Vsa arhivska dokumentacija, ki jo je v obsegu 82m^3, pa je shranjena v zveznem arhivu, ki se nahaja v East Point v zvezni državi Georgia.

Problem, ki ga je Shawcross navedel v demantiju na trditve prof. Lewis-a, je nezmožnost ponovne izdelave vseh delov za nosilno raketo Saturn V. Vzrok izhaja iz dejstva, da večine

14 ISO – Internation Organization for Standards

15 International Electrotechnical Commission

16 Saturn V je bila raketa, ki jo je zgradila NASA z namenom poslati ljudi na luno. Saturn V je bila tip rakete »Heavy Lift Vehicle«, kar pomeni, da je bila zelo močna. V celotni zgodovini vesoljski poletov ni bilo močnejše rakete, ki je uspešno poletela. (nasa.gov, 2020)

17 NASA – National Aeronautics and Space Administration

delov ni možno izdelati zaradi tehnološke zastarelosti, prevelikih stroškov ponovne izdelave, neobstoja podizvajalcev ali preprosto zato, ker so določene dele porabili za druge namene. V povzetku vsega zapisanega v članku bi lahko strnili, da so stroški povezani s ponovno izdelavo vseh potrebnih delov preprosto preveliki in zato neupravičeni.

S podobnimi težavami so se spoprijeli tudi strokovnjaki NSSDC[18] in PDS[19] na oddelku za geoznanosti na Washingtonski univerzi. NASA je leta 1976 pristala na planetu Mars z dvema Viking sondama. V okviru misije so bili izvedeni tudi trije biološki testi s katerimi bi potrdili ali ovrgli obstoj mikroorganizmov na planetu. Leta 2000 je NASA dobila zahtevo za ponovni pregled odvzeti vzorcev prsti z Marsa. Zahteva je bila tudi, da so posredovani podatki v digitalni obliki. Originalni podatki z leta 1976 so bili arhivirani na 24 zvitkih mikrofilma in nastopila je težava. Stroški, ki bi nastali ob digitiziranju podatkov z mikrofilmov bi bili enormni poleg tega bi bil končni digitalni podatki zelo nekvalitetni in posledično nezanesljivi. Problem so rešili s pomočjo zasebnega arhiva Dr. Pat Straat, ki je že ob Viking misiji shranjevala vse podatke misije. (*Viking Lander Biology Data Restored by NSSDC and PDS*, 2000).

NASA se je kmalu po objavi knjige in spričo vseh polemik v javnosti pričela zavedati, da imajo težavo na področju vodenja in hranjenja dokumentarnega gradiva. V letu 2000 je The Consultative Committee for Space Data Systems (CCSDS) objavila članek z naslovom »The Open Archival Information System and the NSSDC«, ki je vseboval dotedanje napore strokovnjakov iz različnih institucij pri izdelavi referenčnega modela za odprti arhivski informacijski sistem (OAIS) (*Archive Reference Model Gains Wide Acceptance*, 2000).

Model OAIS ne predstavlja načrta izvajanja; je referenčni model, ki deluje na konceptualni ravni. . Referenčni model je »posplošen model določenega procesa, ki temelji na najboljšem primeru tovrstnih procesov, in se uporablja za zgled modeliranja konkretnih procesov« (*Termania - Bibliotekarski terminološki slovar - referenčni model*, b. d.).

»OAIS je bil leta 2003 sprejet kot standard ISO 14721, nato pa leta 2012 posodobljen. Navedeni namen modela OAIS je »olajšati širše razumevanje tega, kar je potrebno za ohranitev in dostop do e-zapisov za dolgoročno obdobje«. (*ISO - ISO 14721:2012 - Space data and information transfer systems – Open archival information system (OAIS) – Reference model*, 2012).«(Hajtnik, 2019)

ISO standard 14721 je zbirka tehničnih priporočil in dobrih praks, ki jih potrebujemo ob vzpostavitvi e-repozitorija. Vsebina priporočil in dobrih praks ni omejena le na digitalne vsebine, temveč ponuja tudi okvir za trajno hrambo fizičnih vsebin.

E-repozitorij mora zagotoviti trajno in dolgoročno hrambo digitalnih vsebin. Vsa tehnična priporočila in dobre prakse bazirajo na odprtem arhivskem informacijskem sistemu OAIS, katerega je vzpostavil CCSDS[20]. Skrb za nadaljnji razvoj standarda je v rokah CCSDS in ISO. Standard med drugim zagotavlja referenčni okvir za razumevanje in večjo ozaveščenost o arhivskih konceptih, ki so potrebni trajno hrambo in dostopnost do digitalnih vsebin.

4.3.2 ISO 16363:2012 (revizija in certificiranje)

ISO standard 16363: 2012 določa priporočeno prakso za ocenjevanje zanesljivosti e-repozitorijev. Ena izmed podlag za sprejem standarda je dokument »CCSDS 652.0-M-1, September 2011« z naslovom »Audit and certification of trustworthy digital repositories« ter podnaslovom »Magenta book«. Dokument je skupek priporočil s strani CCSDS, na podlagi katerih se lahko izvede revizija in certifikacija zaupanja vrednega e-repozitorija (The Consulative Committee for Space Data Systems, 2011).

18 NSSDC – Nasa space Science Data Coordinated Archive

19 PDS – Planetary Data System

20 CCSDS – The Consultative Committe for Space Data Systems

V nadaljevanju je bil izdelan dokument TRAC[21], ki je nastal pod okriljem RLG[22] in NARA[23], in vključuje zaveze iz OAIS ter dokumenta »Trusted Digital Repositories: Attributes and Responsibilites« (*Trusted Digital Repositories: Attributes and Responsibilities An RLG-OCLC Report*, 2002)

Standard ISO 16363:2012 je logično nadaljevanje TRAC, ki je bil opredeljen v dogovoru iz OAIS, kjer je bila opredeljena časovnica za sprejem novega ISO standarda, ki bo omogočal certifikacijo in revizijo e-repozitorijev.

4.3.3 ISO 16919

Standard ISO 16919 je namenjen predvsem tistim organizacijam, ki bodo izvajale revizijo in certifikacijo e-repozitorijev. Priporočljiv je tudi za vse tiste, ki delujejo v e-repozitorijih ali so odgovorni za upravljanje z e-repozitoriji. Namen standarda je objektivno merjenje zanesljivosti e-repozitorija in vključuje manjše število posebnih dodatkov za organizacije, ki bodo izvajale revizijo in certificiranje (*ISO 16919,* 2014)"container-title":"ISO","language":"en","-title":"ISO 16919:2014","title-short":"ISO 16919","URL":"https://www.iso.org/cms/render/live/en/sites/isoorg/contents/data/standard/05/79/57950.html","accessed":{"-date-parts":[["2020",10,12]]},"issued":{"date-parts":[["2014",11,1]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"} .

4.3.4 ISO 17021

Standard ISO 17021 je namenjen certifikacijskim organom, ki izvajajo revizijo in certificiranje sistemov upravljanja. Standard vsebuje nabor zahtev, ki zagotavljajo, da se postopek certificiranja sistemov upravljanja s strani certifikacijskega organa izvede na kompetenten, dosleden in nepristranski način. („ISO 17021", b. d.)consistent and impartial manner.","container-title":"ISO Update","language":"en-CA","title":"ISO 17021: Requirements for Certification Bodies","title-short":"ISO 17021","URL":"http://isoupdate.com/standards/iso17021/","accessed":{"date-parts":[["2020",10,12]]}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}

4.4 Certificiranje v tujini

Velikokrat smo zasledili različne trditve na področju certificiranja arhivov, da imamo v Republiki Sloveniji zelo rigorozne zahteve. Poglejmo si, kako je rešeno certificiranje arhivskih sistemov v tujini.

Certificiranje arhivskih sistemov v Veliki Britaniji je proces, ki se je uradno začel izvajati v letu 2013 s strani Nacionalnega arhiva. Cetrificianje je posledica potrebe po enotnem standardu, ki bo zagotavljal visoko stopnjo zaupanja na celotnem področju Združenega kraljestva. Opredeljeni standard je namenjen vsem vrstam arhivskih sistemov med drugim tudi e-repozitorijem.

Za lažjo predstavo smo si ogledali potek certificiranja v Veliki Britaniji. Nacionalni arhiv Velike Britanije »The National Archives« je predpisal standarde storitve arhiva (Archive Service Accreditation). Standardi veljajo za Veliko Britanijo, Škotsko ter Wales in vključujejo priporočila, navodila in dobre prakse za upravljanje in izboljšave pri vodenju arhivov, njihovi dolgoročni hrambi ter ohranjanju podatkov.

Vsak potencialni ponudnik storitev, ki ponuja storitve dolgoročne hrambe dokumentov in želi biti certificiran, mora izpolnjevati zahteve, ki jih podaja Nacionalni arhiv Velike Britanije.

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21 TRAC - Trustworthy Repositories Audit & Certification: Criteria and Checklist

22 RLG - Research Libraries Group

23 NARA - National Archives and Records Administration

Zakonodaja na tem področju, »Regulation 2015 - The Re-use of Public Sector Information Regulations« (*The Re-use of Public Sector Information Regulations 2015*, b. d.) v kateri so opredeljeni pomembni koncepti v javnem interesu za posamično institucijo. Vsaka institucija proizvede določen nabor informacij v javnem interesu ali PSI[24]. PSI ima posebno vlogo v objavljenih priporočilih Nacionalnega arhiva za akreditacijo e-repozitorija. Informacije, ki so kreirane v javnem sektorju, imajo pomembno strateško vlogo za gospodarstvo. Vrednost vseh informacij proizvedenih v javnem sektorju je bila ovrednotena v letu 2011 na 1.92 mrd € (Archives, b. d.).

4.5 Certificiranje doma

V Republiki Sloveniji je Arhiv Republike Slovenije zadolžen med drugim za certificiranje storitev e-repozitorija. Protokole in pravila o dolgoročni hrambi elektronskega gradiva določajo temeljni in pod temeljni akti. Temeljna akta sta Zakon o elektronskem poslovanju in elektronskem podpisu ter Zakon o varstvu dokumentarnega in arhivskega gradiva ter arhivih.

Za uspešno certificiranje je potrebno izpolnjevati več predpogojev, kot so; registracija ponudnika storitev, sprejeta notranja pravila, certificirana vsa strojna oprema ter certificirana vsa programska oprema. Vsi navedeni postopki pa so opredeljeni v več pod temeljnih aktih in sicer Uredba o varstvu dokumentarnega in arhivskega gradiva, Enotne tehnološke zahteve, Splošni pogoji za izvajanje akreditacije, Pravilnik o strokovni usposobljenosti za delo z dokumentarnim gradivom.

Po uspešno opravljeni certifikaciji se izda certifikat za opravljanje storitev e-repozitorija. Izdani certifikat se periodično preverja in podaljšuje njegova veljavnost.

Vsak predpogoj, ki je opredeljen v podtemeljnih aktih, je samostojen proces in vključuje priporočila in dobre prakse, ki so vključene v ISO standardih. Preverjanje izvajajo akreditirani zunanji revizorji, ki imajo preverljive izkušnje na področju certificiranja e-repozitorijev.

5 ZAKLJUČEK

Certificiranje e-repozitorijev je zelo široka tema in za njeno pravilno razumevanje je potrebno veliko tehničnega predznanja, čeprav pričujoč prispevek opisuje le en sam postopek v svojem naslovu.

Ob raziskovanju in prebiranju različnih dokumentov za prispevek in iskanja odgovorov na zastavljeni vprašanji, se mi je porodilo še več vprašanj, kot sem sprva mislil. Dodatna vprašanja pa so posledica pojava pandemije Corona virusa, ki trenutno vpliva na vse pore našega življenja.

Na prvo vprašanje »Ali je zmanjšano zaupanje v e-repozitorije upravičeno?«, lahko hitro in jasno odgovorim, da je neupravičeno. Ob tem lahko dodam še kritično misel, da je visoka stopnja zaupanja v klasične arhive do neke mere povsem neupravičena.

Svojo prvo trditev argumentiram na podlagi vseh pregledanih dokumentov, ki so navedeni med viri in literaturo. Za vzpostavitev zaupanja vrednega e-repozitorija v Republiki Sloveniji ali v tujini mora zainteresirana stranka[25] izpolnjevati mnogo predpisov in zahtev s področja informacijske varnosti, upravljanje s tveganji, upravljanje z dokumentarnim in arhivskim gradivom, ipd.

Ob rigoroznih zahtevah, ki vključujejo preverjanje vseh predpisanih postopkov, si stranka v postopku le stežka privošči neaktivnost in površnost. Morebitna neaktivnost ali površnost pri izvajannju zahtev standarov je v naslednjem koraku ustrezno korigirana.

24 PSI – Public Sector Information

25 Stranka je v tem prispevku smatrana kot subjekt, ki bo vzpostavil e-repozitorij

Stranka je v vsakem primeru prisiljena spoštovati vse zaveze, ki so opredeljene v pravilnikih. Zaveze v pravilnikih niso le črke na papirju temveč skupek navodil dobre prakse, kako reševati različne probleme pred njihovim nastankom. Zelo nazorno lahko omenimo trenutno stanje pandemije; skozi primere dobre prakse so upoštevani tudi postopki in pravila igre v primeru izbruha pandemije ali izrednih situacij. Skozi pripravo na ustrezno certificiranje nas sami postopki vodijo in usmerjajo tudi k reševanju morebitnih izrednih situacij. Omeniti je potrebno, da vzpostavitev e-repozitorija zahteva organizacijske, kadrovske in finančne vložke v izgradnjo zaupanja vrednega e-repozitorija in le s težka bo zainteresirana stranka upravičila vložke v primeru, da ne gre za resnost vzpostavitve. S tem želim poudariti, da z veliko gotovostjo stranka, ki prične z vzpostvitvijo e-repozitorija, deluje v veliki resnosti in ne gre za nikakršno nonšalantnost.

Druga trditev v prispevku »Ali certificiran e-repozitorij vzdrži dolgoročno hrambo?« je malce bolj zapletena. V prvem delu lahko trdimo, da ob striktnem upoštevanju vseh zavez dobrih praks, dolgoročna hramba vzdrži. S spoštovanjem vseh zavez, ki jih stranka prevzame ob pripravi na certificiranje, kjer so upoštevani vsi riziki, s pomočjo upravljanja s tveganji, se vsa informacijska varnost striktno izvaja, posodabljanje strojne in programske opreme je v skladu z vsemi normativi je trditev povsem upravičena. Periodično certificiranje e-repozitorija omogoča pregled vseh zavez in pravil igre, ki skrbijo, da hramba dokumentov ni ogrožena.

Na drugi strani imamo postulat trenutnega družbenega sistema, ki je dobiček. V tej luči moramo upoštevati tudi dolgoročno hrambo e-repozitorijev. V primerjavi s klasičnimi arhivi, ki so arhiski dokumenti postavljeni na police v zaščitenem prostoru in jih imamo enostavno pod ključem ter za dodatno varnost najamemo ali organiziramo dodatno varnostno službo, je pri e-repozitorijih malce drugače.

Računalništvo in z njim povezane tehnologije se dnevno močno razvijajo, posledično je področje varnosti podatkov precej povečano in se možnost vdorov in poneverb povečuje. Kot skrbniki e-repozitorija moramo skrbeti in ažurno prilagajati vse varnostne mehanizme, ki nam omogočejo ustrezno varovanje. Ob tem ne smemo pozabiti, da takšna dejanja od nas zahtevajo že vzpostavljeni in certificirani postopki. Prav gotovo nas takšna obveza sili v planiranje zadostnih finančnih sredstev, kar je v primeru klasičnega arhiva prav gotovo manjši kakor pri e-repozitoriju.

Z drugega stališča lahko ravno na primeru varnosti primerjamo, kako je možna večja manipulacija pri fizičnem arhivu kot v elektronskem arhivu. Povsem na enostaven način lahko lažje ponaredimo fizičen kot digitalen dokument. Že sam lažji dostop o fizičnega dokumenta kot do digitalnega nam to na nek način omogoča. Pri digitalnem dokumentu je težje zagotoviti »verodostojnost« poneverjenga dokumenta. V mislih imam samo ponverbo »hash« oznake na dokumentu, saj je njena kreacija vezana na več parametrov.

Prispevek zaključujem z mislijo, da vzpostavitev zaupanja vednega e-repozitorija v svojih postopkih predpisuje množico dobrih praks in postopkov, ki bi se lahko uporabljali ne glede na potrebo, torej ali gre za e-repozitorij, knjižnico, strežniško sobo ali postopke v državni upravi.

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Typology: 1.02 Review Article

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ARCHIVES AND THE DIGITAL AGE IN THE CZECH REPUBLIC

ABSTRACT

Digitisation in the Czech Republic took on in the late twentieth and, more significantly, in the early twenty-first centuries, not only in the field of archives but of libraries too. A major role in this respect was played by regular conferences dedicated to the science of information and held annually at the National Archive. While the libraries focused, predominantly, on digitisation of precious manuscripts and old prints, and were supported in this by a grant programme subsidised by the Ministry of Culture Czech Republic (Manuscriptorium), the archives have focused mainly on digitisation of parish registers, which was done in various ways. Digitisation of other archival documents followed and these are now being made accessible o scholars through various web portals, including international ones. An important role in digitisation of documental material was played by the international organisation ICARus and its Monasterium programme. Besides digitisation it deals with archiving of electronic documents (digital-born), although the establishment of the National Digital Archive was accompanied by various problems. The training of suitable specialists to serve the digital age in the Czech Republic is no easy matter either, although even universities focus on it.

Key words: *archiv science, digitisation, State Information Policy of the Czech Republic, libraries, rare documents, National Digital Library, National Archive, state regional archives, National Digital Archive, teaching of archivists*

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ARCHIVI ED ERA DIGITALE NELLA REPUBBLICA CECA

ABSTRACT

La digitalizzazione nella Repubblica Ceca ha preso piede alla fine del ventesimo secolo, e più significativamente nei primi anni del ventunesimo secolo, non solo nel campo degli archivi, ma anche delle biblioteche. Un ruolo importante in questo senso è stato svolto dalle conferenze periodiche dedicate alla scienza dell'informazione, tenute annualmente presso l'Archivio Nazionale. Mentre le biblioteche si concentravano, prevalentemente, sulla digitalizzazione di preziosi manoscritti e vecchie stampe, e sono state sostenute in questo da un programma di sovvenzioni sovvenzionate dal Ministero della Cultura della Repubblica Ceca (Manuscriptorium), gli archivi si sono concentrati principalmente sulla digitalizzazione dei registri parrocchiali, che è stata fatta in vari modi. E' seguita la digitalizzazione di altri documenti d'archivio, e questi sono ora resi accessibili agli studiosi attraverso vari portali web, compresi quelli internazionali. Un ruolo importante nella digitalizzazione del materiale documentale è stato svolto dall'organizzazione internazionale ICARus e dal suo programma Monasterium. Oltre alla digitalizzazione, si tratta dell'archiviazione di documenti elettronici (nativi digitali), anche se l'istituzione dell'Archivio Digitale Nazionale è stata accompagnata da vari problemi. La formazione di specialisti idonei per servire l'era digitale nella Repubblica Ceca non è facile, anche se anche le università si concentrano su di essa.

Parole chiave: *archiv science, digitalizzazione, State Information Policy of the Czech Republic, biblioteche, documenti rari, Biblioteca digitale nazionale, Archivio nazionale, archivi regionali statali, Archivio digitale nazionale, insegnamento degli archivisti*

ARHIVI IN DIGITALNA DOBA V REPUBLIKI ČEŠKI

IZVLEČEK

Digitalizacija na Češkem se je začela že v poznem dvajsetem, predvsem pa na začetku enaindvajsetega stoletja, vendar ne samo na področju arhivov, ampak tudi knjižnic. Pri tem so bile pomembne redne konference o informacijski znanosti, ki so jih vsako leto organizirali v nacionalnem arhivu. Medtem ko so se knjižnice osredotočale predvsem na digitizacijo dragocenih rokopisov in starih grafik, kar je bilo podprto s programom nepovratnih sredstev, ki ga je subvencioniralo Ministrstvo za kulturo Češke republike (Manuscriptorium), so se arhivi osredotočili predvsem na digitalizacijo župnijskih registrov, kar je bilo izvedeno na različne načine. Sledila je digitalizacija drugih arhivskih dokumentov, ki so zdaj dostopni ali dostopni učenjakom prek različnih spletnih portalov, tudi mednarodnih. Pomembno vlogo pri digitalizaciji dokumentarnega gradiva je imela mednarodna organizacija ICARus in njen program Monasterium. Poleg digitalizacije se ukvarja z arhiviranjem elektronskih dokumentov (rojenih v digitalni obliki), čeprav je ustanovitev Nacionalnega digitalnega arhiva spremljala različna težava. Tudi usposabljanje ustreznih strokovnjakov za digitalno dobo na Češkem ni lahka zadeva, čeprav se na to osredotočajo celo univerze.

Ključne besede: *arhivska znanost, digitalizacija, državna informacijska politika Češke, knjižnice, redki dokumenti, nacionalna digitalna knjižnica, nacionalni arhiv, državni regionalni arhiv, nacionalni digitalni arhiv, poučevanje arhivistov*

ARCHIVY A DIGITÁLNÍ VEK V ČESKÉ REPUBLICE

ABSTRAKT

Digitalizace v České republice se začala rozvíjet od konce 20. století a zejména od začátku 21. století, a to nejen v oblasti archivnictví, ale i knihovnictví. Významnou roli v této oblasti sehrály pravidelné konference věnované problematice informačních věd, které se každoročně konaly v Národním archivu. Zatímco knihovny se zaměřily zejména na digitalizaci vzácných rukopisů a starých tisků a za tímto účelem vznikl i dotační program podporovaný ministerstvem kultury (Manuscriptorium), archivy se soustředily v prvé řadě na digitalizaci matrik, která byla prováděna různými způsoby. Postupně následovala i digitalizace dalších archivních dokumentů, které jsou zpřístupňovány badatelům prostřednictvím různých webových portálů, včetně mezinárodních. Významnou roli při digitalizaci listinného materiálu uloženého v českých archivech sehrála mezinárodní organizace ICARus a její program Monasterium. Kromě digitalizace se řeší také archivace elektronických dokumentů (digital-born), přestože zřízení Národního digitálního archivu doprovázely různé problémy. Snadným úkolem v rámci „digitálního věku" v České republice není ani příprava vhodných specialistů, přestože se na ni zaměřují i vysoké školy.

1 INTRODUCTION

Same as in other countries, the Czech Republic saw the beginnings of digitisation at the very end of the second millennium and fully developed with the advent of the third millennium. First steps associated not just with the very application of this technology but also with related theoretical and practical issues were taken in the area of librarianship, namely concerning the transfer of rare and often difficult to access analogue documents into digital form which allowed for their easier access and, in some cases, the much needed protection. The first digitisation projects appeared in the Czech Republic in the 1990s in large central libraries (digitisation being too expensive for smaller institutions) and first they focused on precious, rare and endangered manuscripts. Non-standardised metadata standards were used for the description of documents.

2 STATE INFORMATION POLICY – THE PUBLIC INFORMATION NETWORK OF LIBRARIES

The increase in quality and quantity of digitisation was made possible by the technological development after 2000. The decisive factor for its wide application was the approval of the National Information Policy of the Czech Republic (the Czech Republic government resolution no. 525 of May 31, 1999), related to the policy of the European Union under the slogan "information society for all". On the basis of this (the Czech Republic government resolution no. 352 of April 10, 2000, on the concept of the national information policy in education), the programme of the "Public Information Service of Libraries (VISK)" was approved. Its main goal was to innovate the public information service of libraries on the basis of information technologies, besides other goals it was to focus on "keeping and making accessible the national cultural heritage concentrated in library collections". This meant to ensure, through digitisation, "protection and wide accessibility of rare library documents and other collections threatened with disintegration and representing a major part of the national cultural legacy" and – in relation to it – to "build and put into operation a digital library and an archive, which will ensure storing and access to rare library documents to both specialised user groups and the general public". The VISK programme was thus to include participation of the UNESCO programme "The Memory of the World" and the European Commission project "Europeana". In regard to individual goals, the VISK programme was divided into nine interconnected sub-programmes, of which the tasks quoted above were fulfilled by VISK4 (Digital Library and Archive for Information Services of Libraries), VISK6 (National Programme of Digital Access to Rare Documents – "Memoriae Mundi Series Bohemica") and VISK7 (National Programme for Micro-filming and Digital Access to Documents in Risk of Acid Paper Degradation – "Kramerius") (*Cubr; Melichar – Hutař*).

2.1 Digitisation of Rare Documents in Libraries

While VISK7 made it possible to carry out digitisation namely of old periodicals and younger printed publications (made accessible by the "Kramerius" digital library since 2003), VISK6 is focused on digitisation of rare manuscripts and old prints (until 1800), or even very rare newer documents that are located in the Czech Republic, regardless of where they originated from or where they were made. The risk of decomposition and requirements for their wider use were the basic criteria of selection. The allocation of funds for digitisation is requested by institutions which house the given documents. The applicants are obliged to ensure the creation of digital archive data, which will respect and use the basic principles, standards and recommendations. The proposals of the applicants are assessed by a commission at the Ministry of Culture, consisting of experts from various institutions who can also recommend further important documents to be digitised.

The "Memoriae Mundi Series Bohemica" (MMSB) programme, as a programme of digital access and protection of cultural heritage contained in documents located in the territory of the Czech Republic, in which the rare documents were made accessible, was launched by the National Library of the Czech Republic in partnership with AiP Beroun s.r.o. as early as 1995. Since its inception it subscribed to the UNESCO "Memory of the World" programme, which the National Library of the Czech Republic joined in 1992 and for which it processed a number of pilot projects. In MMSB, "Manuscriptorium" (www.manuscriptorium.eu) was launched in 2004 as a freely available digital library of historical documents (making accessible manuscripts, incunable, old prints and historical maps), accessible in Czech and English. "Manuscriptorium" is a sub-aggregator of the Europeana project for the area of historical collections, in which 43 Czech and over 40 foreign institutions participate. Since 2007 "Manuscriptorium" is a part of the European ENRICH (European Networking Resources and Information concerning Cultural Heritage) project, which covers nearly 85% of all digitised historical documents stored in European national libraries. Digitisation of seventeenth and eighteenth century prints is done in partnership with Google (*Hejnová*). International metadata standards are used to sign the documents (*Knoll – Psohlavec; Knoll 1998, 1999; Psohlavec 1999, 2000, 2005; Uhlíř*).

2.2 National Digital Library

From 2011 to 2015 the project of the National Digital Library of the Czech Republic was implemented and, as a part of it, operation started in 2012 at digitising sites at the National Library Prague and Moravian Library in Brno, where a huge number of pages of "common" printed documents is being gradually digitised. Another project has been running since 2015, in which the two libraries mentioned above were joined by the Library of the Academy of Sciences Czech Republic and National Technical Library (*Lhoták*). At the same time, a special software for libraries is being developed that will fulfil the basic functions of long-term archiving.

3. "ARCHIVES, MUSEUMS AND LIBRARIES IN THE DIGITAL WORLD" CONFERENCE

The above mentioned national information policy initially quite neglected the area of other memory institutions, i.e. archives, museums and galleries, as well as the area of heritage protection. One of the goals, therefore, was to ensure support for these institutions and partnership among them in the interest of achieving the common goal – to protect cultural heritage and to make it accessible to all citizens. The initiative emerged from librarians who (namely the Association of Librarians and Information Professionals of the Czech Republic) gave birth to the conference designed for professionals of other memory institutions; the first of these, entitled "Archives, Museums and Libraries in the Digital World" was held on December 6, 2000, in Prague – and since then it has been held annually (the 21st edition is to be organised in 2020). While the first conferences saw mainly papers providing general information on cooperation, technical issues and first experiences, gradually more special issues emerged and various projects were presented. Besides libraries also museums, archives and heritage institutions were gradually represented. Most of the papers are available, at least in the form of PowerPoint presentations, on the Internet.[2]

2 See https://www.skipcr.cz/akce-a-projekty/akce-skip/archivy-knihovny-muzea-v-digitalnim-svete/20.-konference-archivy-knihovny-muzea-v-digitalnim-svete-2019 (papers from 2010–2018); https://www.skipcr.cz/akce-a-projekty/akce-skip/archivy-knihovny-muzea-v-digitalnim-svete/11-archivy (papers from 2000–2009).

4. DIGITISATION IN ARCHIVES

The digitisation in archives was directly preceded by electronic records of archival materials. Gradually, digitisation started, the main reasons for this step being the protection of the physical condition of the archival material, faster access, possibility to print copy without handling the original and protection against theft.

The problem was the non-existence of clear methodic rules for the description of the archival material, therefore it was decided to draft new rules, compliant to the international standards (approved by the International Archival Board). These are 1. ISAD(G)) – General International Standard Archival Description of 1999; 2. ISAAR (CPF) – International Standard Archival Authority Record for Corporate Bodies, Persons and Families of 1995. It was on this basis that, gradually, new "Basic Rules for Processing of Archival Material" were drafted and these now replace the older ones which were in effect from 1958.

As late as the beginning of the third millennium, however, it was not a matter of course that archives in the Czech Republic (and libraries) had their websites. First, a database of archive collections, the so-called PEvA, initially non-public, now accessible on the Internet (https://aplikace.mvcr.cz/archivni-fondy-cr/default.aspx), was founded, then, gradually, digitised archival tools appeared (and new ones were developed based on the methodical guide of 2006); subsequently archival material was being digitised. Same as in the case of libraries, the attention was focused first on rare documents, second on frequently used documents such as parish records and other sources used for genealogical research, the goal being to protect the archival material and to alleviate the burden of researchers' agenda.

4.1 The State Regional Archive TReboN – DigiArchiv

It was the State Regional Archive (SOA) in Třeboň, which became the pioneer of digitisation in the Czech Republic. Its Digital Archive (DigiArchiv, http://digi.ceskearchivy.cz) now includes a significant volume of digitised archival material and archival tools from the archives in South Bohemia (*Kaiseršat – Hankovec 2010, 2011, Kaiseršat 2014, Hankovec 2017*). Digitisation in SOA Třeboň was started by the members of The Church of Jesus Christ of Latter-day Saints (Mormons) and the staff of the Genealogical Society of Utah (Family Search) on the basis of an agreement signed on February 20, 2007. First the parish records, until 2012, were digitised. The result of the project was that over seven thousand of parish record books from 1587 to 1949 were made accessible to readers; this is followed by digitisation of documents related to parish records (*Cukr*). The access to digitised materials, including the preparation of metadata, was done by SOA Třeboň on their own– namely thanks to fact that they have a professional whose programming and IT skills vastly exceed the common standard of administrators in IT archives. The result is a highly sophisticated and yet transparent and logical information system, which functions on the principles of intuitive navigation and meets a number of current standards, it allows not only for displaying the digital copies of archival materials but also offers applications providing the general public with a comfortable user experience and information services (*Kaiseršat 2017*). Later, from 2012 to 2014, more frequented sources were digitised – registers of serfs and registers of inhabitans (sheets from the census), while namely in the case of the latter the digitisation significantly contributed to its preservation. In 2015, land registers and urbaria started to be digitised and made accessible, since 2016 the Land-Registry of Joseph II and Stable Land-Registry have been digitised. Besides that, from 2011 to 2015, over six thousand large format maps and plans or technical drawings were digitised in partnership with the Geodetical Research Institute in Zdiby near Prague. At the same time, SOA Třeboň started working on its own internal digitisation focused namely on commu-

nity, school and society records and also collections of postcards and photographs, city views or rare individual items (manuscripts, documents, office records); since 2010 the archive has been digitising the rare archival collection "Historica Třeboň", declared in 2000 the national heritage monument as it contains important archival materials for the periods of the Middle Ages and the early Modern Age (*Hadač, pp. 5–10*). The vast geographic database (Geographic Register), developed by the archivists of SOA Třeboň and covering places outside South Bohemia and the Czech Republic (including misspelled names), proves to be an important tool to process and make accessible digitised archival material; the register is linked to nearly every record in the database and constitutes a backbone of all digitised material. The whole DigiArchiv works on the basis of cooperation between an archivist and IT specialist (and user) and makes accessible to researchers in a very efficient way increasing volume of archival material, thus helping to raise awareness about the existence, importance and necessity of archives. Digitisation in SOA Třeboň is under way and focuses on more archival material, although it is a demanding task on finances, organisation and human resources. The main goal, nevertheless, remains not just its development, but long term sustainability on an appropriate level (*Kaiseršat 2017; Plávek 2017*).

4.2 Monasterium

Documents, not only from the State Regional Archive in Třeboň but other archives in the Czech Republic, including the National Archive, are accessible through the Monasterium archive (www.monasterium.net), a virtual archive, which today contains over 660,000 mediaeval and early modern documents of over 180 institutions in fifteen European countries (Austria, Germany, Switzerland, Italy, Spain, Czech Republic, Slovakia, Poland, Hungary, Slovenia, Croatia, Serbia, Macedonia, Romania, Estonia). It was established and is operated by the international organisation ICARUS (*Křečková 2007, 2010; Křečková – Pazderová;* Černušák).

4.3 The State Regional Archive Pilsen inpartnership with Bavaria – Porta fontium

Another example of significant international partnership, connecting two countries, is the archive web portal Porta fontium (http://www.portafontium.eu/), developed by State Regional Archive in Pilsen (which, same as SOA Třeboň, developed their proprietary software) in partnership with the General Directorium of Bavarian Archives. At its very inception there was the project named "Bavarian-Czech Network of Digital Historical Sources" (2010-2012), followed upon by "Czech-Bavarian Archival Guide" (2013–2015), the purpose of which was to map the terrain of archival materials on both sides of the Czech-Bavarian border. Soon digitisation of selected archival material from West-Bohemian and some Bavarian state archives started, namely parish records (which Pilsen started to digitise even before and made them accessible, from 2010, through Acta Publica web application in partnership with Moravian Land Archive), but also land registers and urbaria, chronicles, photographs, documents, census logs, periodicals, police conscription records for the city of Pilsen from years 1918-1941 or list of guests in West-Bohemia spas. Digitised materials have been accessible on the portal since November 2012 and they are still used by the researchers. The original project has expanded and taken the form of a database, which was made accessible in May 2015 and is to bring detailed information on archival collections in all state archives of the Czech Republic (not just in Western Bohemia) which include the so-called Bavariana, and collections in the state archives of Bavaria which include the so-called Bohemica. At the same time archival collections, formerly divided and located in various archives on both sides of the border, are to be virtually interconnected, such as documents from the Waldsassen monastery stored in the state archive in Amberg and in the State District Archive in Cheb (*Augustin – Halla 2017*).

4.4 National Archive, State and Other Archives

Digitisation of archival materials in individual types of archives in the Czech Republic takes on different forms and offers varying volumes of archival material. The National Archive uses the information system VadeMeCum (https://vademecum.nacr.cz/vademecum/), developed by Czech company Bach Systems s. r. o. The system contains basic information on archival collections stored in the National Archive, offers the possibility to search archival means (analogue and electronic) on the basis of indices, inventory records and signatures. In some cases it provides direct access to digitised archival materials through Digital Research Room (https://www.nacr.cz/verejnost/badatelna/digitalni-badatelna). In this case the scope of digitised material is smaller than in SOA Třeboň and the National Archive allows mainly for study of conscriptions of the Prague police headquarters in 1850–1918 (http://digi.nacr.cz/prihlasky2/).

The same application, i.e. VadeMeCum for archives, allowing to browse published digitised material and search for information in archival collections, has been in use since 2007 by the State Regional Archive in Litoměřice and its subsidiaries in North Bohemia (http://vademecum.soalitomerice.cz/vademecum/; *Vladyková*), as well as the Land Archive in Opava, whose digital archive was put into operation in 2012 and makes accessible selected digitised archival materials from North Moravia and Silesia (http://www.archives.cz/web/digitalni_archiv/).

A different web application, called eBadatelna (http://ebadatelna.soapraha.cz), is used by the State Regional Archive in Prague, and yet another way of publishing of digitised archival materials is used by the State Regional Archive in Zámrsk for the area of East Bohemia (https://vychodoceskearchivy.cz/e-badatelna/). The Moravian Land Archive in Brno digitises and publishes only parish records in Acta Publica (http://actapublica.eu/). The project was prepared since 2007 and was financed by joint funds of the Moravian Land Archive in Brno and the European Union, later it was further expanded.

In all state regional archives parish records were digitised as priority, mostly in partnership with the Genealogical Society of Utah, and the digitised materials were gradually made accessible online. Subsequently, or gradually, registers of serfs, land registers, urbaria, censuses, directories, graphic prints, city views, posters, seals and card indices were or are digitised. Besides partnership with the Genealogical Society, archives digitise materials by their own means, however, often dealing with issues of storage, description of digitised material and staff for digitisation, which requires IT specialists and archivists.

The digital publishing of pre-1850 city views stored in Czech archives is a specific project, following upon the former list organised by the section of archival administration and records management with Ministry of Interior Czech Republic. The portal was developed in partnership of the Archive of the City of Prague and Bach Systems s.r.o. (http://veduty.bach.cz/veduty/).

The Archive of the City of Prague has used, since 2003, the VadeMeCum by Bach Systems s.r.o. for archives, the first digitised archival materials were published in 2005, further digitisation was done, with the support of the Norwegian Funds, in 2007-2010. Today, historically most important, most valuable and physically most endangered archival materials of the collections stored in the Archive of the City of Prague, relevant for national and European history, are accessible in the digital form (http://katalog.ahmp.cz/pragapublica/).

Digitisation is carried out in the Czech Republic and other types of archives which build their own repositories. These include the Military Historical Archive (*Baláž – Kusko*), Archive of the Charles University (*Cajthaml – Vašková*), Archive of the Czech Television (*Wintrová – Sieber – Novák*), National Film Archive (*Lachman*), Archive of the City of Pilsen (*Maglić*), Archive of the Czech National Bank (*Kunert*) and others.

5. NATIONAL DIGITAL ARCHIVE

5.1 Preparation and Realization of the National Digital Archive

As early as 1990s, electronic (e-born) documents were produced in the Czech Republic, although archives could not at first accept them as archival materials and their paper version was required. This gradually changed thanks to the new Act on archives no. 499/2004 Coll.; at the same time, the government of the Czech Republic made a resolution (no. 11 of January 7, 2004) on long-term storing and publishing of documents in digital form. The relevantly focused project was executed in 2001 and 2002 jointly by Ministry of Interior, the then State Central Archive and the Electrotechnical Faculty Czech Technical University. Gradually, more steps followed to expand the e-government.

The first experience with acceptance of electronic archival materials in the Czech Republic was made by the National Archive, which received the oldest electronic archival material as early as in 1997 (these were letters by the professor of philosophy Erazim Kohák, i.e. private documents in a personal collection); in 2001 the first systematic survey of electronic documents in central offices under the authority of the National Archive was done. This was a major impulse for the necessary solution of this problem. From the beginning of the millennium, therefore, foundations were laid for the establishment of a state-level entity for long-term storing and publishing of documents in digital form, with experience having been obtained abroad, namely in Sweden and the Netherlands, later in Germany and other countries. Pursuant to the Act on archiving no. 499/2004 Coll. tasks related to storing and publishing of "new forms of information media, including documents in digital form", were assigned to the National Archive, which is, at the same time, to carry out the function of expert methodic and training centre (*Vojáček*).

The first realization team to solve the task of digital archiving was set up in late 2005, in 2008 the technological project to build the digital archive was finalized. This was the first major analysis of digital archiving in the Czech Republic. On its base, the digital archive of the National Archive was to be established as a central solution for the whole archival network in the Czech Republic – the so-called National Digital Archive, conceived as a central service to ensure long-term archiving of digital archival material, with emphasis put on digital documents related to e-government. The goal of the NDA was to ensure: 1. long-term storing of digital archival material by selected public archives (as a primary task), 2. archival portal and access to documents, 3. support in shredding process, 4. support in processing digital archival material and 5. safe storing of digital reproductions of traditional archival materials (*Vojáček*).

The project of the National Digital Archive was implemented from 2011 to 2014 but due to problems of process character (rivalry of the suppliers of software for the document management and electronic system of records management) it was not possible to complete the request for proposals, although two attempts were made. The National Archive, therefore, had to change its strategy and to opt for an emergency solution in order to be able to make the selection and to accept digital documents from governmental authorities, as it was legally obliged to do, pursuant to the amendment of the Act on archiving from 2009. The National Archive opted for its proprietary solution, the core of which was the Canadian Open Source Archivematica – as of November 1, 2014, it was possible to launch a pilot operation and as of January 1, 2016, normal operation of the digital archive; in 2015 the first shredding process in electronic records management and storing of digital archival materials was done (*Vojáček*).

Meanwhile, in 2012, the legislation on archiving was substantially changed and it brought about new obligations – namely a central portal for archives was to be created, which was to allow for collection and acceptance of digital documents, but also to gather and publish metadata from archives and archival materials, from government authorities and other sources. Due to financial constraints, however, these obligations could be ensured in the newly built national archival portal only partially. The portal was launched in 2017, at the same time the archivists were trained. In 2017 to 2019, then, the National Digital Archive II was implemented, for which financing was secured and within which new modules of digital archive were developed, other were changed and became more efficient. Concurrently, there was a project by the Ministry of Interior Czech Republic, the goal of which was to process newly the central record keeping of archival materials and archival tools and to use this project as a module of the archive portal (*Vojáček*).

5.2 Current Condition of Digital Archiving in the Czech Republic

At the moment, there is just a single National Digital Archive and national archival portal. State regional and other archives have their own digital storages and make digitised material accessible through their own web applications and portals. However, these are not archival portals as defined by the law.

Since 2016 there has been, with the National Archive, a methodic platform for electronic documents, which connects archivists from state regional and other archives and which has as its goal to deal with methodical and practical issues of digital archiving, using contacts with foreign colleagues. An intensive partnership with universities, research institutes of the Academy of Sciences and other memory institutions is important; partnership with the commercial sector, on the other hand, is difficult, but applied research could be used. Security issues, too, will have to be addressed (*Vojáček*).

6 PREPARATION OF SPECIALISTS

Current specialists focusing on digitising and electronic documents are mainly employees of the archives and information specialists who work together. The problem remains, however, how to train staff who will be skilled in both areas, since this faces the problems of requirements for accreditation of study programs, lack of qualified teachers and financial resources, but also the lack of suitable applicants for study of the two specialisations. An interesting opportunity is offered by the study programme Computer Support in Archiving, open at University of Hradec Králové in partnership with the State Regional Archive in Zámrsk and the State District Archive in Hradec Králové, which is, however, focused on practical aspect of digitising (*Grulich; Ryantová 2011, 2014a*). At the University of South Bohemia in České Budějovice there was, for many years, a double subject study of archiving – informatics, but it had just a single student who, moreover, went to work in a quite different field following her graduation (*Ryantová 2014b*).

7. SUMMARY

Digitising in the Czech Republic started to develop thanks to the state information policy first in libraries, later in other memory institutions, including archives. An important role was played by annual conferences called "Archives, Museums and Libraries in a Digital World," held annually since 2000. In archiving, digitisation of analogue archival materials developed first, mainly those that were most frequent-

ly used or were most endangered. Besides the National Archive and state archives, digitisation is being developed by other types of archives that have their own digital storages and make digitised materials accessible through their proprietary web applications and portals. A central solution to ensure long-term archiving of digital (e-born) archival materials, namely in relation to the e-government, is represented by the so-called National Digital Archive with National Archive, which is further developed in partnership with various institutions. In the future, though, security issues and training of specialised staff will have to be addressed.

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Typology: 1.04 Professional Article

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RELEVANCE OF CRITERIA AND CERTIFICATION OF TRUSTED E-REPOSITORIES IN THE PHARMACEUTICAL INDUSTRY

ABSTRACT

Purpose: *Organizations and companies in the field of pharmacy also need appropriate trusted e-repositories to ensure the reliability of stored documentary and archival material. In the research, I examined the applicability and relevance of the criteria and certification of trusted e-repositories in the pharmaceutical industry and identified the criteria that pose a major problem in certification, to offer a possible solution for the competent departments in pharmaceutical companies for checking the reliability of there own e-storage and to indicate the processes that are more problematic.*

Method/Approach: *Through a study of the literature, I examined and analyzed the field of criteria and certification procedures for trusted e-repositories. I reviewed available electronic resources and publications in the field of archiving, information science and pharmacy, as well as national and EU legislation in the field of the research.*

Results: *Criteria and certification procedures have been developed for trusted e-repositories. Most of them rely at least in a part on the Open Archival Information System (OAIS). The collaboration of several international organizations in the field of long-term storage has led to the formulation of 10 main features of trusted e-repositories. The European Framework for Auditing and Certification of e-Repositories proposes three levels of certification. In the research, I examined and analyzed in more detail the basic (CoreTrustSeal) and extended (Nestor's seal) level and obtained information on criteria that have not yet been fully implemented in the certification process or have not achieved full compliance. No e-repository in the field of pharmacy has been certified.*

Conclusion/Findings: *Criteria and certification of trusted e-repositories in the pharmaceutical industry can be an additional solution for verifying reliable e-storage. Additional research and experience regarding the application of criteria and certification of e-repositories in the pharmaceutical industry will increase the relevance of certification of trusted e-repositories in this field.*

Keywords: *e-repository, trusted e-repository, criteria, certification, pharmacy*

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RILEVANZA DEI CRITERI E DELLA CERTIFICAZIONE DEGLI E-REPOSITORY CREDIBILI NEL SETTORE FARMACEUTICO

ABSTRACT

Scopo: *Le organizzazioni e le aziende nel campo farmaceutico hanno anche bisogno di appropriati e-repository affidabili per garantire l'affidabilità del materiale documentario e d'archivio memorizzato. Nella ricerca, ho esaminato l'applicabilità e la pertinenza dei criteri e della certificazione dei repository di posta elettronica di fiducia nell'industria farmaceutica, ed ho identificato i criteri che rappresentano un grave problema nella certificazione, per offrire una possibile soluzione per i dipartimenti competenti delle aziende farmaceutiche per verificare l'affidabilità del proprio e-storage e per indicare i processi più problematici.*

Metodo/Approccio: *Attraverso uno studio della letteratura, ho esaminato e analizzato il campo dei criteri e delle procedure di certificazione per i repository di posta elettronica attendibili. Ho esaminato le risorse elettroniche disponibili e le pubblicazioni nel campo dell'archiviazione, della scienza dell'informazione e della farmacia, nonché della legislazione nazionale e dell'UE nel campo della ricerca.*

Risultati: *Sono stati sviluppati criteri e procedure di certificazione per archivi di posta elettronica affidabili. La maggior parte di loro si affida almeno in una parte all'Open Archival Information System (OAIS). La collaborazione di diverse organizzazioni internazionali nel campo dello storage a lungo termine ha portato alla formulazione di 10 caratteristiche principali di e-repository affidabili. Il quadro europeo per l'auditing e la certificazione dei repository di posta elettronica propone tre livelli di certificazione. Nella ricerca, ho esaminato e analizzato più in dettaglio il livello di base (CoreTrustSeal) e quello esteso (sigillo di Nestor) e ho ottenuto informazioni su criteri che non sono ancora stati pienamente implementati nel processo di certificazione o non hanno raggiunto la piena conformità. Nessun e-repository nel campo della farmacia è stato certificato. Conclusione/Risultati: i criteri e la certificazione di e-repository affidabili nel settore farmaceutico possono essere una soluzione aggiuntiva per verificare l'archiviazione elettronica affidabile. Ulteriori ricerche ed esperienze relative all'applicazione di criteri e alla certificazione dei repository di posta elettronica nell'industria farmaceutica aumenteranno la pertinenza della certificazione di archivi e-repository affidabili in questo campo.*

Parole chiave: *e-repository, e-repository affidsabili, criteri, certificazione, farmacologia*

RELEVANTNOST KRITERIJEV IN CERTIFICIRANJA ZAUPANJA VREDNIH E-REPOZITORIJEV V FARMACEVTSKI INDUSTRIJI

IZVLEČEK

Namen: *Tudi organizacije in podjetja, ki delujejo na področju farmacije, za zagotavljanje zanesljivosti hranjenega dokumentarnega in arhivskega gradiva potrebujejo ustrezne zaupanja vredne e-repozitorije. V raziskavi sem preučila uporabnost in relevantnost kriterijev in certificiranja zaupanja vrednih e-repozitorijev na področju farmacevtske industrije ter identificirala kriterije, ki predstavljajo večji problem pri certificiranju. Pristojnim službam v farmacevtskih podjetjih bi tako ponudila možno rešitev za preverjanje zanesljivosti lastne e-hrambe ter nakazala procese, ki so bolj problematični.*

Metoda/Pristop: *S študijo literature sem preučila in analizirala področje kriterijev in postopkov certificiranja zaupanja vrednih e-repozitorijev. Pregledala sem dostopne elektronske vire in publikacije s področja arhivistike, informacijskih znanosti in farmacije ter nacionalno in EU zakonodajo s področja raziskave.*

Rezultati: *Razviti so bili kriteriji in certifikacijski postopki za zaupanja vredne e-repozitorije. Večina jih vsaj deloma sloni na odprtem arhivskem informacijskem sistemu (OAIS). Sodelovanje večih mednarodnih organizacij s področja dolgoročne hrambe je privedlo do formulacije 10 glavnih lastnostih zaupanja vrednih e-repozitorijev. Evropski okvir za revidiranje in certificiranje e-repozitorijev predlaga tri stopnje certificiranja. V raziskavi sem podrobneje preučila in analizirala osnovno (CoreTrustSeal) in razširjeno (Nestorjev pečat) stopnjo ter pridobila informacije o kriterijih, ki v postopkih certificiranja še niso bili v celoti implementirani oziroma pri njih ni bila dosežena popolna skladnost. Certificiran ni bil noben e-repozitorij s področja farmacije.*

Sklep/ugotovitve: *Kriteriji in certificiranje zaupanja vrednih e-repozitorijev v farmacevtski industriji lahko predstavlja dodatno rešitev za preverjanje zanesljive e-hrambe. Dodatne raziskave in izkušnje glede uporabe kriterijev in certificiranja e-repozitorijev v farmacevtski industriji bodo povečale relevantnost certificiranja zaupanja vrednih e-repozitorijev na tem področju.*

Ključne besede: *e-repozitorij, zaupanja vreden e-repozitorij, kriteriji, certificiranje, farmacija*

1 UVOD

S povečanjem količine dokumentacije v digitalni obliki in problemom zagotavljanja zanesljivosti zapisanih informacij se ne srečujejo samo v spominskih organizacijah (arhivi, knjižnice, muzeji). S tem problemom se srečujejo povsod, kjer dokumentacija izvirno nastaja v digitalni obliki ali z digitalizacijo fizičnega gradiva in je treba zagotoviti dosegljivost, uporabnost, celovitost, avtentičnost in berljivost te dokumentacije na dolgi rok. V farmacevtski industriji in na drugih področjih farmacije je potrebno gradivo v skladu z zakonodajo, kot tudi zaradi pravne varnosti in urejenosti, hraniti tudi do 30 let ali trajno, če dele tega gradiva označimo kot arhivsko gradivo. Ker večina dokumentacije izvirno nastaja v digitalni obliki, je potrebno imeti oziroma implementirati sisteme za zanesljivo dolgoročno hrambo. Še posebej zaradi možnih finančnih posledic v primeru neskladnosti dokumentacije z vidika inšpekcijskega nadzora ali vidika pravne varnosti. Tudi organizacije in podjetja, ki delujejo na področju farmacije, za zagotavljanje zanesljivosti hranjenega dokumentarnega in arhivskega gradiva potrebujejo ustrezne zaupanja vredne e-repozitorije.

Cilj raziskave je bil preučiti uporabnost in relevantnost v strokovni javnosti sprejetih kriterijev in certificiranja zaupanja vrednih e-repozitorijev na področju farmacevtske industrije ter identificirati tiste kriterije, ki predstavljajo večji problem pri implementaciji oziroma certificiranju. Z raziskavo bi pristojnim službam v farmacevtskih podjetjih, ki so odgovorne za dolgoročno hrambo dokumentarnega in arhivskega gradiva, ponudila možno rešitev za preverjanje zanesljivosti lastne e-hrambe in nakazala kriterije oziroma procese, ki so bolj problematični.

2 ZASNOVA RAZISKAVE

Predpostavila sem, da obstajajo kriteriji s katerimi lahko farmacevtsko podjetje oceni svoj e-repozitorij in potrdi, da so v njem shranjene informacije zanesljive.

Postavila sem raziskovalno vprašanje:

Ali so v strokovni javnosti sprejeti kriteriji in certificiranje zaupanja vrednih e-repozitorijev aplikativni tudi na področju farmacevtske industrije?

Nadalje sem postavila specifična raziskovalna vprašanja:

Koliko je certificiranje zaupanja vrednih e-repozitorijev že prisotno na področju farmacije? Kateri zahteve za zaupanja vredne e-repozitorije predstavljajo večji izziv pri certificiranju?

2.1 Metodologija

Podatke in informacije sem pridobila s študijo literature, s katero sem pregledala področje kriterijev za zaupanja vredne e-repozitorije ter informacije o certificiranih zaupanja vrednih e-repozitorijih. Pridobljene informacije sem analizirala in vključila v raziskavo. Ugotoviti sem želela koliko je tematika že raziskana in kakšne so izkušnje na področju farmacevtske industrije.

Raziskavo sem izvedla aprila 2020. Sistematično sem raziskala dostopne elektronske vire in elektronske publikacije s področja arhivistike, informacijskih znanosti in farmacije. Pri iskanju sem se osredotočila na elektronske vire in publikacije dostopne preko Narodne in univerzitetne knjižnice (NUK), knjižničnih baz Emeraldinsight, Proquest in Scopus, spletnih strani Academia.edu in Google scholar. Pregledala sem tudi nacionalno in EU zakonodajo s področja raziskave.

2.2 Omejitve raziskave

V podrobnejši analizi sem se omejila na kriterije in certificiranje zaupanja vrednih e-repozitorijev na osnovni in razširjeni stopnji znotraj Evropskega okvira za revidiranje in certificiranje e-repozitorijev.

3 REZULTATI

3.1 Odprti arhivski informacijski sistem (OAIS)

Sistemi za zagotavljanje dolgoročne hrambe sledijo predvsem standardu ISO 14721 (OAIS) (Hajtnik 2017). Po OAIS dolgoročna hramba pomeni dolgoročno ohranjanje informacij in zagotavljanje njihove avtentičnosti (CCSDS 2012).

OAIS je arhiv, ki ga sestavlja organizacija (sestavljena iz ljudi in sistemov), ki je sprejela odgovornost za ohranitev informacij in ki te informacije da na voljo določeni imenovani skupnosti. Imenovana skupnost je identificirana skupina potencialnih potrošnikov, ki bi bili zmožni razumeti določen niz informacij. Imenovano skupnost lahko sestavlja več skupnosti uporabnikov. Arhiv določi imenovano skupnost in to definicijo lahko sčasoma spremeni (CCSDS 2012).

Model OAIS je konceptualni model, ki je lahko uporaben za kateri koli arhiv. Tudi za tiste organizacije in posameznike, ki ustvarjajo informacije, ki bodo morda potrebovale dolgoročno hrambo. Eksplozivna rast informacij v digitalnih oblikah namreč ne predstavlja izziva samo za tradicionalne arhive in njihove ponudnike informacij ampak tudi za številne druge organizacije v vladnem, komercialnem in neprofitnem sektorju. Tudi te organizacije morajo prevzeti funkcije ohranjanja informacij, saj se digitalne informacije zlahka izgubijo ali pokvarijo ter morajo biti aktivni udeleženci v trudu za dolgoročno hrambo in morajo slediti načelom, navedenim v OAIS modelu za zagotovitev, da se podatki lahko ohranijo dolgoročno (CCSDS 2012).

Na osnovi OAIS modela je bil razvit standard ISO 14721.

3.2 Kriteriji in certificiranje zaupanja vrednih e-repozitorijev

OAIS vsebuje tudi načrt za nadaljne standarde. Eden od teh je standard za certificiranje arhivov (CCSDS 2012). Za dosego tega sta RLG (Research Libraries Group) in NARA (National Archives and Records Administration) pripravila dokument Trustworthy repositories audit and certification: Criteria and checklist (TRAC) v katerem sta izdelala kriterije in postopek za certificiranje zaupanja vrednih e-repozitorijev.

TRAC je uporaben za številne e-repozitorije in arhive, za e-repozitorije akademskih zbirk do velikih arhivov podatkov in od nacionalnih knjižnic do zunanjih ponudnikov storitev digitalnega arhiviranja. TRAC kriterije sestavljajo trije sklopi: organizacijska infrastruktura, upravljanje e-zapisov in tehnologije, tehnična infrastruktura in varnost (RLG-NARA 2007). TRAC je bil vključen v CCSDS (Consultative Committee for Space Data Systems) delovno skupino za revidiranje in certificiranje (RAC-WG), da se je razvil v popoln standard (CCSDS 2011). To je bilo nato preneseno v ISO in objavljeno kot ISO 16363 (Giaretta in Schrimpf 2012).

Razviti so bili tudi drugi standardi in certifikacijski postopki za zaupanja vredne e-repozitorije:

- Data Seal of Approval (DSA) (Dillo in De Leeuw 2015),
- Nestorjev katalog kriterijev za zaupanja vredne e-repozitorije (NESTOR 2009) in Nestorjev pečat za zaupanja vredne e-arhive (NESTOR 2013),
- DIN 31644 - Information and documentation: Criteria for trustworthy digital archives. (DIN 2012),
- CoreTrustSeal (CoreTrustSeal 2020).

Večina teh standardov in certifikacijskih postopkov vsaj deloma sloni na OAIS in so pogosto sorodni (Husen et al. 2017).

Giaretta in Schrimpf (2012) sta opredelila glavne razloge za revidiranje in certificiranje e-repozitorijev: 1) učenje iz procesa, 2) identificirati prednosti in slabosti e-repozitorija ter potrditev uvedenih konceptov, 3) pregledovanje, preučitev in odobritev procesov in dokumentacije s strani zunanjih strokovnjakov, 4) upravljalcem in pregledovalcem, pokazati pripravljenost za izvajaje zunanjih, neodvisnih, mednarodnih ocenjevanj, da bi dosegli najvišje standarde digitalne hrambe in 5) prispevanje k uspešnosti standardov in z njimi povezanimi procesi revidiranja.

Delovna skupina NESTOR (NESTOR 2009) je sodelovala z drugimi organizacijami za dolgoročno hrambo tj. Digital Repository Certification Task Force (OCLC/RLG-NARA), Centre for Research Libraries (CRL), Digital Curation Centre (DCC) in EU projektom Digital Preservation Europe. Skupaj z njimi je formulirala 10 glavnih lastnosti zaupanjavrednih e-repozitorijev:

1. Repozitorij se zaveže k stalnemu vzdrževanju e-zapisov za identificirano skupnost/skupnosti.
2. Dokazuje organizacijsko sposobnost (vključno s finančno, kadrovsko in postopkovno), da izpolni svojo zavezo.
3. Pridobiva in vzdržuje potrebne pogodbene in pravne pravice ter izpolnjuje svoje odgovornosti.
4. Ima učinkovito in uspešno politiko poslovanja.
5. Pridobi in prevzame e-zapise na podlagi navedenih kriterijev, ki ustrezajo njegovim obveznostim in zmožnostim.
6. Vzdržuje/zagotavlja integriteto, avtentičnost in uporabnost e-zapisov, ki jih hrani skozi čas.
7. Ustvarja in vzdržuje potrebne metapodatke o ukrepih, izvedenih na e-zapisih v času hrambe, kot tudi o relevantnih postopkih, podpori dostopa in uporabe pred prevzemom v hrambo.
8. Izpolnjuje zahteve za razširjanje.
9. Ima strateški program za načrtovanje in izvajanje dolgoročne hrambe.
10. Ima tehnično infrastrukturo, ki je primerna za stalno vzdrževanje in varnost e-zapisov, ki jih hrani.

Ključna predpostavka na kateri temeljijo te lastnosti je bila, da je treba e-repozitorije vseh vrst in velikosti ohranjati v skladu s potrebami in sredstvi določene skupnosti ali določenih skupnosti (CRL 2007).

Program Evropske unije Obzorje 2020 priporoča, da se pri izbiri repozitorija da prednost certificiranim, kjer je to mogoče (Evropska komisija 2016).

3.3 Evropski okvir za revidiranje in certificiranje e-repozitorijev

Leta 2010 je bil podpisan memorandum o soglasju (Memorandum of Understanding) za oblikovanje Evropskega okvira za revidiranje in certificiranje e-repozitorijev. Memorandum je bil sponzoriran s strani Evropske komisije in podpisan s strani treh delovnih skupin CCSDS /ISO delovne skupine za revidiranje certifikacijo e-repozitorijev (RAC), Data Seal of Approval (DSA) in delovne skupine DIN za certifikacijo zaupanja vrednih e-repozitorijev, ki delujejo na področju standardov za zaupanja vredne e-repozitorije. Podpisan je bil z namenom, da se razvije usklajen pristop znotraj EU za revidiranje in certifikacijo e-repozitorijev (Giaretta, Harmsen in Keitel 2010).

Evropski okvir za revidiranje in certificiranje e-repozitorijev je namenjen podpori raziskovalcem, e-repozitorijem in organom financiranja pri pridobivanju ustreznih certifikatov ter identificiranju ustrezno certificiranih partnerjev. Različna okolja zahtevajo različne ravni pregleda, revizije in certificiranja (Giaretta in Schrimpf 2012).

Predlagali so tri stopnje certificiranja za zaupanja vredne e-repozitorije: osnovna (Core), razširjena (Extended) in formalna (Formal). Razlike med stopnjami so v načinu izvajanja revizije in številu ocenjenih kriterijev:

- osnovno certifikacijo pridobijo e-repozitoriji, ki pridobijo DSA certifikacijo (sedaj CoreTrustSeal),
- razširjeno certifikacijo pridobijo e-repozitoriji z osnovno certifikacijo, ki so uspešno izvedli strukturirano, zunanje pregledano in javno dostopno samorevizijo na podlagi DIN 31644 ali ISO 16363 (Nestorjev pečat),
- formalno certifikacijo pridobijo e-repozitoriji, ki poleg osnovne certifikacije izvedejo popolno zunanjo revizijo in certificiranje na podlagi ISO 16363 ali enakovrednega DIN 31644 (Giaretta, Harmsen in Keitel 2010).

Obseg standarda DIN 31644 "Information and documentation- Criteria for trustworthy digital archives" je bil razširjen s spominskih organizacij na vse organizacije, ki ohranjajo informacije v digitalni obliki. Glavni del standarda je seznam 34 zahtev, strukturiranih v treh delih: organizacija, upravljanje intelektualnih entitet in njihovih prikazov ter infrastruktura in varnost. Priloge standarda vsebujejo primere e-repozitorijev in najboljše prakse za vsako zahtevo/kriterij ter literaturo (Giaretta in Schrimpf 2012).

Medtem, ko je TRAC nekoliko nagnjen k samoreviziji digitalnih knjižnic, je ISO 16363 že od začetka zasnovan, kot osnova za celoten postopek zunanje revizije vseh vrst e-repozitorijev, od kulturnih do znanstvenih do komercialnih (Giaretta in Schrimpf 2012). PTAB (Primary Trustworthy Digital Repository Authorisation Body Ltd.), s sedežem v Dorsetu, Velika Britanija, je prva organizacija na svetu, ki je prejela akreditacijo za ISO 16363 za zaupanja vredne e-repozitorije (PTAB 2020).

DIN in ISO zahtevata od 1,5 do 3 mesece delovnega časa, če to izvaja 1 oseba. Dva bolj formalna standarda sta zahtevnejša, vendar zagotovita večjo zanesljivost e-repozitorijev (Giaretta in Schrimpf 2012).

Neglede na raven certificiranja (npr. osnovna, razširjena ali formalna) vsi standardi in postopki certificiranja poudarjajo pomen organizacijske infrastrukture, upravljanja e-zapisov, tehnične infrastrukture in varnosti, da lahko e-repozitoriji dosežejo status zaupanja vrednosti (Donaldson et.al. 2017). Obseg in stopnja podrobnosti posameznega kriterija pri DSA glede na DIN in standarde ISO pomeni, da niso neposredno primerljivi (niti niso temu namenjeni) (Giaretta in Schrimpf 2012).

Evropski okvir ima vsekakor prednosti, zlasti za javne e-repozitorije. Vendar ločene razprave kažejo, da je "formalno certificiranje" najbolj zanimivo za komercialni svet. To naj ne bi predstavljalo problema ampak bi naj odpiralo pot za več vstopnih točk v certifikacijski okvir ter zagotavljalo povezavo med Evropskim okvirom in globalnimi certifikacijskimi dejavnostmi, h katerim je usmerjen ISO 16363 (Giaretta in Schrimpf 2012).

3.4 Razširjenost certificiranja zaupanja vrednih e-repozitorijev

V raziskavi iz leta 2017 e-repozitoriji, ki jih priporočajo različne organizacije, vključno z akademskimi založniki, agencijami za financiranje in podatkovnimi organizacijami večinoma niso imele certifikata. Re3data.org5 je vključeval register 1500 e-repozitorijev in po podatkih repozitorija66.org6 je bilo nekaj več kot 3000 e-repozitorijev po vsem svetu. Oktobra 2017 je certifikat WDS (World Data System of the International Science

Council) pridobilo 63 e- repozitorijev, DSA je pridobilo 50 e- repozitorijev, sedem e-repozitorijev je imelo DSA in WDS certifikat, šest e-repozitorijev je imelo certifikat TRAC, štirje e-repozitoriji so imeli certifikat CTS (CoreTrustSeal), dva e- repozitorija sta pridobila Nestorjev pečat. Noben e- repozitorij ni bil certificiran skladno z ISO 16363. Certifikat o zaupanja vrednem e-repozitoriju je pridobilo manj kot 6% priporočenih e-repozitorijev (Donaldson et.al. 2017).

Vzrok za razkorak med certificiranimi in priporočenimi e-repozitoriji bi lahko bil ta,da gre za dokaj nove postopke in da večina organizacij ne zahteva, da so e-repozitoriji certificirani (Donaldson et.al. 2017). Prav tako certificiranje e-repozitorijev izvira iz specifične discipline /področja. DSA ima ozadje v družboslovnih in humanističnih vedah, NESTOR tvori mreža muzejev, arhivov in knjižnic, ICSU-WDS pa večinoma deluje na področju zemeljskih in vesoljskih znanosti (Dillo in De Leeuw 2015). Petdeset najbolj priporočanih e-repozitorijev je bilo povezanih z naravoslovnimi vedami (življenje/ fizika/ zdravstvene vede), izjeme pri prvih 50 so bili trije interdisciplinarni e-repozitoriji. Repozitoriji, ki delujejo na področju življenskih znanosti (life science) so morda tudi manj ozaveščeni o certificiranju (Husen et al. 2017).

Aprila 2020 je 49 repozitorijev imelo WDS certifikacijo, 24 DSA, 81 CTS (CoreTrustSeal 2020), šest e-repozitorijev je bilo certificirano po TRAC, štirje so pridobili Nestorjev pečat (NESTOR 2009) in en je bil certificiran po ISO 16363 (PTAB 2020). Kljub temu, da se je število certificiranih e-repozitorijev povečalo od leta 2017, je še zmeraj relativno malo repozitorijev, ki so certificirani kot zaupanja vredni. Število certificiranih e-repozitorijev po WDS, DSA in CTS se je skupno povečalo za 30, število e-repozitorijev z Nestorjevim pečatom za dva. Število e-repozitorijev s TRAC certificatom je ostalo isto (CRL 2020). Po ISO 16363 je bil certificiran prvi e-repozitorij (PTAB 2020).

V sklopu raziskave sem podrobneje preučila in analizirala kriterije iz osnovne in razširjene stopnje certificiranja zaupanja vrednih e-repozitorijev (CTS in Nestorjev pečat). Pregledala sem posamezne kriterije oziroma zahteve ter informacije o oceni posameznih e-repozitorijev oziroma organizacij, ki so pridobile CoreTrustSeal ali Nestorjev pečat.

3.5 CoreTrustSeal (osnovna stopnja)

CoreTrustSeal (CTS) kriterije za zaupanja vredne e-repozitorije je razvila delovna skupina DSA – WDS za revidiranje in certifikacijo e-repozitorijev. CoreTrustSeal certifikacija nadomešča DSA certifikacijo in certifikacijo rednih članov WDS (CoreTrustSeal 2020). CTS se v nekaterih delih naslanja na OAIS. Osnovna certifikacija vključuje minimalno intenziven postopek, pri katerem e-repozitoriji dokazujejo, da so trajnostni in zaupanja vredni (Recker et al. 2019).

E-repozitorij, ki želi pridobiti osnovno certifikacijo, najprej opravi notranjo samooceno, ki jo nato pregledajo kolegi v skupnosti. V tem pristopu e-repozitorij in recenzenti tesno sodelujejo. Osnovna certifikacija poleg zunanjih koristi (zaupanja deležnikov, izboljšanje ugleda e-repozitorija, dokazovanje, da e-repozitorij sledi dobrim praksam), e-repozitoriju ponuja tudi številne notranje koristi. Predstavlja izhodišče za primerjavo in pomaga določiti prednosti in slabosti e-repozitorija. S samooceno e-repozitorij oceni svoje notranje postopke, zato je samoocena zelo koristna tudi če e-repozitorij ne želi zaprositi za osnovno certificiranje. E-repozitorij glede na kriterije oceni svoje notranje postopke in jih po potrebi posodobi. CoreTrustSeal certificat je veljaven 3 leta od izdaje (Recker et al. 2019).

Vsak kriterij je obvezen in se ocenjuje samostojno. Ob vsakem kriteriju je besedilo z navodili, ki opisujejo informacije in dokaze, ki jih morajo zagotoviti vlagatelji za objektiven pregled. Vlagatelj mora navesti nivo skladnosti za vsakega od kriterijev:

0 - Ni primerno

1 – E-repozitorij tega še ni upošteval

2 – E-repozitorij ima teoretični koncept

3 – E-repozitorij je v fazi implementacije

4 – Smernica je v celoti implementirana v e-repozitoriju

Če vlagatelj meni, da zahteva ni primerna (0), potem je to treba podrobno utemeljiti. Stopnji skladnosti 1 ali 2 ne zadostujeta za uspešno certifikacijo. Certifikat se lahko podeli, če so nekatere zahteve v fazi implementacije (3) (Recker et al. 2019).

CTS je sestavljen iz 16 zahtev, ki so razdeljene v 3 sklope: organizacijska infrastruktura, upravljanje e-zapisov in tehnologija.

R0 ni kriterij, ki ga ocenjujejo. Znotraj tega kriterija je potrebno navesti kontekst repozitorija (vrsta, kratek opis e-repozitorija in skupnosti, nivo hrambe, notranji/zunanji partnerji, povzetek pomembnih sprememb od zadnje, druge ustrezne informacije).

Organizacijsko infrastrukturo sestavlja 6 zahtev (R1-R6), ki zajemajo odgovornost e-repozitorija za zagotavljanje dostopa do e-zapisov in hrambe gradiva v ustreznem okolju za primerna časovna obdobja (R1), vzdrževanje ustreznih dovoljenj glede dostopa in uporabe podatkov ter spremljanje skladnosti (R2), načrt za zagotavljanje stalnega dostopa in hrambe (R3), zagotavljanje zaupnosti in upoštevanje etičnih norm pri ustvarjenih, zbranih, dostopanih in uporabljenih podatkih (R4), zagotavljanje zadostnih sredstev, zadostnega števila usposobljenega osebja in jasnega sistema upravljanja (R5) ter spremljanje strokovnih mnenj ter povratnih informacij (R6).

Upravljanje e-zapisov sestavlja 8 kriterijev (R7-R14), ki zajemajo zagotavljanje integritete in avtentičnosti podatkov (R7), sprejem podatkov in metapodatkov na podlagi določenih kriterijev za zagotovitev relevantnosti in razumljivosti za uporabnike podatkov (R8), uporabo dokumentiranih procesov in postopkov pri upravljanju arhiviranja podatkov (R9), prevzem odgovornosti za dolgoročno hrambo in upravljanje te funkcije na planiran in dokumentiran način (R10), ustrezno strokovno znanje za obravnavo kakovosti tehničnih podatkov in metapodatkov ter zagotavljanje, da je končnim uporabnikom na voljo dovolj informacij za ocenjevanje kakovosti (R11), potek arhiviranja v skladu z definiranimi delovnimi procesi od prevzema do razširjanja (R12), omogočanje odkrivanja in identifikacije podatkov s strani uporabnikov (R13), omogočanje ponovne uporaba podatkov (R14).

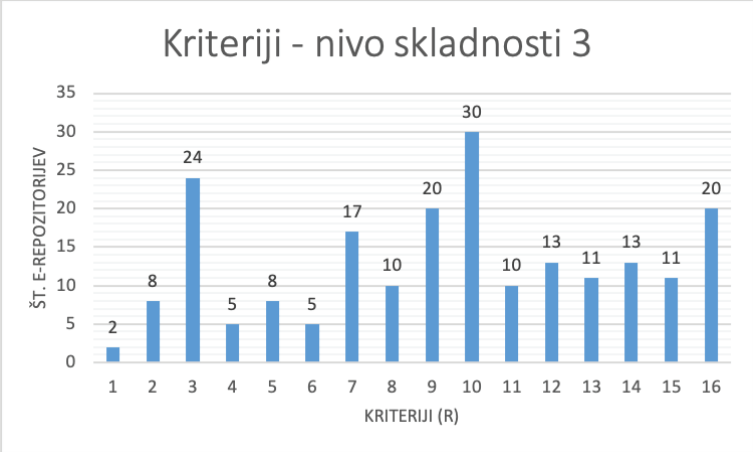
Tehnologijo sestavljata 2 kriterija, ki zajemata ustrezno tehnično infrastrukturo (R15) in varnost (R16) (Recker et al. 2019).

V raziskavi sem pregledala in analizirala e-repozitorije, ki so pridobili CTS. Med njimi ni bilo e-repozitorija s področja farmacije.

Od vseh (81) e-repozitorijev jih je 17 imelo v celoti implementirane vse kriterije. Ostalih 64 je imelo najmanj 1 kriterij do največ 11 kriterijev, ki so bili v fazi implementacije oziroma so dosegli nivo skladnosti 3. Pri petih e-repozitorijh je bil izločen (level 0) kriterij R4 in pri 1 kriterij R16.

Najpogosteje (15-30 e-repozitorijev) je bil nivo skladnosti 3 pri kriterijih R3 (24), R9 (20), R10 (30) in R16 (20). Med 10 in 20 e-repozitorijev je doseglo nivo skladnosti 3 pri kriterijih R7 (17), R8 (10), R11 (10), R12 (13), R13 (11), R14 (13) in R15 (11). Do 10 e-repozitorijev je imelo nivo skladnosti 3 pri kriterijih R1 (2), R2 (8), R4 (5), R5 (8) in R6 (5). Število e-repozitorijev z nivojem skladnosti 3 po kriterijih je prikazano na Sliki 1.

Slika 1: Kriteriji – nivo skladnosti 3 (št. e-repozitorijev)



Največ e-repozitorijev ni imelo v celoti implementirane zahteve s katero prevzemajo odgovornost za dolgoročno hrambo in upravljajo to funkcijo na načrtovan in dokumentiran način. Pravtako večinoma ni bila v celoti implementirana zahteva glede načrta za zagotavljanje stalnega dostopa in hrambe, ustrezno dokumentiranih procesov in postopkov hrambe in zahteva glede ustrezne tehnične infrastrukture za zagotavljanje zaščite objekta in njegovih podatkov, produktov, storitev in uporabnikov. Veliko e-repozitorijev tudi ni zagotovilo ustreznih dokazov, da lahko v celoti zagotavljajo integriteto in avtentičnosti v celotnem življenskem krogu podatkov.

3.6 Nestorjev pečat (razširjena stopnja)

Delovna skupina NESTOR je identificirala kriterije za oceno zanesljivosti e-repozitorija na organizacijskem in tehničnem nivoju ter na osnovi tega izdala katalog kriterijev za zaupanja vredne e-repozitorije. Nestorjev katalog kriterijev upošteva tudi mednarodne pristope in ugotovitve (RLG-OCLC ,'Trusted Digital Repositories: Attributes and Responsibilities'', TRAC „Trustworthy Repositories Audit & Certification: Criteria and Checklist"). Katalog kriterijev je namenjen predvsem spominskim organizacijam (arhivi, knjižnice, muzeji) in služi kot priročnik za izdelavo, načrtovanje in implementiranje zaupanja vrednega e-repozitorija. Na vseh stopnjah razvoja se lahko uporablja tudi za samoocenjevanje. Katalog je namenjen tudi kot orientacija za vse organizacije, ki same upravljajo z arhivom, komercialnim in nekomercialnim ponudnikom storitev in zunanjim ponudnikom storitev. (NESTOR 2009).

Realizacija e-repozitorija za dolgoročno hrambo in izpolnjevanje posameznih kriterijev je večstopenjski proces (zasnova, načrtovanje in specifikacija, realizacija in implementacija, ovrednotenje). Ne gre za rigidni fazni model ampak naj bi se stopnje ponavljale v rednih intervalih kot rezultat nenehnih izboljšav. Za spremljanje tega razvojnega procesa je implementiran ustrezen sistem kakovosti (NESTOR 2009).

Nestrojev pečat predstavlja razširjen postopek samoocenjevanja e-repozitorijev na podlagi standarda DIN 31644. Če samoocena da pozitiven rezultat, lahko e-repozitorije to objavijo z uporabo Nestorjevega pečata za zaupanja vredne e-repozitorije. Postopek je bolj izpopolnjen in njegovi rezultati so bolj natančni kot enostavna samoocena, vendar manj natančen in točen kot formalni postopek certificiranja z zunanjimi revizorji. Celotna revizija naj ne bi trajala dlje kot tri mesece. (NESTOR 2013).

Ocenjevanje je osredotočeno na rešitve, ki jih E-repozitorij uporablja in ne na kakovost arhivirane vsebine. V oceni je ugotovljeno sedanje stanje razvoja arhiva. Načrti, prihodnji projekti ali nekdanje okoliščine niso vključeni. Po dogovoru z Nestorjem e-repozitorij začne s samooceno. Posamezen kriterij je mogoče izključiti. V primeru, da je posamezen kriterij izključen je potrebno to ustrezno utemeljiti. Ko so določeni ustrezni kriteriji, e-repozitorij pripravi izčrpno pisno poročilo o statusu implementacije vsakega posameznega kriterija. Navaja dokumente, kjer so konkretne situacije dokumentirane, ali jih doda, če niso javno na voljo (NESTOR 2013). E-repozitorij izvede samoocenjevanje in podeljuje točke na podlagi lestvice prikazane v Tabeli 1.

Še ne deluje	0	Za ta kriterij še ni načrtov ali dokumentov o izpolnjevanju.
Načrtovano	3	Izdelan je bil pisni načrt izpolnjevanja kriterija. Načrt ne temelji le na objavljenih pristopih drugje, ampak se nanaša tudi na posebne razmere v e-repozitoriju.
Podrobno načrtovan	6	Načrti so bili podrobno pripravljeni. Vse potrebne informacije in odobritve so bile zagotovljene ali pridobljene za implementacijo, ki se je že začela.
Implementirano	10	Načrti so bili izvedeni organizacijsko in/ali tehnično. Ukrepi so bili vključeni v tekoče poslovanje e-repozitorija.

Tabela 1: Lestvica kriterijev samoocenjevanja (NESTOR 2013)

Dokumenti bodo na splošno odobreni in objavljeni v primeru ocene 6 in 10 točk. Če dokumentov ni mogoče objaviti zaradi avtorskih pravic, poslovnih skrivnosti ali varnostnih razlogov morajo biti na voljo revizorjem. Zaupnost je zagotovljena med pregledom. Za pridobitev Nestorjevega pečata se ne sme izločiti kriterijev 1-12 in doseči je treba 10 točk pri vsakem kriteriju. Za ostale kriterije (13-34) je treba doseči povprečno 7 točk.

Po koncu samoocene vso dokumentacijo e-repozitorij posreduje Nestorju. Dva recenzenta dokumetacijo pregledata in določita končno število točk za podaljšano samoocenjevanje.

Nestorjev pečat je veljaven po izdani pozitivni oceni, ko je e-repozitorij objavil poročilo o pregledu, njegove odgovore pri ocenjevanju in vse ustrezne dokumente skupaj s pečatom na lahko dostopnem delu spletnega mesta in ko ga je Nestor dodal v register certificiranih e-repozitorijev. Pečat vključuje leto izdaje. Formalno velja v nedogled. Vendar pa se bo njegova relevantnost po več letih zmanjšala, razen če se opravi nadaljnji pregled. Kljub temu ni zahteve, da je treba postopek ponoviti (NESTOR 2013).

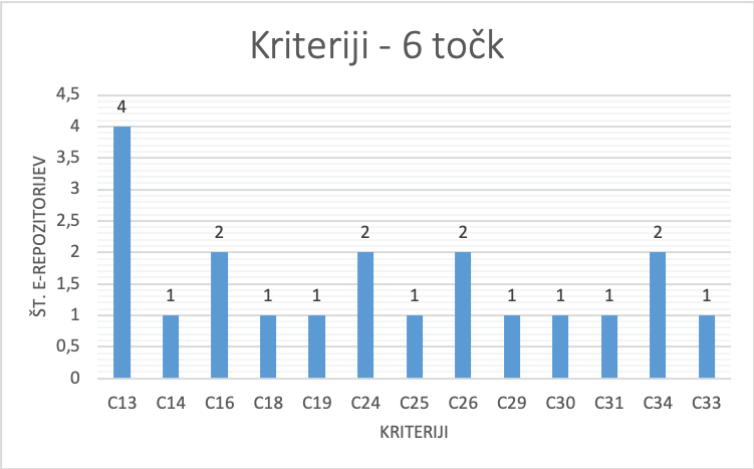
Nestorjev pečat sestavlja 34 kriterijev (C1-C34), ki zajemajo cilje in naloge e-repozitorija (izbira informacijskih objektov in njihov prikaz, odgovornost za dolgoročno hrambo, določitev imenovane skupnosti), zagotavljanje dostopa do e-zapisov, interpretabilnost e-zapisov, zakonsko in pogodbeno podlago ter zakonsko skladnost pri prevzemu, arhiviranju in dostopu, ustrezno financiranje, zadostno število ustrezno usposobljenega osebja, ustrezno organizacijsko strukturo in procese, ukrepe za dolgoročno hrambo, upravljanje kriz/nasledstva, identifikacijo in dokumentiranje pomembnih lasnosti prenesenih e-zapisov, ohranjanje integritete in avtentičnosti ob prevzemu, hrambi in omogočanju dostopa, tehnično avtoriteto, izdajo specifikacije v zvezi s sprejemnimi informacijskimi paketi (SIP), arhivskimi informacijskimi paketi (AIP) in dostopnimi informacijskimi paketi (DIP), pretvorbo SIP v AIP in AIP v DIP, interpretabilnost AIP-ov, uporabo notranjih identifikatorjev za upravljanje zapisov, metapodatke (opisne, strukturne, tehnične in administrativne), beleženje ukrepov za dolgoročno hrambo, IT infrastrukturo in varnost (NESTOR 2013).

V času raziskave so imeli štirje e-repozitoriji Nestorjev pečat. Med njimi ni bilo e-repozitorija s področja farmacije.

Noben e-repozitorij ni dosegel 10 točk pri vseh kriterijih. Po 6 točk so dobili vsi repozitoriji za kriterij C13. Dva e-repozitorija sta dobila po 6 točk za kriterij C16, C24, C26 in C34 ter po en e-repozitorij pri kriterijih C14, C18, C19, C25, C29, C30, C31 in C33. En repozitorij je dosegel 3 točke pri kriterijih C18, C19 in C24. Število e-repozitorijev, ki so dosegli 6 točk po kriterijih je prikazano na Sliki 2.

Noben e-repozitorij ni imel v celoti implementiran kriterij glede identifikacije in dokumentiranja pomembnih lasnosti prenesenih e-zapisov, ki so pomembne za ohranitev. Vendar Nestor ob tem kriteriju navaja, da trenutno ni mogoče pričakovati popolne skladnosti s tem kriterijem, saj je potrebno več časa, da skupnost sprejme in implementira koncept pomembnih lastnosti (NESTOR 2013).

Slika 2: Kriteriji – 6 točk (št. repozitorijev)



Po dva e-repozitorija nista imela v celoti implementiran kriterij glede uporabniškega vmesnika, ki uporabnikom in administraciji e-repozitorija omogoča, da preverjajo in ohranjajo integriteto e-zapisov (tudi pretvorba AIP v DIP), tehničnih ukrepov za dolgoročno hrambo za zagotovitev interpretacije AIP-ov, določanja DIP-ov na podlagi zahtev imenovane skupnosti ter zagotavljanja varnosti e-repozitorija in v njem hranjenega arhivskega gradiva.

Po en e-repozitorij ni imel v celoti implementiran kriterij glede ohranjanja integritete e-zapisov pri vmesniku za prevzem, pri pretvorbi AIP v DIP, pri strukturnih in tehničnih metapodatkih, beleženju ukrepov za dolgoročno hrambo ter pri IT infrastrukturi.

Pravtako po en e-repozitorij ni dosegel popolne skladnosti pri zagotavljanju avtentičnosti zapisov med implementacijo ukrepov za dolgoročno hrambo in dokumentiranju stopnje avtentičnosti ter pri omogočanju preverjanja in vzdrževanja avtentičnosti e-zapisov uporabnikom in administraciji e-repozitorija (vključuje tudi pretvorbo AIP v DIP). Vendar tudi pri teh dveh kriterijih Nestor navaja, da zaradi tesne povezave s C13 trenutno ni pričakovati popolnega izpolnjevanja tega kriterija (NESTOR 2013).

4 RAZPRAVA

Razviti so bili kriteriji in certifikacijski postopki za zaupanja vredne e-repozitorije. Večina jih vsaj deloma sloni na odprtem arhivskem informacijskem sistemu (OAIS). Sodelovanje večih mednarodnih organizacij s področja dolgoročne hrambe je privedlo do formulacije 10 glavnih lastnostih zaupanja vrednih e-repozitorijev.

Kriteriji in certifikacijski postopki sicer navajajo, da so namenjeni tudi drugim organizacijam ne samo spominskim (RL-NARA 2007, NESTOR 2009, Giaretta in Schrimpf 2012), kljub temu med certificiranimi e-repozitoriji nisem zasledila organizacije s področja farmacije ali farmacevtske industrije. Pravtako nisem zasledila raziskav vezanih na uporabo kriterijev ali certificiranja zaupanja vrednih e-repozitorijev na področju farmacije. Verjetno tudi zato, ker certificiranje bolj izvira iz družboslovnih in humanističnih ved ter je v prvi meri namenjeno muzejem, arhivom in knjižnicam. Pravtako dolgoročna hramba dokumentacije v digitalni obliki ni primarna dejavnost farmacevtskih podjetij.

Farmacevtska podjetja morajo seveda zagotoviti zanesljivost hranjenega dokumentarnega in arhivskega gradiva. Pri tem si lahko pomagajo tudi s samooceno svojih notranjih postopkov po kriterijih za zaupanja vredne e-repozitorije in tudi z drugimi standardi (za upravljanje z zapisi, upravljanje s tveganji, za informacijsko varnost, arhivski metapodatki).

Kriteriji s katerimi organizacije ocenijo zanesljivost svojih e-repozitorijev so običajno prosto dostopni (TRAC, CTS, Nestor), tako da lahko organizacije tudi same ocenijo svoje e-repozitorije. Na osnovi kriterijev so bili razviti različni certifikacijski postopki za zaupanja vredne e-repozitorije. Znotraj Evropskega okvira za revidiranje in certificiranje e-repozitorijev so predlagali tri stopnje za certifikacijo zaupanja vrednih e-repozitorijev (osnovna, razširjena, formalna). Z višanjem stopnje certificiranja se poveča tudi število kriterijev oziroma zahtev, ki jim mora e-repozitorij zadostiti, da velja za zaupanja vrednega.

V raziskavi sem podrobneje preučila in analizirala kriterije iz osnovne in razširjene stopnje certificiranja zaupanja vrednih e-repozitorijev (CTS in Nestorjev pečat). Oba certifikata se naslanjata na model OAIS in sta del Evropskega okvira, vendar kljub temu v nekaterih delih uporabljata različno terminologijo. To je predstavljalo problem pri razumevanju posameznih kriterijev oziroma zahtev. Kot sta že ugotovila Giaretta in Schrimpf 2012, terminologija ni usklajena znotraj Evropskega okvira, kar je močno otežilo tudi mojo raziskavo. O problemih, ki izhajajo iz različne terminologije sta razpravljala tudi Lindlar in Rudnik 2019 v zvezi s konceptom imenovane skupnosti. Kako bi lahko vlagatelji, ki niso seznanjeni s terminologijo, uporabljeno v podpornih informacijah, izpolnili zahteve pregledovalcev in dali ustrezno in „specifično" definicijo svoje imenovane skupnosti?

Posamezniki in organizacije bodo tako imeli večje težave pri pripravi dokazov oziroma dokumentacije za postopek certifikacije, še posebej pri prehajanju iz ene stopnje v drugo.

Glede na rezultate raziskave je pri CTS največ problemov predstavljalo načrtovanje in dokumentiranje dolgoročne hrambe, načrti zagotavljanja stalnega dostopa in hrambe ter zahteva glede ustrezne tehnične infrastrukture za zagotavljanje zaščite objekta in njegovih podatkov, produktov, storitev in uporabnikov. E-repozitoriji so tudi težje v celoti zagotavljali integriteto in avtentičnosti podatkov v celotnem življenskem krogu.

Pri Nestorjevem pečatu so se e-repozitoriji srečali s problemom predvsem pri uporabniških vmesnikih, ki uporabnikom in administraciji e-repozitorija omogoča, da preverjajo in ohranjajo integriteto e-zapisov, tehničnih ukrepih za dolgoročno hrambo za zagotovitev interpretacije AIP-ov, določanju DIP-ov na podlagi zahtev imenovane skupnosti ter pri zagotavljanju varnosti e-repozitorija in v njem hranjenega arhivskega gradiva. Težje so tudi v celoti implementirali ustrezno ohranjanje integritete e-zapisov pri vmesniku za prevzem, pri pretvorbi AIP v DIP, pri strukturnih in tehničnih metapodatkih ter beleženju ukrepov za dolgoročno hrambo in pri IT infrastrukturi.

Katalog Nestor in standard DIN 31644 sta bila v glavnem narejena za uporabo v Nemčiji (Giaretta in Schrimpf 2012) in verjetno so tudi zato v času raziskave imeli samo štirje e-repozitoriji Nestrojev pečat. Vzorec za analizo kriterijev je bil posledično zelo majhen in bi bilo za povečanje relevantnosti tega dela raziskave smiselno le-to ponoviti, ko se bo število e-repozitorijev z Nestorjevim pečatom povečalo.

Čeprav postopka certificiranja nista neposredno primerljiva sem našla korelacije med kriteriji, ki so bili bolj problematični in so predstavljali večji izziv pri certificiranju. Pri obeh postopkih ni bilo popolne implementacije pri kriterijih oziroma zahtevah vezanih na dokumentiranje ukrepov za dolgoročno hrambo, zagotavljanje integritete in avtentičnosti v celotnem življenskem krogu, IT infrastrukturo in zagotavljanje varnosti objekta in v njem hranjenega arhivskega gradiva.

5 ZAKLJUČEK

Relativno malo je e-repozitorijev, ki so certificirani kot zaupanja vredni. Med njimi nisem zasledila organizacije s področja farmacije. Kljub temu lahko kriteriji in certificiranje zaupanja vrednih e-repozitorijev v farmacevtski industriji predstavlja dodatno rešitev za preverjanje zanesljive e-hrambe. S samooceno svojega e-repozitorija farmacevtsko podjetje preveri svoje notranje postopke in jih po potrebi posodobi. Z nadaljno zunanjo revizijo zagotovi še večjo zanesljivost svojega e-repozitorija.

Dodatne raziskave in izkušnje glede uporabe kriterijev in certificiranja e-repozitorijev v farmacevtski industriji bodo povečale relevantnost kriterijev in certificiranja zaupanja vrednih e-repozitorijev na tem področju. Predlagam poglobljene raziskave v smeri identifikacije tistih kriterijev, ki so pomembni na področju farmacije, kot tudi študije primerov samoocene proti formalnim standardom (DIN 31644 in ISO 16363).

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Typology: 1.04 Professional Article

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RECORDS AND ARCHIVES MANAGEMENT IN THE CONDITIONS OF DEVELOPMENT AND IMPLEMENTATION OF AUTOMATED INFORMATION SYSTEMS: DELIMITATION OF COMPETENCES BETWEEN ARCHIVISTS AND IT SPECIALISTS

ABSTRACT

The article is devoted to the problem of interaction between archivists and IT-specialists in solving issues of creating electronic documents, managing them throughout their life cycle, as well as transferring them to the archive. Should archivists adapt to the automated information systems developed by IT-professionals, which often offer methods of document processing that are contrary to traditional archival practices, or should they insist on developing such systems that are consistent with these practices? The answer is largely depends on the authority in the field of records and archives management, which the legislation gives to archivists. The presence of appropriate authority allows archivists to establish the functional requirements for automated information systems; the task of IT-professionals in these conditions becomes technical implementation of the established requirements.

Key words: *electronic document, archivist, IT-specialist, competence, modern information technologies, automated information systems*

GESTIONE DI DOCUMENTI E GESTIONE DEGLI ARCHIVI NELLE CONDIZIONI DI SVILUPPO E IMPLEMENTAZIONE DI SISTEMI INFORMATIVI AUTOMATIZZATI: DELIMITAZIONE DI COMPETENZE TRA ARCHIVISTI E SPECIALISTI INFORMATICI

SINTESI

L'articolo è dedicato al problema dell'interazione tra archivisti e specialisti informatici nella risoluzione dei problemi relativi alla creazione di documenti elettronici, alla loro gestione durante tutto il loro ciclo di vita ed al loro trasferimento nell'archivio. Gli archivisti dovrebbero adattarsi ai sistemi informativi automatizzati sviluppati dai professionisti informatici, che spesso offrono metodi di elaborazione dei documenti contrari alle tradizionali pratiche di archiviazione, oppure dovrebbero insistere nello sviluppo di tali sistemi coerenti con queste pratiche? La risposta dipende in gran parte dall'autorità nel campo della gestione dei registri e degli archivi, che la legislazione dà agli archivisti. La presenza di un'autorità competente consente agli archivisti di stabilire i requisiti funzionali per i sistemi informativi automatizzati; il compito dei professionisti informatici in queste condizioni diventa l'attuazione tecnica dei requisiti stabiliti.

Parole chiave: *documento elettronico, archivista, specialista informatico, competenza, moderne tecnologie dell'informazione, sistemi informativi automatizzati*

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UPRAVLJANJE DOKUMENTARNEGA IN ARHIVSKEGA GRADIVA IN ARHIVOV V POGOJIH (PRIMERU) RAZVOJA IN IZVAJANJA AVTOMATIZIRANIH INFORMACIJSKIH SISTEMOV: RAZMEJITEV PRISTOJNOSTI MED ARHIVARJI IN IT-STROKOVNJAKI

IZVLEČEK

Članek je posvečen problemu interakcije med arhivisti in IT-strokovnjaki pri reševanju vprašanj ustvarjanja elektronskega gradiva, njihovega upravljanja v celotnem življenjskem ciklu in njihovega prenosa v arhiv. Bi se morali arhivisti prilagoditi avtomatiziranim informacijskim sistemom, ki so jih razvili IT-strokovnjaki, ki pogosto ponujajo metode obdelave dokumentov, ki so v nasprotju s tradicionalnimi arhivskimi praksami, ali naj vztrajajo pri razvoju takšnih sistemov, ki so skladni s temi praksami? Odgovor je v veliki meri odvisen od pristojnosti na področju upravljanja dokumentarnega in arhivskega gradiva, ki jih zakonodaja daje arhivistom. Prisotnost ustreznih pooblastil arhivistom omogoča, da določijo funkcionalne zahteve za avtomatizirane informacijske sisteme; naloga IT-strokovnjakov v teh razmerah postane tehnična izvedba uveljavljenih zahtev.

Ključne besede: *elektronski dokument, arhivist, IT-strokovnjak, kompetenca, sodobne informacijske tehnologije, avtomatizirani informacijski sistemi*

КІРАВАННЕ ДАКУМЕНТАМІ І АРХІВАМІ ВА ЎМОВАХ РАСПРАЦОЎКІ І ЎКАРАНЕННЯ АЎТАМАТЫЗАВАНЫХ ІНФАРМАЦЫЙНЫХ СІСТЭМ: РАЗМЕЖАВАННЕ КАМПЕТЭНЦЫЙ АРХІВІСТАЎ І ІТ-СПЕЦЫЯЛІСТАЎ

РЭЗЮМЭ

Артыкул прысвечаны праблеме ўзаемадзеяння архівістаў і ІТ-спецыялістаў пры вырашэнні пытанняў стварэння электронных дакументаў, кіравання імі на працягу іх жыццёвага цыклу, а таксама перадачы на захоўванне ў архіў. Ці павінны архівісты прыстасоўвацца да распрацаваных ІТ-спецыялістамі аўтаматызаваных інфармацыйных сістэм, якія часта прапануюць методыкі работы з дакументамі, якія ідуць насуперак традыцыйнай архіўнай практыцы, альбо яны павінны настойваць на распрацоўцы такіх сістэм, якія б гэтым практыкам адпавядалі? Адказ на гэтае пытанне шмат у чым залежыць ад паўнамоцтваў у сферы кіравання дакументамі і архівамі, якімі заканадаўства надзяляе архівістаў. Наяўнасць адпаведных паўнамоцтваў дазваляе архівістам ўсталёўваць функцыянальныя патрабаванні да аўтаматызаваных інфармацыйных сістэм; а задачай ІТ-спецыялістаў у гэтых умовах становіцца іх тэхнічная рэалізацыя.

Ключавыя словы: *электронны дакумент, архівіст, ІТ-спецыяліст, кампетэнцыя, сучасныя інфармацыйныя тэхналогіі, аўтаматызаваныя інфармацыйныя сістэмы*

1 INTRODUCTION

In the last decade, modern information technology (hereinafter - IT) has rapidly entered the field of records and archive management. In previous years automation processes were mainly subject to the creation, accounting and search of records on traditional media, but now modern information systems allow creating electronic records without paper analogues and radically change the technologies of their processing and storage.

Nowadays, the archivist can no longer ignore the invasion of IT in the sphere of his professional activity. Information systems are becoming increasingly important in the professional activities of records managers and archivists, who have to organize their activities within the framework defined by these systems. The archivist is forced to pay more and more attention to the technical aspects of creating electronic documents, their selection for transfer to storage in the archive, their preservation and use in the archive. It is no accident that the topics related to the use of IT in the archival sphere dominate in the subjects of the 19th Congress of the International Council of Archives, that initially was planned to be held in Abu Dhabi, United Arab Emirates in November, 2020 ("artificial intelligence", "big data", "automated appraisal", "managing metadata", "digital preservation", etc.) *(Congress 2020: Abu Dhabi, United Arab Emirates, 16 – 20 November 2020. Call for Proposals and Papers)*.

In these conditions, a number of difficult, but very important questions arise before archivists.

Should archivists adhere to traditional practices when they acquire electronic documents to archive, elaborate finding aids, organize their use in archive, just adapting modern IT to solve these tasks? Or should they fully rely on IT specialists, trust in the computer programs and artificial intelligence developed by them? In other words, should archivists hand over electronic documents to IT-professionals, leaving in their own competence only documents on paper and other traditional media? Or will the solution of professional archival problems in processing electronic documents stay in the hands of archivists, and IT-specialists only technically ensure the implementation of their decisions?

The answers to these questions largely depend on the authority of archivists to establish requirements for the content and functionality of the information systems developed by the IT-specialists. In this regard, the key issue is the distribution of competencies between archivists and IT-professionals in the development of records management information systems and information systems for archival storage.

2 ARCHIVISTS AND INFORMATION SYSTEMS IN THE FIELD OF RECORDS AND ARCHIVES MANAGEMENT: PROFESSIONAL ISSUIES

The problems of implementing records management information systems in the activities of government bodies and other organizations have been in the focus of attention of records managers and archivists for many years. This attention is justified, since documents accepted for storage in archives are created in the operative (current) activities of organizations. The quality of documents created and stored in organizations, regardless of the type of medium, first of all their ability to serve as confirmation and evidence throughout the entire period of existence *(Rybakou, 2019)*, is of paramount importance when deciding on the selection of documents for storage in the archive. The transition from a traditional paper document to electronic (digital) one, created and stored in the information system, actualizes the problem of ensuring its long-term preservation. In these conditions, the task of ensuring the authenticity and integrity of electronic documents comes first.

However, ensuring the authenticity and integrity of electronic documents in information systems at the stage of their operative storage is only part of the problem, the solution of which worries archivists. With the ever-wider implementation of records management systems in the activities of organizations and the accumulation of large amounts of documented information in them, archivists came close to the need to resolve issues related to the acquisition of valuable electronic documents created in various records management systems in archives, including for permanent storage in state archives. It is not only the problems of ensuring the long-term preservation of electronic documents. Archivists need also to solve legal, organizational and technical issues of their acquisition, description, construction of finding aids, organization of use in the archive.

As to traditional paper documents, archivists over the centuries have developed their professional approaches to solving the indicated problems. But the fundamentally different physical nature of the electronic document, its special structure, the presence of metadata compel archivists not only to review some traditional theoretical principles of documentation and archival science (the concepts of "document", "archival document", "originality and copy of a document", etc.), but also revise traditional methods and practices of processing the documents *(Международный архивный форум в Словении, 2019)*.

Features of the physical state of an electronic document and its perception by a person can be figuratively described by the words of the outstanding German philosopher Immanuel Kant, who claimed that any object of the real world is a "thing-in-itself", and our perception of it is a "thing-for-us" *(Кант, 1907; Кант, 1965)*.

The specificity of the physical nature of electronic documents shows itself at different stages of processing them, for example, when establishing logical connections (links) between documents and assignation them to primary complexes (both in records keeping when organizing operative storage and in the archive when organizing their permanent archival storage). Paper documents, which are separate physical objects, can be easily formed into one paper file, which is also a separate physical object that can be subjected to archival description as an independent unit of storage. The information of an electronic document physically does not constitute a single, integral object and looks like it only when the external presentation of an electronic document is in a form accessible and understandable for human perception. How in this case to form electronic documents into primary logical complexes ("electronic files"), which for the same reason can also exist only as a "thing for us", that is, virtually? Should this be done in principle or should this traditional practice be abandoned? If this practice should be abandoned, then how to describe electronic documents at a level higher than a level of a single document? Will artificial intelligence be able to solve qualitatively the problems of searching for archival documents and information in case of abandonment of traditional archival directories (inventories, registries, etc.)?

The solution of these problems is complicated by the fact that electronic documents are created in information systems developed by IT-specialists who are not familiar with either the theory or the practice of records and archives management. When developing information systems, they are driven particularly by commercial interests. Records managers and archivists are not always involved in the development of these systems. Developers do not always consider it necessary to consult with them, to take into account their opinions and wishes. In many cases, IT-specialists put in their developments subjective, sometimes everyday ideas about records keeping and archive business processes, use unprofessional terminology. As a result, when solving professional problems, archivists are tightly limited by the framework into which the developers of the corresponding information systems put them, which forces them to look for non-standard solutions, often contrary to the main provisions of archival theory and practice.

Archivists constantly pay attention to the invasion of IT-specialists in the field of records and archives management and the difficulties arising in connection with this. When developing information systems for archival storage, IT-specialists reduce the problem to archiving documents in the operative (records management) system, they do not see the difference between operative and archival storage of documents. But documents in current activities and in the archive execute different functions, therefore this approach is not acceptable for archivists *(Larin, 2019)*. A very important problem is the fact that in many information systems the links of documents with their creators are lost. This threatens the maintenance of one of the most important principles of archival science – the principle of provenance. In turn, this leads to the loss of value of such a key element of the classification of archival documents as the fond. But it is precisely the principle of provenance that gives the document the value of evidence and is an important part of owning the context of the document *(Schmalzl, 2019; Международный архивный форум в Словении, 2019)*.

Can records managers and archivists somehow influence the situation that is rapidly getting out of their control? Or there is no choice for them and they have to accept humbly the conditions imposed on them by IT-specialists? It seems that they can, but this opportunity is determined by the powers vested by archivists, as well as the correct distribution of competencies between archivists and IT-specialists in the development of information records management systems and information systems for archival storage.

3 ARCHIVISTS AND IT-SPECIALISTS: AUTHORITY AND COMPETENCE

As practice shows, if archivists are endowed with sufficient authority to regulate the creation, use and storage of electronic documents, establish special requirements for the functionality of developed and used information records management and archival systems, then the fundamental, basic principles of archival science and based on them archival methods and practices can be saved. Naturally, they should be modified according to the specific nature and features of the electronic document, as well as the applied information technologies.

It is very important to secure the authority of archivists in the legislation. Consider the Belarusian example.

According to the Archival Law, state regulation in the field of archives and records management is carried out by the President, the Government, the republican administrative body in the field of archives and records management, as well as local authorities. The functions of the republican administrative body are performed by the Ministry of Justice of the Republic of Belarus, which includes the Department on Archives and Records Management. State regulation includes the implementation of a unified state policy, the establishment of uniform principles for archives and records management, including the accumulation, storage and use of documents in archives, control over their activities, etc. *(Закон Республики Беларусь Об архивном деле и делопроизводстве в Республике Беларусь, 2011, art. 6)*.

The legal basis for the use of electronic documents in the country, the basic requirements for electronic documents are established by the special Law on Electronic Documents and Electronic Digital Signatures. State regulation in the field of electronic documents circulation is carried out by the President, the Government, the National Bank, the Ministry of Justice and state archival institutions. The powers of the latter include the development and implementation of a unified state policy in the field of the formation of the National Archival Fond with electronic documents, ensuring their safety, organization of their use as well as state regulation of electronic record keeping and control

over it (*Закон Республики Беларусь Об электронном документе и электронной цифровой подписи, 2009; Закон Республики Беларусь О внесении изменений и дополнений в Закон Республики Беларусь «Об электронном документе и электронной цифровой подписи»*, *2018*, *par.7*, *12)*.

It is obvious that Belarusian archivists have sufficient authority to regulate the creation, use and storage of electronic documents at all stages of their life cycle, including transfer to archives.

It is fundamentally important that according to the Archival Law archivists are empowered to establish requirements for organizing and maintaining record management in state bodies and other organizations *(Закон Республики Беларусь Об архивном деле и делопроизводстве в Республике Беларусь, 2011, art. 26)*. In the context of the implementation of records management information systems, the realization of the relevant powers allows archivists to establish requirements for these information systems and their functional capabilities.

The availability of appropriate authority is important because electronic documents are initially created in information systems, their processing and storage until they are transferred to archive is also organized in the same systems. At the beginning of the year 2020 the number of records management information systems that were used in state bodies and other organizations in Belarus amounted to more than 30 (*Методические рекомендации по выбору автоматизированных систем документационного обеспечения управления (ведомственных систем электронного документооборота) в государственных органах, иных организациях, 2019)*. And these are only those systems that allow processing the managerial (organizational and administrative) documentation. The methods of processing documents in these systems, the formats that are used for their creation and storage are various.

The second fundamentally important point in the Archival Law is the right of archivists to establish requirements for records and archives management not only in state bodies, but also in other organizations, including private ones.

The existence of appropriate authority is due to the fact that the documents created in the activities of private organizations, which are their property, can be recognized as having scientific and historical value and subject to permanent storage. In the future they can be transferred for storage to state archive. Besides, private organizations use electronic documents in the information exchange with state bodies and other organizations that are sources of acquisition of state archives. Accordingly, the electronic documents created in them and sent to state bodies must also comply with uniform requirements in order to ensure their safety, integrity and authenticity over long periods. If the document is created and received by the state body in a format not suitable for its long-term preservation, then it will have to be converted into a format suitable for this purpose. As a result a new document will be created and its authenticity can be challenged. Therefore, the creation and storage of documents in private organizations also need to be regulated.

Within the framework of their authority, Belarusian archivists have developed a set of legal acts regulating the creation of documents both on paper and on electronic media, their processing, operative and archival storage in all organizations.

The basic regulatory legal act is the Instruction on Records Management in the State Bodies, Other Organizations. The Instruction establishes general requirements for the creation and processing documents in all organizations and on all types of media with some exceptions for electronic documents (*Инструкция по делопроизводству в государственных органах, иных организациях* (2019).

Special requirements for the creation of electronic documents, their processing, transferring to the organization's archive, are determined by the Instruction on the Procedure for Dealing with Electronic Records in the State Bodies, Other Organizations (*Постановление Министерства юстиции Республики Беларусь от 6 февраля 2019 г. № 19 «Об утверждении Инструкции о порядке работы с электронными документами в государственных органах, иных организациях», 2019*). Special requirements for the acquisition and storing electronic documents in the organization's archive, creating finding aids and the use of electronic documents are determined by the Rules for Working with Documents in Electronic Form in Archives of the State Bodies, Other Organizations (*Постановление Министерства юстиции Республики Беларусь от 6 февраля 2019 г. № 20 «Об утверждении Правил работы с документами в электронном виде в архивах государственных органов, иных организаций*», 2019).

When developing regulatory legal acts, archivists followed the principle of maximally preserving the identity of a document from the moment it was created or entered into the organization until it was transferred to the archive and stored in the archive. This principle presumes the preservation, as far as possible, the original formats and codes of the electronic document at all stages of its existence (*Рыбаков, 2019*). Intervention in the structure of an electronic document, its conversion to a different format should be eliminated or minimized.

When a document is accepted into the archive and stored, the archivist should not replace the author (creator) of the document. The archivist should not take responsibility for the compliance of the copy of the document received when converting to a different format with the original, since this can lead to the loss of authenticity of the document, may cast doubt on reliability of its content and context and, accordingly, the ability of a document to serve as evidence and proof.

On this basis, regulatory legal acts established that the document should be stored in the organization and transferred to the archive of this organization, and then to the state archive in the form in which it was originally created or entered into this organization. Accordingly, if the document to be stored in archive was created or received by the organization on paper, then it must also be stored and transferred to archive on paper. If the document was created or received by the organization in electronic form, then it must also be stored in electronic form, and it is the electronic document that must be transferred to archive.

Digitization of paper documents is allowed only for those that are of purely practical importance, that is, have no scientific, historical, social or other special value. For such documents storage periods are established up to 10 years, and they are not subject to transfer to the archive. The legislation does not consider such documents as archival and allows their destruction after digitization and confirmation of compliance of the received after digitization electronic copies with their paper originals *(Постановление Министерства юстиции Республики Беларусь от 6 февраля 2019 г. № 19 «Об утверждении Инструкции о порядке работы с электронными документами в государственных органах, иных организациях», 2019, pnt. 67)*.

In conditions of the variety of formats used for creation of electronic documents in different records management information systems, the question arises of ensuring the long-term preservation of those documents that must be transferred to the archive, since not all formats are suitable for this purpose. To solve this problem, the regulatory legal act stipulated that all the documents with the storage period of more than 10 years and which must be transferred to the archive, should be created in PDF/A1 or PDF/A2 format. If the draft document was originally created in a different format, then

before signing it with an electronic digital signature, that is, before creating an official document, it must be converted into one of the above mentioned formats (*Постановление Министерства юстиции Республики Беларусь от 6 февраля 2019 г. № 19 «Об утверждении Инструкции о порядке работы с электронными документами в государственных органах, иных организациях», 2019, pnt. 37*).

Obviously, to implement this requirement, it is necessary to conduct an appraisal of documents at the earliest stages. This purpose is ensured by developing a filing plan. The filing plan should be developed in each organization annually. It must include all paper and electronic files that are conducted in the organization during the year. Each file in the filing plan is assigned a unique index and, depending on the value of the documents included in it, each file gets an appropriate storage period (disposal date). In this case, the type of carrier (paper or electronic) does not matter.

The next important task is the assignment of electronic documents to primary logical complexes, that is, electronic files. Since an electronic document is not a physically integral object, electronic files can also be formed from such documents not physically, but solely on the basis of logical connections (links) between electronic documents, which, by their content and (or) other characteristics, can form a single primary complex (like a paper file). For this purpose, each electronic document gets an index corresponding to the index of the file in the filing plan to which it should be logically assigned (*Постановление Министерства юстиции Республики Беларусь от 6 февраля 2019 г. № 19 «Об утверждении Инструкции о порядке работы с электронными документами в государственных органах, иных организациях», 2019, chapter 2*).

The assignment of electronic documents (including their metadata) to electronic files on the basis of logical relations between them allows to create such a traditional element of the finding aids as an inventory (register) of files.

Initially, electronic files should be transferred to the archive of the organization, which should have an appropriate information system for archival storage. Storage of documents in this information system can be organized in a specialized data center, including one operating on the basis of cloud computing technology. Electronic files should be transferred to information archive system according to the inventory of files created in divisions of the organization. Then a summary inventory of electronic files for the entire organization should be compiled in archive every year. All the inventories in both records management and archive information systems are compiled automatically. In order to certify and confirm the integrity of electronic files and inventories regulatory legal acts prescribe to use a checksum (hash value) (*Постановление Министерства юстиции Республики Беларусь от 6 февраля 2019 г. № 20 «Об утверждении Правил работы с документами в электронном виде в архивах государственных органов, иных организаций», 2019, chapter 4*).

If the organization does not have records management information system and information system for archival storage that meet the requirements of the regulatory legal acts, then all documents of such organizations that are subject to transfer for storage in the archive (with the storage period of more than 10 years) must be created and stored on paper; in case of receipt in electronic form they must be printed out and certified.

Having determined the requirements for the creation, processing and transfer of electronic documents from records management information system to the information system for archival storage on the level of organization, archivists developed requirements for the transfer of electronic documents from organizations' archive to state archive for permanent storage.

To acquire electronic documents in state archives and provide their permanent preservation, the information system of the archive of electronic documents (IS AED) has been developed. IS AED includes a centralized cloud repository located on the resources of the republican platform operating on the basis of cloud computing technologies. The centralized repository will accumulate electronic documents received by all state archives from all state bodies and other organizations that are the sources of their acquisition. In order to ensure compliance with the principle of provenance, when developing IS AED archivists set the task to ensure the possibility of each fond-creator (organization) to transfer its documents to the state archive, a source of acquisition of which it is. Also, the system should enable each state archive to manage independently electronic documents that should be transferred to this state archive and stored in it. Obviously, in the presence of a single centralized cloud repository, when there is a physical fragmentation of individual electronic documents, electronic files and fonds, such a task can be realized only on the basis of establishing logical connections (links) between documents and files that are parts of one fond and constructing an appropriate information management system (*Schmalzl, 2019*).

Built on the above mentioned principles IS AED is currently being tested. To regulate the work of state archives in the system archivists elaborated the draft Rules for the Work of State Archives with Documents in Electronic Form.

Thus, archivists fully exercised their powers to regulate legal and methodological issues of creation and transfer of electronic documents to archival storage. The approach, laid down in normative and methodological documents, should make it possible to preserve the fundamental principles of archival science when working with electronic documents, as well as the traditional levels of description of electronic documents similar to the levels of description of documents on paper (document-file-inventory-fond). The principle of provenance and the concept of "fond" ensure the preservation of the evidentiary power of electronic documents in the conditions of their storage as part of the "Big Data".

However, archivists do not have sufficient knowledge and qualifications in order to independently develop information records and archive management systems that meet the requirements that they have established. And here they need the help of IT-professionals.

The tasks of IT-specialists are to develop information records and archive management systems in such a way that they meet the conditions specified by the regulatory and methodological documents elaborated by archivists.

The sphere of competence of IT-specialists also includes technical issues of data protection both when processing electronic documents, organizing their operative and archival storage, transferring from one information system to another (such transfer will be carried out mainly through telecommunication systems).

An important task of IT-professionals is the development of data transfer formats that should be the same when transferring documents from records management information systems to information systems for archival storage, as well as when transferring documents from the last mentioned information systems to IS AED. The requirement to use uniform data transfer formats at all stages of information interaction is due to the fact that legislation allows for the absence of an information system for archival storage in a concrete organization to transfer electronic documents for temporary storage to a third-party organization (the so-called "archival outsourcing").

Other technical issues are also in the competence of IT-professionals. For example, information system developers should independently propose technical means of verifying the authenticity and validity of digital signatures used to certify electronic documents, electronic files and electronic inventories.

At the same time, archivists should not stay away from the tasks solved by IT-specialists. They should take an active part in the preparation of technical tasks (specifications) for the development of information systems, monitor the compliance of the tasks set in them with the regulatory requirements, as well as the compliance with the professional archival terminology used in them. It is quite true that the Ministry of Communications and Informatization of the Republic of Belarus purchased the development of IS AED for state archives, however, the technical task (specification) for the development was prepared by archivists with the involvement of IT-specialists.

4 PROBLEMS

The above described model of making relations between archivists and IT-specialists is ideal, but in practice its implementation is accompanied by a number of problems, which are sometimes very difficult to overcome.

First of all, it should be noted that to the moment when the requirements for the creation of electronic documents, their operative and archival storage were normatively fixed, the market for relevant services had already been largely saturated with various information records management systems and (to a lesser extent) information systems for archival storage. This is quite logical, since archivists in their elaborations used not only the results of professional theoretical research, but also the accumulated practical experience of using information systems, choosing the best tested practices. However, the establishment for all organizations of uniform requirements for the life cycle of an electronic document, starting from the moment of its creation and ending with its storage in the state archive, revealed that none of the available information systems met these requirements.

The consequence of this was the need to modernize existing information systems or develop new ones, which met opposition from IT-companies specializing in the provision of relevant services. The modernization or development of new information systems required significant labour and financial costs, which in the condition of fierce commercial competition is not possible for all developers. The current situation led to the shifting of financial costs for the refinement or development of new information systems to organizations that are consumers of the corresponding software, and, as a result, to the displeasure of the latter.

As a result, more than one and a half years have passed since the regulatory legal acts had been adopted, but till now there is no an information systems that fully complies with the established requirements, although work in this direction is quite active.

One of the possible solutions to the problem could be the development of unified records and archives management information systems for all organizations. But this will lead, on the one hand, to the monopolization of the corresponding services sector, and, on the other hand, to the recognition of the inefficiency of the earlier automation policy.

A significant problem that needs to be solved when developing and using information systems is a different understanding of the basic professional archival terms by archivists and IT-specialists ("information", "document/record" and "archival document"; "archive" and "archival information system"; "archiving" and" transfer to archive", etc.). A peculiar understanding of archival terminology by IT-specialists sometimes leads to incorrect technological solutions embedded in the information systems they develop.

With all this, it must be recognized that the requirements formulated by archivists for the creation of electronic documents, their operative and archival storage are oriented, first of all, to managerial documentation. However, the principles of work with electronic management documents are not always and not fully applicable to scientific, technical, audiovisual and other special documentation (specificity of file formats, variety and specificity of software used for design and construction, etc.).

It is also important that the normatively fixed requirements for records management information systems provide appraisal of electronic documents, generated in the activities of organizations, and determination of their disposal periods just at the stage of their creation or receipt. However, archivists are well aware that it is not always possible to determine the value of a document and, accordingly, choose the correct format for its creation and storage at this stage. In the future, this may lead to the inability to preserve a certain part of valuable documents, and this is one of the serious problems that need to be decided.

5 CONCLUSIONS

There is no doubt that archivists and records managers, on the one hand, and IT-professionals, on the other, must solve the problems of managing electronic documents and their archival storage in close cooperation. The solution of practical problems should be based on the distribution of powers in accordance with their professional competencies.

Records managers and archivists have to determine how the corresponding information systems should work, what functional capabilities they should have, what result they should provide. To do this, they must have the right to formulate and fix in legal acts the requirements for records and archives management information systems obligatory for different organizations.

Technical issues of implementing the established requirements are the responsibility of IT-professionals. The task of IT-professionals is to develop such information records and archives management systems that would meet established requirements.

The development and modernization of information systems in accordance with the requirements of records managers and archivists will allow establishing logical connections (links) between electronic documents, assigning them to primary logical complexes (similar to traditional paper files), creating traditional elements of finding aids. With the proper setting of tasks, this will ensure compliance with the fundamental principles of archival science (provenance, indivisibility of fonds, etc.), provide the existence of traditional of professional methods of acquisition and description of documents.

At the same time, it is fundamentally important to establish a unified terminology in legal regulatory acts that will be used in automated information systems and which will be followed by professional archivists as well as developers and users of information systems.

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CRISIS MANAGEMENT AND MANAGEMENT OF TELEVISION ARCHIVES DURING THE COVID-19 EPIDEMIC

ABSTRACT

Purpose: *This paper aims to show the operation of television archives at RTV Slovenia during the state of emergency due to the COVID-19 epidemic from 12th March 2020 until 31st May 2020. The crisis has had an effect on the operation of RTV Slovenia and consequently on its archives, which must perform their duties in accordance with the law and instructions of the management. The purpose of the study is to show the management and administration of the archives during the crisis and the effect this had on the operation of RTV Slovenia.*

Method/approach: *To study the impact of the state of emergency on the operation of the television archives, we analysed primary and secondary written sources to connect certain theoretical premises of crisis management with the actual operation of the archives during the crisis. Using the experimental method, we showed the effects of some decisions made by the national crisis management bodies and RTV Slovenia administration on the archives.*

Results: *The results show the operation of archives during the COVID-19 epidemic, the changes implemented due to measures taken by the authorities and the solving of problems related to the organization of work and performing of archival procedures. Furthermore, we are proposing guidelines and recommendations for crisis management of archives in the event of future crises.*

Conclusion/findings: *Two main hallmarks of the management of archives during the crisis were great uncertainty and the need to constantly adapt to the situation. This necessitated the preparation of several plans and decisions that changed according to the course of the crisis. From what we have experienced during this crisis, we need to prepare additional work plans in order to solve problems that we have encountered. The research also shows that the archives can continue performing their work effectively even during the state of emergency.*

Keywords: *state of emergency, crisis management, COVID-19 epidemic, crisis work plans, television archives operation*

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GESTIONE DELLA CRISI E GESTIONE DI ARCHIVI TELEVISIVI DURANTE L'EPIDEMIA DI COVID-19

ABSTRACT

Scopo: *Questo documento mira a mostrare il funzionamento degli archivi televisivi della RTV Slovenia durante lo stato di emergenza a causa dell'epidemia di COVID-19 dal 12 marzo 2020 al 31 maggio 2020. La crisi ha avuto un effetto sul funzionamento della RTV Slovenia e di conseguenza sui suoi archivi, che devono svolgere le loro funzioni in conformità con la legge e con le istruzioni della direzione. Lo scopo dello studio è quello di mostrare la gestione e l'amministrazione degli archivi durante la crisi e l'effetto che ciò ha avuto sul funzionamento di RTV Slovenia.*

Metodo/approccio: *Per studiare l'impatto dello stato di emergenza sul funzionamento degli archivi televisivi, abbiamo analizzato fonti scritte primarie e secondarie per collegare alcune premesse teoriche di gestione delle crisi con l'effettivo funzionamento degli archivi durante la crisi. Utilizzando il metodo sperimentale, abbiamo mostrato gli effetti di alcune decisioni prese dagli organismi nazionali di gestione delle crisi e dall'amministrazione RTV Slovenia sugli archivi.*

Risultati: *I risultati mostrano il funzionamento degli archivi durante l'epidemia di COVID-19, i cambiamenti attuati a causa delle misure adottate dalle autorità e la risoluzione dei problemi legati all'organizzazione del lavoro e all'esecuzione di procedure di archiviazione. Inoltre, proponiamo orientamenti e raccomandazioni per la gestione delle crisi degli archivi in caso di crisi future.*

Conclusione/risultati: *Le due caratteristiche principali della gestione degli archivi durante la crisi erano la grande incertezza e la necessità di adattarsi costantemente alla situazione. Ciò ha reso necessaria la preparazione di diversi piani e decisioni, che sono cambiati seguendo lo sviluppo della crisi. Dato quello che abbiamo vissuto durante questa crisi, dobbiamo preparare ulteriori piani di lavoro per risolvere i problemi che abbiamo incontrato. La ricerca mostra pure che gli archivi possono continuare a svolgere il loro lavoro in modo efficace anche durante lo stato di emergenza.*

Parole chiave: *stato di emergenza, gestione delle crisi, epidemia di COVID-19, piani di lavoro di crisi, operazioni sugli archivi televisivi*

KRIZNO UPRAVLJANJE IN VODENJE TELEVIZIJSKEGA ARHIVA V ČASU EPIDEMIJE COVID-19

IZVLEČEK

Namen: *V raziskavi bomo predstavili delovanje TV-arhiva na RTV Slovenija v izrednih razmerah, in sicer v času epidemije COVID-19 od 12. 3. 2020 do 31. 5. 2020. Izredne razmere so imele vpliv na delovanje RTV Slovenija ter posledično na TV-arhiv, ki je dolžan opravljati svoje naloge v skladu z zakonom in navodili vodstva. Namen študije primera je prikazati upravljanje in vodenje TV-arhiva v krizi in z njim povezan vpliv na poslovanje.*

Metoda/pristop: *V študiji primera vpliva izrednih razmer na delovanje TV-arhiva smo analizirali primarne in sekundarne pisne vire, s katerimi smo povezali nekatera teoretična izhodišča kriznega upravljanja in vodenja. Z uporabo izkustvene metode smo prikazali vpliv nekaterih odločitev organov kriznega upravljanja in vodenja v državi ter RTV Slovenija na TV-arhiv.*

Rezultati: *Z rezultati raziskave želimo prikazati delovanje TV-arhiva v krizni situaciji epidemije COVID-19 kot odziv na ukrepe pristojnih inštitucij, reševanje problemov, povezanih z organizacijo dela, in opravljanjem arhivskih postopkov. Nadalje želimo podati tudi smernice in priporočila kriznega upravljanja ter vodenja TV-arhiva v primeru naslednjih kriz.*

Sklepi/ugotovitve: *Upravljanje in vodenje v izrednih razmerah sta pokazala veliko negotovost razmer ter stalno prilagajanje situaciji. V ta namen je bilo potrebno pripraviti več načrtov in sklepov, ki so se spreminjali glede na potek krize. Na podlagi izkušenj je potrebno pripraviti dodatne načrte dela, s katerimi bi rešili težave, ki so se ob krizi pojavile. Raziskava delovanja TV-arhiva nam je pokazala, da lahko TV-arhiv opravlja svoje delo učinkovito tudi v času izrednih razmer.*

Ključne besede: *izredne razmere, krizno upravljanje in vodenje, epidemija COVID-19, načrti dela v krizi, delovanje TV-arhiva.*

1 UVOD

V Vuhanu na Kitajskem se je decembra 2019 pojavilo več primerov pljučnice. Bolezen so poimenovali koronavirus bolezen 19 oz. COVID-19 (Coronovirus disease 19 oz. COVID-19), virus, ki jo povzroča pa hudi akutni respiratorni sindrom koronavirus 2 (Severe acute respiratory syndrome coronavirus 2 oz. SARS-CoV-2). 11. 3. 2020 je Svetovna zdravstvena organizacija (World health organization oz. WHO) razglasila pandemijo. WHO se je odločila za razglasitev pandemije, ko je število okužb v svetu doseglo 200.000 okuženih in preseglo 8.000 smrti v 160 državah. Virus se je v Evropi najprej razširil v Italiji, kjer je bilo do 18. 3. 2020 okuženih 30.000 prebivalcev, od tega jih je 2.500 umrlo (Spinelli in Pellino, 2020).

V Sloveniji je bil prvi primer COVID-19 potrjen 4. 3. 2020. Z 12. 3. 2020 je država razglasila epidemijo, 16. 3. 2020 pa je sledil »t. i. lockdown« oz. zaprtje javnega življenja. Tega dne je bilo v Sloveniji potrjenih 276 primerov okužb. Uradni zaključek epidemije v Sloveniji je bil 31. 5. 2020. Prišlo je do odprave zaprtja javnega življenja na več področjih. S tem se je odpravil zgolj pravno formalni koncept epidemije, medtem ko je virusna bolezen še vedno prisotna. V obdobju med 4. 3. 2020 in 31. 5. 2020 se je v državi okužilo 1.472 oseb oz. 0,07 odstotkov populacije (Covid-19 Sledilnik), od katerih je umrlo 108 oseb2.

Dogajanje je sprožilo obsežne aktivnosti na področju kriznega upravljanja in vodenja ter z njima povezanega kriznega komuniciranja na državni ravni ter posledično na ravni radiotelevizije Slovenija (v nadaljevanju RTV Slovenija) kot krovne organizacije in televizijskega arhiva in dokumentacije (v nadaljevanju TV-arhiv) kot njenega sestavnega dela. Pomen TV-arhiva je po zakonu o RTV Slovenija (v nadaljevanju ZRTVS-1) zagotavljanje arhiviranja oddaj lastne produkcije, hkrati pa mora zagotavljati podporo programskim službam za nemoteno poslovanje s pripravo arhivskega televizijskega gradiva.

V raziskavi se bomo osredotočili na delovanje TV-arhiva RTV Slovenija v izrednih razmerah, katere vir ogrožanja povezujemo s krizo epidemije COVID-19, ki predstavlja zdravstveni epidemiološki vidik varnosti3.

2 TEORETIČNA IZHODIŠČA

Hermann, Rosenthal, ,t Hart, Holsti, Stern, idr. (v Malešič, 2004) podajajo različne definicije krize, skupno vsem pa je, da je kriza ogrožanje vrednot, ki vsebuje omejen čas za odločanje ali ukrepanje ter povzroča presenečanje ali negotovost.

Po Malešiču ima vsaka kriza »specifične značilnosti, vse krize pa imajo tudi veliko skupnega. V krizi odločevalci na različnih vladnih ravneh zaznajo ogrožanje temeljnih vrednot in norm ali pa ogrožanje njihovega položaja vodilnih javnih uslužbencev. Kriza ponuja omejen čas za oblikovanje politike in sprejemanje odločitev. In navsezadnje, kriza postavlja odločevalce pod velik stres in jih prisili, da sprejemajo odločitve v negotovih razmerah, v katerih dogodki prehitevajo drug drugega« (2004, str. 11).

Krize imajo naslednje »skupne značilnosti:

- ogroženost temeljnih vrednot (npr. ozemeljske celovitosti, pravne države, temeljnih človekovih pravic, človeških življenj, materialnih dobrin, varnosti itd.);
- zelo omejen razpoložljiv čas za odločanje v razmerah, ki so presenetile ali celo šokirale organe upravljanja in vodenja (kritičnost vpliva na čas za ukrepanje, saj si dogodki hitro sledijo in se hitro odvijajo);

2 Do 26. 7. 2020 je število okuženih naraslo na 2.028 in umrlih na 116 (Covid-19 Sledilnik).

3 Krize so posledica vojaškega vidika ogrožanja, naravnih katastrof, migracij, notranje varnosti, epidemije, idr. Pod epidemiološkim vidikom varnosti razumemo vpliv epidemij na varnost države in državljanov.

- negotovost razmer (razmere se naglo spreminjajo, na nastanek in razvoj kriznih razmer pa vplivajo notranji in/ali zunanji vzroki);
- večpodročna in večsmerna posledičnost posamezne odločitve, pri čemer je dopustnost napačnih odločitev minimalna ali pa je sploh ni;
- omejena uporabnost preteklih informacij za odločanje in sredstev, na katere se je mogoče pri izbiri ukrepov nasloniti;
- omejena razpoložljivost primernih obstoječih informacijskih virov za odločanje;
- nenehno in nepričakovano pojavljanje vedno novih znamenj in značilnosti krize;
- intenzivnejši notranji in zunanji nadzor nad odločitvami;
- možnost oviranja tistih, ki so za krizo odgovorni;
- neprestana psihična obremenitev odločevalcev z malo priložnostmi za popuščanja in sprostitev« (Malešič 2004, str. 12–13).

Na krizo se navezuje krizno upravljanje in vodenje, po Boin in ,t Hart (v Malešič, 2004, str. 14) ga lahko definiramo »kot oblikovanje postopkov, dogovorov in odločitev, ki vplivajo na potek krize, in obsega organizacijo, priprave, ukrepe in razporeditev virov za njeno obvladovanje«.

»Raziskave so pokazale, da je ena najobčutljivejših točk kriznega upravljanja in vodenja komuniciranje, ki se odraža tudi v (ne)uspehu nekaterih drugih prvin tega procesa, kakor so preventiva in priprave na krizo, vodenje, odločanje ter politično-organizacijsko sodelovanje in konflikt« (Malešič, 2006, str. 293). Tako imajo v procesu kriznega upravljanja in vodenja vse večjo vlogo množični mediji, »saj vplivajo na pogled javnosti na krizni dogodek sam in na s tem povezano krizno upravljanje« (Malešič, 2006, str. 293).

Različni avtorji (Robert in Lajtha, 2002, Hansen in Stern, 2001, Brandstrom in Malešič, 2004, Marra, 1998, Coombs, 1999 in drugi) »opozarjajo na povezanost med uspešnim kriznim komuniciranjem in učinkovitim kriznim upravljanjem ter vodenjem. Pri tem opozarjajo na nujnost proaktivnosti oblasti pri komuniciranju z javnostmi, na objektivnost, verodostojnost, odprtost in druge značilnosti uspešnega kriznega komuniciranja. Opozarjajo na nujnost organiziranja in načrtovanja procesa kriznega komuniciranja ter na oblikovanje njegovih strategij in taktik« (v Malešič idr., 2006, str. 80).

Namen kriznega komuniciranja natančno opredeli Bernstein, »ki pravi, da je krizno komuniciranje namenjeno spremembi zavesti javnosti[4], večji učinkovitosti upravljavskega napora, informiranju in izobraževanju, vzpostavitvi verodostojnosti in ugleda organizacije, oblikovanju sočutne in solidarne javnosti ter zmanjšanju negotovosti« (Malešič, 2006, str. 296).

Strategija kriznega komuniciranja poteka na dveh nivojih; prvi nivo so državne institucije, drugi nivo pa je strategija znotraj organizacije. Krizno komuniciranje lahko razdelimo na komuniciranje pred, med in po krizi. Pred krizo je pomembno vedeti, na kakšen način se aktivirajo akterji kriznega upravljanja v organizaciji in na kakšen način poteka komunikacija med vodstvom ter zaposlenimi. Med krizo je izredno pomembno, da se podajajo samo preverjene informacije in se hkrati popravljajo različna poročila. Po krizi je potrebno podati preverjene podatke o posledicah krize, evalvirati strategijo kriznega komuniciranja med krizo in pripraviti strategijo za prihodnje krize.

Osrednja televizijska hiša v državi, RTV Slovenija, je po ZRTVS-1 javni zavod posebnega kulturnega in nacionalnega pomena. RTV Slovenija mora po 4. členu ZRTVS-1 v svojih pro-

4 Javnost lahko razdelimo na splošno javnost, prizadeto javnost, notranjo javnost (akterji kriznega upravljanja in vodenja) ter tujo ali mednarodno javnost.

gramih med drugim informirati »o pomembnejših vprašanjih varnosti ljudi, varstvu pred naravnimi in drugimi nesrečami ter obrambi države, vključno z vprašanji delovanja institucij mednarodne skupnosti, v katere je včlanjena Republika Slovenija, ter posreduje nujna obvestila v zvezi z ogroženostjo ljudi, premoženja, kulturne dediščine in okolja« (ZRTVS-1).

Za svoje delovanje v izrednih razmerah RTV Slovenija potrebuje tudi TV-arhiv, ki je v ta namen dolžan opravljati svoje naloge v skladu z navodili vodstva in zakonskimi opredelitvami. V ta namen je sprejet načrt poslovanja v izrednih razmerah, na podlagi katerega se v skladu z Uredbo o kriterijih za razporejanje državljanov na obrambno dolžnost in v skladu z obrambnim načrtom Javnega zavoda RTV Slovenija ter na podlagi zapisnika o inšpekcijskem pregledu na področju civilne obrambe, ki je potekal v maju 2003, določijo zaposleni na delovno dolžnost (svoje delovno mesto v mirnodobnem stanju). Po Zakonu o obrambi se določa, da se delovna dolžnost izvršuje le v vojnem ali izrednem stanju (Seznanitev zaposlenih o razporeditvi na delovno dolžnost, 2003). Zaradi teh določil mora RTV Slovenija opravljati svojo dejavnost tudi v izrednih razmerah.

Razglasitev epidemije je povzročila izredne razmere tako v državi kakor tudi na RTV Slovenija. Odločitve o ravnanju so bile podvržene kompleksni situaciji, s katero smo se tako v novejši zgodovini države in na RTV Slovenija srečali na začetku devetdesetih let. Prvi takšen primer je bila Vojna za Slovenijo[5]. Vidna razlika med epidemijo COVID-19 in vojno v Sloveniji je bila v stopnji koordiniranosti[6] akterjev kriznega vodenja in upravljanja[7]. Kot pravi Malešič (2008, str. 116), je bila ob vojaški agresiji na Slovenijo velika stopnja koordiniranosti, kar je bila posledica daljših priprav, medtem ko je epidemija Slovenijo doletela nepričakovano in ni jasnih posledic krize. Za akterje kriznega upravljanja in vodenja na RTV Slovenija lahko v prvi fazi odzivanja na krizo štejemo vodstvo in službo za varnost in zdravje pri delu, v drugi fazi pa vodje oddelkov programskih služb[8].

3 ZASNOVA RAZISKAVE

V raziskavi bomo prikazali primer študije upravljanja in vodenja TV-arhiva v času kriznih razmer v državi zaradi epidemije COVID-19 z vidika kriznega upravljanja in vodenja.

Z raziskovalnim vprašanjem, kako je vplivala kriza na upravljanje in vodenje TV-arhiva, želimo prikazati odziv na spremembe poslovnih ciljev TV-arhiva pri zagotavljanju nemotenega delovanja RTV Slovenija ter nanizati smernice za delovanje TV-arhiva v primeru prihodnjih nepričakovanih kriz oz. izrednih razmer.

3.1 METODOLOGIJA

Pri raziskavi smo uporabili singularno študijo primera kot kvalitativni in kvantitativni metodološki pristop. Kvalitativni pristop[9] se je kazal v raziskavi upravljanja in vodenja

5 Vojna za Slovenijo ali desetdnevna vojna (27. 6. 1991 – 4. 7. 1991) je bil vojaški spopad med slovensko Teritorialno obrambo in policijo ter jugoslovansko vojsko. Vojna se je zaključila 7. 7. 1991 z Brionskim sporazumom, po katerem je bila določena prekinitev spopadov. Oktobra istega leta je jugoslovanska vojska zapustila teritorij Slovenije.

6 Stopnja koordiniranosti akterjev vodenja in upravljanja je stopnja priprav ter priprava ukrepov v krizi.

7 Akterji kriznega vodenja in upravljanja so po Grošlju (2004, str. 21) tisti akterji, ki so neposredno vključeni oz. so del kriznega vodenja in upravljanja neke krize. Običajno govorimo o državnih organih in institucijah, lahko pa govorimo tudi o predstavnikih civilne družbe.

8 Programske službe na RTV Slovenija so: predvajanje programa, koordinacija programa, prevajalci in lektorji, uredništva ter TV-arhiv.

9 »Za kvalitativno raziskovanje je značilna interpretativna paradigma, poudarek je na proučevanju subjektivnih doživetij posameznika in na ugotavljanju pomena, ki ga posameznik pripisuje posameznim dogodkom« (Starman, 2013, str. 69).

organizacije v krizi na nivoju krovne organizacije in organizacijske skupine. Pri analizi primera smo z analizo primarnih in sekundarnih pisnih virov, kot so ukazi, sklepi, navodila, idr. analizirali teoretična izhodišča in dejavnosti organizacije ob nastanku kompleksne krize[10]. Na podlagi rezultatov smo pregledali preslikavo teoretičnih raziskav varnostnih kriz na praktično raven. Z uporabo izkustvene metode bomo prikazali vpliv odločitve organov upravljanja in vodenja krize v državi ter generalnega vodstva RTV Slovenija na delo TV-arhiva. Kvantitativni pristop se je uporabil pri časovni primerjalni analizi arhivskih dejavnosti med letoma 2019 in 2020.

Pri raziskavi smo se osredotočili na pripravo in izvedbo kriznih načrtov dela TV-arhiva v izrednih razmerah. Pokazali bomo prednosti in slabosti delovanja arhiva v kompleksni krizi.

3.2 OMEJITVE RAZISKAVE

Raziskava je potekala v času izrednih razmer. Situacija se je iz dneva v dan spreminjala, kar je značilno za kompleksne varnostne krize, zato so se določeni rezultati ovrgli oz. so se izkazali za neprimerne že skozi potek raziskave. Kot omejitev raziskave lahko omenimo tudi objektivnost, ker ne moremo pričakovati izključitev vseh osebnih teženj in hotenj raziskovalca.

4 ŠTUDIJA PRIMERA: DELOVANJE TV-ARHIVA V ČASU EPIDEMIJE COVID-19

4.1 UKREPI RTV SLOVENIJA

RTV Slovenija je sprejela različne ukrepe; prvi ukrep je bil sprejet 24. 2. 2020. Z njim so se uvedli prvi preventivni ukrepi za preprečevanje okužb s tem, da so se po različnih lokacijah RTV Slovenija namestili razkuževalniki. 27. 2. 2020 so bila podana navodila za preprečevanje okužb po priporočilih Nacionalnega inštituta za javno zdravstvo (v nadaljevanju NIJZ)[11], vzpostavljena je bila interna telefonska številka za **vprašanja v zvezi z aktualnimi preventivnimi ukrepi in varovanjem zdravja pri delu na RTV Slovenija, podani so bili napotki in usmeritve za ravnanje v skladu s trenutno veljavnimi navodili pristojnih institucij ter razpoložljivimi kontakti za prijavo okužbe na delovnem mestu.**

Naslednji korak je bila nabava zaščitne opreme (razkužila za roke, zaščitne maske, razkužila za opremo idr.) in določitev minimalne razdalje najmanj 1,5metra. Uvedlo se je dodatno čiščenje delovnih prostorov, predvsem rizičnih predelov za stike, kot so: kljuke, stikala, gumbi za priklic dvigala idr.

10 Za epidemija COVID-19 lahko govorimo, da je kompleksna kriza, saj deluje preko nacionalnih meja in zahteva mednarodno sodelovanje in povezanost različnih akterjev kriznega upravljanja in vodenja, ker kompleksna kriza presega pravne in funkcionalne zmožnosti akterjev (Prezelj, Malešič, 2016).

11 Pri preprečevanju okužbe z virusom SARS-CoV-2 je tako kot pri drugih nalezljivih boleznih, ki povzročajo okužbe dihal, priporočljivo upoštevati naslednje vsakodnevne preventivne ukrepe:
- Izogibamo se tesnim stiskom z ljudmi, ki kažejo znake nalezljive bolezni.
- Ne dotikamo se oči, nosu in ust.
- V primeru, da zbolimo, ostanemo doma.
- Upoštevamo pravila higiene kašlja.
- Redno si umivamo roke z milom in vodo.
- V primeru, da voda in milo nista dostopna, za razkuževanje rok uporabimo namensko razkužilo za roke. Vsebnost alkohola v razkužilu za roke naj bo najmanj 60 %. Razkužilo za roke je namenjeno samo zunanji uporabi. Sredstva za čiščenje/razkuževanje površin niso namenjena čiščenju/razkuževanju kože.
- Glede na trenutno epidemiološko situacijo splošna uporaba zaščitnih mask ni potrebna.
- V času povečanega pojavljanja okužb dihal se izogibamo zaprtih prostorov, v katerih se zadržuje veliko število ljudi. Poskrbimo za redno zračenje zaprtih prostorov.

Vzpostavljen je bil tudi protokol v primeru suma na okužbo:

PROTOKOL V PRIMERU SUMA OKUŽBE S KORONAVIRUSOM

1. OSEBA Z VIDNIMI ZNAKI SUMA OKUŽBE JE NA RECEPCIJI/VHODU V RTV

- Receptor/varnostnik jo vljudno ustavi (na varni razdalji 1,5 m) in ji predlaga, da bi si s termometrom, ki je v recepciji, izmerila temperaturo.
- Če ima visoko temperaturo (nad 37,5 stop. Celzija), ji pove, da ne more vstopiti, ker obstaja sum na možnost okužbe s koronavirusom.
- Osebi posreduje zaščitno masko in jo napoti v izolacijsko sobo.
- Oseba sama pokliče svojega osebnega zdravnika oz. eno od telefonskih številk, ki so na voljo, kjer dobi nadaljnja napotila.
- Receptor/varnostnik o dogodku obvesti komunikatorja.
- Komunikator o primeru obvesti vodjo Službe zdravja in varnosti pri delu in vodstvo zavoda.
- Izolacijska soba se po odhodu okužene osebe razkuži. Za to je pristojna Služba zdravja in varnosti pri delu.

2. OSEBA Z VIDNIMI ZNAKI SUMA OKUŽBE JE ŽE V PROSTORIH RTVSLO/PISARNI

- Oseba pokliče interno telefonsko številko xxxx, ostale osebe pa zapustijo prostor.
- Komunikator pisno zabeleži klic osebe z znaki okužbe in ji sporoči, naj počaka v prostoru, kjer se nahaja/pisarni, kamor ji bodo dostavili zaščitno masko.
- Komunikator o klicu obvesti pristojne v Službi zdravja in varnosti pri delu in vodstvo zavoda.
- Komunikator poskrbi za dostavo maske, kar opravi dežurni gasilec, ki si nadene masko in rokavice.
- Okuženo osebo po prejemu maske napotimo v izolacijsko sobo, kjer si lahko izmeri temperaturo. Na poti do izolacijske sobe naj bo sama!
- Oseba sama pokliče svojega osebnega zdravnika oz. eno od telefonskih številk, ki so na voljo, kjer dobi nadaljnja napotila.
- Soba/pisarna, pot med sobo in izolacijsko sobo in izolacijska soba se po odhodu okužene osebe razkužijo. To je v pristojnosti Službe zdravja in varnosti pri delu.
- Prostor in uporabljena službena oprema ostanejo do prejema rezultatov testiranja zaprta. V kolikor je uporaba nujna za odvijanje delovnega procesa, se oprema razkuži z razkužilom. V kolikor je rezultat testiranja na okužbo pozitiven, pooblaščena oseba Službe zdravja in varnosti pri delu takoj naroči dezinfekcijo prostorov, kjer se je oseba nahajala.
- Zaposleni, ki so bili v bližini ali stikih, prejmejo navodila s strani NIJZ in jih upoštevajo.

3. OSEBA JE V PROSTORIH RTV IN NE KAŽE VSEH SPECIFIČNIH ZNAKOV OKUŽBE, ČEPRAV OBSTAJA MOŽNOST, DA BI SE OKUŽILA

- Oseba sama pokliče osebnega zdravnika oz. eno od razpoložljivih telefonskih številk, kjer dobi nadaljnja napotila.
- Oseba nato zapusti prostore RTV Slovenija.

4. ZMANJŠAJMO ŠTEVILO OSEB, KI BI JIH SICER SNEMALI V STUDIJIH

V kolikor je le mogoče, naj se izjave snemajo pred stavbo ali v službeni avli, pri čemer se gostom omogoči neposredni vstop v službeno avlo. Za vstop poskrbi gostitelj. Ustrezne službe v avli namestijo premična ozadja. V času nevarnosti okužbe vas prosimo, da v prostore RTV Slovenija ne vabite zunanjih gostov, če to ni nujno. V primeru razgovorov

ali prevzemov materialov to opravite pred stavbo. Ta navodila morajo biti dostopna na vidnih mestih v vseh tajništvih in na recepcijah RTV Slovenija. Tajništva prosimo, da protokol aktivnosti v primeru suma okužbe s koronavirusom razobesijo na vidnih mestih.

Služba za komuniciranje RTV Slovenija (po elektronski pošti, 12. 3. 2020).

4.2. UPRAVLJANJE IN VODENJE TV-ARHIVA V IZREDNIH RAZMERAH

Priprave na izredne razmere so na RTV Slovenija stekle razmeroma hitro, na prvem operativnem sestanku, dne 27. 2. 2020, so vodje programskih služb prejele nalogo, da na oddelkih načrtujejo poslovne procese v primeru delovanja v izrednih razmerah.

Pri pripravi načrta TV-arhiva za delovanje v izrednih razmerah je bil prvi korak opis stanja. V ta namen smo pregledali kadrovsko strukturo zaposlenih in njihove delovne naloge v običajnih razmerah. TV-arhiv ima skupaj 19 zaposlenih, od tega je 12 dokumentalistov raziskovalcev, trije so arhivarji, en zaposlen je zadolžen za zunanja naročila, en za popis oddaj na starih nosilcih, foto-arhivar je zadolžen za fotografski arhiv in vodja oddelka.

Delovne naloge zaposlenih so razdeljene glede na delovno mesto, ki ga zaposleni zasedajo:

a) Dokumentalist raziskovalec:

- raziskovanje in izbiranje gradiva za programske projekte,
- pridobivanje, selekcioniranje arhivskega in dokumentarnega gradiva,
- analitično obdelovanje gradiva, klasificiranje, indeksiranje in ustvarjanje podatkovnih zbirk,
- raziskovanje na področju arhivistike, zgodovine in drugih ved, povezanih z arhivskim gradivom,
- pripravljanje gradiva iz arhiva za prispevke,
- strokovna obdelava izvirno digitalnega gradiva.

b) Zunanja naročila:

- komunikacija z zunanjimi naročniki,
- priprava vlog za uporabo dokumentarnega in arhivskega gradiva televizije Slovenija,
- priprava pogodb za zunanje naročnike,
- omogočanje ogledov naročenega gradiva,
- koordinacija presnemavanja gradiva na nosilce za naročnike.

c) Popis oddaj na starih arhivskih nosilcih:

- pregled vsebine oddaje na kasetah,
- popis vsebine.

d) Foto-arhivar:

- skeniranje foto filmov,
- poizvedba fotografij.

e) Vodja oddelka:

- načrtovanje, organiziranje, usklajevanje in nadziranje dela,
- opravljanje najzahtevnejših strokovnih del v okviru delovnega področja,
- pripravljanje strokovnih podlag in navodil,
- predlaganje in uvajanje novih metod, tehnik in načinov dela,

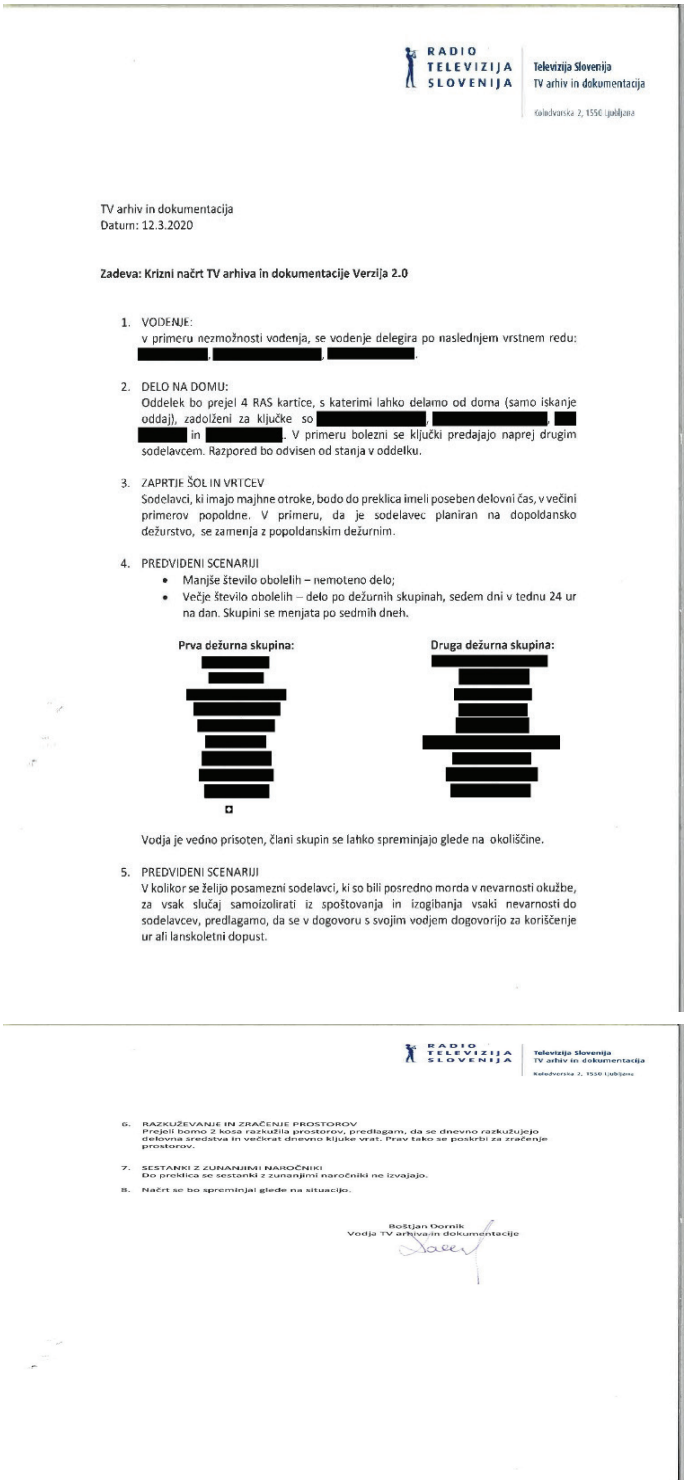
- posredovanje znanj s seminarjev in delavnic sodelavcem,
- sodelovanje pri pripravi razvojnih načrtov oddelka,
- vodenje projektov,
- izdelava analiz in pripravljanje poročil,
- izvajanje rednih letnih razgovorov z zaposlenimi (Opis delovnih mest JZ RTV Slovenije).

Naslednji korak je bil pregled delovnih nalog TV-arhiva kot organizacijske enote, med katerimi smo določili področja delovanja v času izrednih razmer:

- digitalni in analogni prevzem arhivskega gradiva,
- strokovna obdelava gradiva,
- izdaja gradiva notranjim uporabnikom.

V okviru področij smo določili prioritetne naloge. Primarna naloga RTV Slovenija v izrednih razmerah je obveščanje javnosti, zato je TV-arhiv določil, da bo primarno delo podpora informativnemu uredništvu z izdajo gradiva notranjim naročnikom. Sekundarna delo pa digitalni in analogni prevzem arhivskega gradiva ter njegova strokovna obdelava, kot sta popis in arhiviranje. Delovne naloge, kot so zunanja naročila, popis oddaj na starih arhivskih nosilcih ter digitalizacijo fotografij, smo opredelili za postranske dejavnosti v izrednih razmerah, zato smo v prvi fazi načrta prekinili te dejavnosti.

Na podlagi zgornjih ugotovitev smo v prvi fazi načrtovali tako kot prikazuje slika 1.1. Določili smo dve delovni skupini zaposlenih tako, da so se lahko opravljale prioritetne naloge na zgoraj opredeljenih področjih. V vsaki skupini so bili dokumentalisti raziskovalci in arhivarji. Po načrtu naj bi se obe skupini menjavali na sedem dni, ena skupina bi bila na delovnem mestu, druga na čakanju doma. Strategija tega načrta je slonela na operativni in zaledni skupini, ki se med seboj lahko hitro izmenjujeta. Določili smo še vodje skupin, in zaposlene, ki bi lahko delo opravljali na domu s pomočjo oddaljenega dostopa. Za zaposlene z malimi otroki smo določili popoldanski delovni čas. V prvi fazi načrtovanja smo pripravili tudi skupine, ki bi bile trajno nastanjene na delovnem mestu v primeru velike ekspanzije virusnega obolenja. Vseskozi je obstajala možnost naselitve zaposlenih za daljši časovni rok (v ta namen je RTV Slovenija pripravila ležišča) na delovnem mestu. V primeru večjega števila okuženih smo pripravili dve delovni skupini, od katerih naj bi ena fizično dežurala 24 ur dnevno po sedem dni na delovnem mestu. Prav tako smo po vrstnem redu določili tri namestnike vodje v primeru nezmožnosti za opravljanje vodenja in upravljanja oddelka. Določili smo tudi sistem razkuževanja prostorov in prepovedali sestanke z zunanjimi naročniki.



RADIO TELEVIZIJA SLOVENIJA | Televizija Slovenija
TV arhiv in dokumentacija
Kolodvorska 2, 1550 Ljubljana

TV arhiv in dokumentacija
Datum: 12.3.2020

Zadeva: Krizni načrt TV arhiva in dokumentacije Verzija 2.0

1. VODENJE:
   v primeru nezmožnosti vodenja, se vodenje delegira po naslednjem vrstnem redu: [redacted].
2. DELO NA DOMU:
   Oddelek bo prejel 4 RAS kartice, s katerimi lahko delamo od doma (samo iskanje oddaj), zadolženi za ključke so [redacted]. V primeru bolezni se ključki predajajo naprej drugim sodelavcem. Razpored bo odvisen od stanja v oddelku.
3. ZAPRTJE ŠOL IN VRTCEV
   Sodelavci, ki imajo majhne otroke, bodo do preklica imeli poseben delovni čas, v večini primerov popoldne. V primeru, da je sodelavec planiran na dopoldansko dežurstvo, se zamenja z popoldanskim dežurnim.
4. PREDVIDENI SCENARIJI
   - Manjše število obolelih – nemoteno delo;
   - Večje število obolelih – delo po dežurnih skupinah, sedem dni v tednu 24 ur na dan. Skupini se menjata po sedmih dneh.

   Prva dežurna skupina: [redacted]

   Druga dežurna skupina: [redacted]

   Vodja je vedno prisoten, člani skupin se lahko spreminjajo glede na okoliščine.
5. PREDVIDENI SCENARIJI
   V kolikor se želijo posamezni sodelavci, ki so bili posredno morda v nevarnosti okužbe, za vsak slučaj samoizolirati iz spoštovanja in izogibanja vsaki nevarnosti do sodelavcev, predlagamo, da se v dogovoru s svojim vodjem dogovorijo za koriščenje ur ali lanskoletni dopust.

RADIO TELEVIZIJA SLOVENIJA | Televizija Slovenija
TV arhiv in dokumentacija
Kolodvorska 2, 1550 Ljubljana

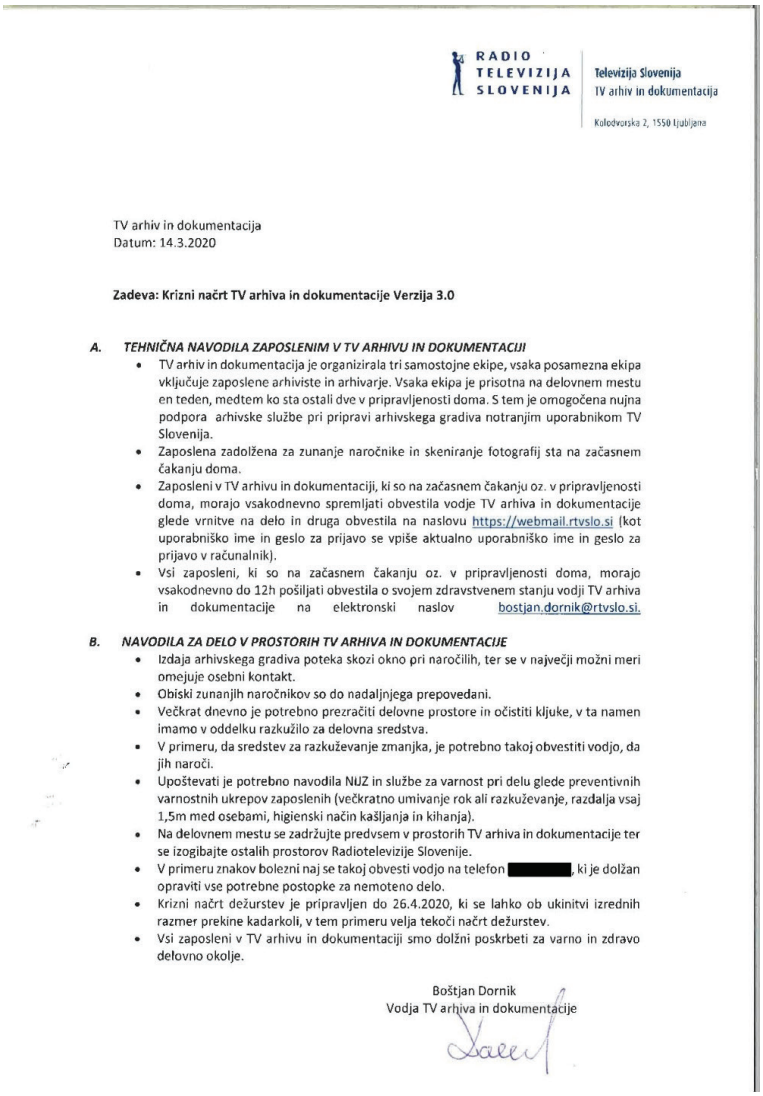
6. RAZKUŽEVANJE IN ZRAČENJE PROSTOROV
   Prejeli bomo 2 kosa razkužila prostorov, predlagam, da se dnevno razkužujejo delovna sredstva in večkrat dnevno kljuke vrat. Prav tako se poskrbi za zračenje prostorov.
7. SESTANKI Z ZUNANJIMI NAROČNIKI
   Do preklica se sestanki z zunanjimi naročniki ne izvajajo.
8. Načrt se bo spreminjal glede na situacijo.

Boštjan Dornik
Vodja TV arhiva in dokumentacije

Slika 1.1: Krizni načrt V 2.0 (lasten vir)

V drugi fazi načrtovanja smo zaradi hitrega prenosa okužbe spremenili sistem oblikovanja skupin, odločili smo se, da raje kreiramo tri skupine s ciljem izdaje gradiva notranjim uporabnikom. V vsako skupino smo določili od tri do štiri dokumentaliste raziskovalce in enega arhivarja. Strategija treh skupin je slonela na tem, da bi v primeru okužbe eno skupino poslali v štirinajstdnevno karanteno, drugi dve pa bi nemoteno opravljali svoje delo. Takšna organizacija skupin je ostala do zaključka epidemije in se je izkazala za učinkovito.

Poleg tega smo (glej sliko 1.2) pripravili tehnična navodila, kjer smo opredelili delovni proces skupin, pripravljenost na delo, zdravstvena navodila za delo idr. Zaradi pomanjkanja tehničnih možnosti do oddaljenih dostopov smo ukinili skupino za oddaljeni dostop.



RADIO TELEVIZIJA SLOVENIJA

Televizija Slovenija
TV arhiv in dokumentacija

Kolodvorska 2, 1550 Ljubljana

TV arhiv in dokumentacija
Datum: 14.3.2020

Zadeva: Krizni načrt TV arhiva in dokumentacije Verzija 3.0

A. TEHNIČNA NAVODILA ZAPOSLENIM V TV ARHIVU IN DOKUMENTACIJI

- TV arhiv in dokumentacija je organizirala tri samostojne ekipe, vsaka posamezna ekipa vključuje zaposlene arhiviste in arhivarje. Vsaka ekipa je prisotna na delovnem mestu en teden, medtem ko sta ostali dve v pripravljenosti doma. S tem je omogočena nujna podpora arhivske službe pri pripravi arhivskega gradiva notranjim uporabnikom TV Slovenija.
- Zaposlena zadolžena za zunanje naročnike in skeniranje fotografij sta na začasnem čakanju doma.
- Zaposleni v TV arhivu in dokumentaciji, ki so na začasnem čakanju oz. v pripravljenosti doma, morajo vsakodnevno spremljati obvestila vodje TV arhiva in dokumentacije glede vrnitve na delo in druga obvestila na naslovu https://webmail.rtvslo.si (kot uporabniško ime in geslo za prijavo se vpiše aktualno uporabniško ime in geslo za prijavo v računalnik).
- Vsi zaposleni, ki so na začasnem čakanju oz. v pripravljenosti doma, morajo vsakodnevno do 12h pošiljati obvestila o svojem zdravstvenem stanju vodji TV arhiva in dokumentacije na elektronski naslov bostjan.dornik@rtvslo.si.

B. NAVODILA ZA DELO V PROSTORIH TV ARHIVA IN DOKUMENTACIJE

- Izdaja arhivskega gradiva poteka skozi okno pri naročilih, ter se v največji možni meri omejuje osebni kontakt.
- Obiski zunanjih naročnikov so do nadaljnjega prepovedani.
- Večkrat dnevno je potrebno prezračiti delovne prostore in očistiti kljuke, v ta namen imamo v oddelku razkužilo za delovna sredstva.
- V primeru, da sredstev za razkuževanje zmanjka, je potrebno takoj obvestiti vodjo, da jih naroči.
- Upoštevati je potrebno navodila NIJZ in službe za varnost pri delu glede preventivnih varnostnih ukrepov zaposlenih (večkratno umivanje rok ali razkuževanje, razdalja vsaj 1,5m med osebami, higienski način kašljanja in kihanja).
- Na delovnem mestu se zadržujte predvsem v prostorih TV arhiva in dokumentacije ter se izogibajte ostalih prostorov Radiotelevizije Slovenije.
- V primeru znakov bolezni naj se takoj obvesti vodjo na telefon [redacted], ki je dolžan opraviti vse potrebne postopke za nemoteno delo.
- Krizni načrt dežurstev je pripravljen do 26.4.2020, ki se lahko ob ukinitvi izrednih razmer prekine kadarkoli, v tem primeru velja tekoči načrt dežurstev.
- Vsi zaposleni v TV arhivu in dokumentaciji smo dolžni poskrbeti za varno in zdravo delovno okolje.

Boštjan Dornik
Vodja TV arhiva in dokumentacije

Slika 1.2: Krizni načrt V 3.0 (lasten vir)

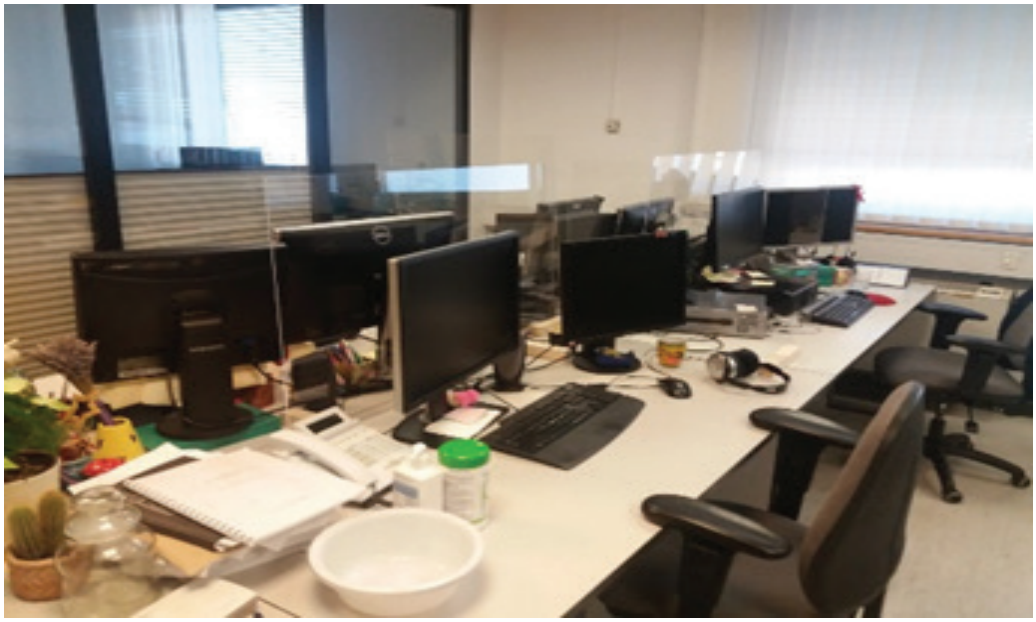
Komunikacija v krizi je potekala predvsem preko elektronskih sporočil in telefonov s strani službe za komuniciranje in vodje oddelka. Problem kriznega komuniciranja leži v zelo negotovih razmerah, saj se je situacija spreminjala iz dneve v dan (tudi iz ure v uro), zato je bilo komuniciranje velikokrat nasprotujoče, npr. en dan so veljale ene usmeritve, naslednji dan pa druge.

Poleg ukrepov, ki jih je pripravila RTV Slovenija, je TV-arhiv pripravil tudi svoje ukrepe.

Najprej je bil prepovedan vstop v prostore TV-arhiva vsem zunanjim naročnikom, kasneje pa je bila sprejeta enaka odločitev tudi za notranje naročnike. Za namen njihove izposoje je bilo potrebno počakati pred vrati oz. okencu za naročila, saj je bil naš cilj zmanjšati neposredne kontakte (glej sliko 1.3).

Slika 1.3: Primer sprejema naročil za notranje uporabnike (lasten vir)

Naslednji korak je bila fizična zaščita prostorov v skladu s priporočili NIJZ. Ker v skupnem prostoru svoje delo opravlja enajst dokumentalistov raziskovalcev, med njimi pa ni mogoče fizično ločiti prostor na oddaljenost 1,5m, smo pregradili delovna mesta s pleksi steklom (glej sliko 1.4). S tem ukrepom smo zagotovili vrnitev zaposlenih na delovno mesto ob uradnem zaključku epidemije.



Slika 1.4: Primer razmejitve delovnih mest s pleksi steklom (lasten vir)

V obdobju izrednih razmer je bilo delo TV-arhiva usmerjeno na primarno in sekundarno delo:

- **Delo z notranjimi naročniki**
  V obdobju epidemije smo izdali 650 naročil v 52 delovnih dneh oz. povprečno 12,5 naročil dnevno. Posebnost je bila v tem, da je bilo izdanih enkrat več naročil kot v običajnih razmerah, od teh je bila večina za potrebe informativnega programa. Izdaja arhivskega gradiva se je v mesecu aprilu in maju 2020 preusmerila tudi na pripravo arhivskega gradiva za Evropsko radiodifuzno zvezo (v nadaljevanju EBU) z namenom izmenjave oddaj med članicami[12]. Zaradi odločitev televizijskih hiš, da v času epidemije prekinejo snemanje novih oddaj, se je s tem pojavil primanjkljaj novih oddaj.
- **Digitalni in analogni prevzem arhivskega gradiva ter njegova strokovna obdelava**
  Poleg preventivnih ukrepov je bil eden večjih ukrepov prekinitev snemanja novih oddaj. Ta ukrep je neposredno vplival na TV-arhiv z dveh vidikov, in sicer: na eni strani se je zmanjšal dotok novih oddaj za strokovno obdelavo in trajno arhiviranje, na drugi strani pa je bilo potrebno zapolniti programski čas. Ob nastanku izrednih razmer se je pričakovalo, da bo stanje kratkotrajno in na podlagi tega smo pripravili v TV-arhivu načrt, kjer je bilo primarno delo predvsem izposoja za notranje naročnike. Po enem mesecu je zaradi prekinitve snemanj stekel postopek digitalizacije starejših posnetkov (v osnovi so že popisani, vendar v starem sistemu) za potrebe predvajanja programa, s čimer se je drastično povečal dotok oddaj za strokovno obdelavo v digitalni arhiv. Zaradi vzpostavitve skupin in s tem povezanim manjšim številom dokumentalistov raziskovalcev, ki skrbijo za strokovno obdelavo in trajno arhiviranje, so se oddaje kopičile na arhivskem strežniku in s tem zmanjševale prostor na diskovnem polju.

V trimesečnem obdobju smo prevzeli 2.786 in strokovno obdelali ter trajno arhivirali 1.507 oddaj, v enakem obdobju lani smo prevzeli 2.813 oddaj in strokovno obdelali ter trajno arhivirali 2.895 oddaj (glej tabelo 1.1.).

12 Članice EBU so evropske nacionalne televizijske hiše.

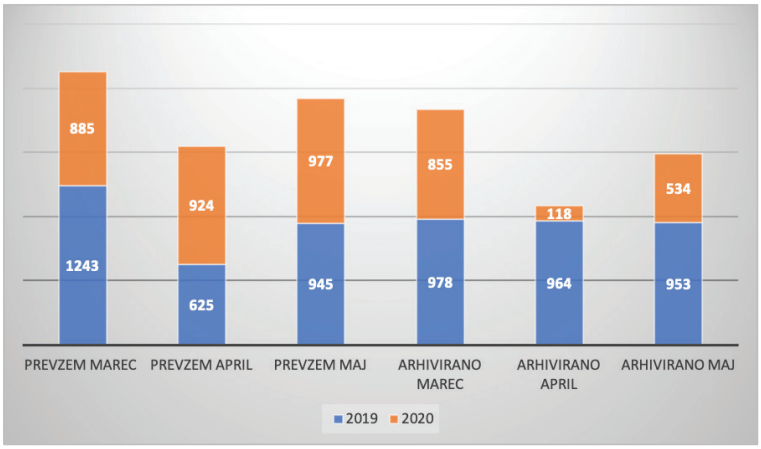


Tabela 1.1.: Primerjalni pregled prevzema in arhiviranja marec–april 2019 in 2020

Podatki kažejo, da je v obdobju izrednih razmer število prevzetega arhivskega gradiva naraščalo. Drastičen upad se kaže pri arhiviranju, če primerjamo mesec marec 2020 z aprilom 2020. Povečanje števila arhiviranih oddaj v maju 2020 je rezultat sprejetega ukrepa za povečanje aktivnosti pri strokovni obdelavi in posledično trajnem arhiviranju oddaj.

V običajnih razmerah se je v istem časovnem obdobju strokovno obdelalo in trajno arhiviralo 965 oddaj mesečno, medtem ko sta se v izrednih razmerah arhivirali zgolj 502 oddaji mesečno oz. kar 48 odstotkov manj. Še posebno velika razlika je bila v mesecu aprilu 2020, ko se je arhiviralo zgolj 12 odstotkov oddaj glede na mesec april 2019.

Medtem ko skupni seštevek prevzetih oddaj kaže na veliko razliko v številu prevzetih oddaj v mesecu marcu 2019 in 2020, pa v drugih dveh mesecih ni bilo večjih sprememb. Podrobnejša slika kaže, da je povečanje števila prevzetih oddaj v mesecu aprilu in maju 2020 predvsem posledica digitaliziranja starejših oddaj.

5 ZAKLJUČKI

Raziskava delovanja TV-arhiva v času krize COVID-19 ter z njo povezanih izrednih razmer je potrdila teoretična izhodišča krize, saj smo se vseskozi ukvarjali s spremembami kriznih načrtov, ki so bile posledica negotovih razmer in omejenosti časa za odločanje. Upravljanje in vodenje v izrednih razmerah sta pokazala veliko negotovost razmer in stalno prilagajanje situaciji. Rešitev za delo s tremi skupinami se je izkazala za učinkovito v primeru eventualnih okužb in nemotenega poslovanja, medtem ko pa nam je po drugi strani primanjkovalo dokumentalistov raziskovalcev za strokovno obdelavo in trajno arhiviranje arhivskega gradiva. Za izredne razmere v prihodnosti je smiselno pripraviti načrt dela, s katerim bi premostili težave strokovne obdelave arhivskega gradiva, pa naj bo to delo od doma ali stalna prisotnost na delovnem mestu.

Določitev primarnih in sekundarnih delovnih nalog je bila na začetku pravilna, ampak se je ob dolgotrajnosti krize izkazalo, da je bilo potrebno prioritete spremeniti ter se osredotočiti tudi na strokovno obdelavo gradiva ter trajno arhiviranje.

Na podlagi izkušenj je potrebno pripraviti izredni načrt dela v primeru drugega vala oz. drugih izrednih razmer. Prioriteta pri delu TV-arhiva ne sme biti samo podpora notranjim naročnikom oz. informativnemu programu, ampak je potrebno delovne naloge razširiti na:

- **Strokovno obdelavo arhivskega gradiva:** arhivsko gradivo je potrebno popisovati sproti, da se izognemo pomanjkanju popisanega arhivskega gradiva na aktualno temo. V tem času se je namreč zgodilo, da je prišlo do pomanjkanja gradiva na temo COVID-19, ki je bilo najbolj aktualno in iskano.
- **Trajno arhiviranje:** potrebno je trajno arhivirati arhivsko gradivo tudi v izrednih razmerah, ker ima TV-arhiv na diskovnem polju prostora za prevzem gradiva za dva meseca.
- **Podpora zunanjim naročnikom:** poleg podpore pri izdaji arhivskega gradiva notranjim uporabnikom je potrebno upoštevati tudi zunanje uporabnike, kot so npr. EBU in druge televizijske hiše s ciljem izmenjave oddaj zaradi prekinitev snemanja novih.

Raziskava delovanja TV-arhiva nam je pokazala, da lahko TV-arhiv opravlja svoje delo v času izrednih razmer in da je ena izmed pomembnejših organizacijskih enot znotraj RTV Slovenija, saj skrbi tako za pripravo arhivskega gradiva za potrebe informiranja javnosti, kakor tudi za dopolnjevanje programskih vsebin.

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Typology: 1.01 Original scientific research

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APPRAISAL OF ELECTRONIC RECORDS – A CASE STUDY ABSTRACT

ABSTRACT

Since years, most of the Austrian Federal Administrations produce electronic records. We have to make archival selection decisions before the creation of records (prospective appraisal). In this presentation, the author shows two solutions, which were found for prospective appraisal of electronic metadata and electronic records in the Styrian Federal Administration. To create a software with a workflow including restricted access to the metadata, a tight cooperation between the IT-department, the department of organization and the archives is necessary.
Key words: *appraisal, records management, archival science, information management technologies*

VALUTAZIONE DEI DOCUMENTI ELETTRONICI – UN CASO DI STUDIO

SINTESI

Da anni, la maggior parte delle amministrazioni federali austriache produce documenti elettronici. Dobbiamo prendere decisioni per la selezione d'archivio prima della creazione dei documenti (valutazione in prospettiva). In questa presentazione, l'autore mostra due soluzioni, che sono state trovate per la valutazione in prospettiva dei metadati elettronici e dei documenti elettronici nell'Amministrazione federale della Stiria. Per creare un software con un flusso di lavoro che include un accesso limitato ai metadati, è necessaria una stretta collaborazione tra il reparto informatico, il reparto organizzativo e gli archivi.
Parole chiave: *valutazione, gestione documentale, archivistica, tecnologie di gestione informatica*

VREDNOTENJE ELEKTRONSKEGA GRADIVA - PRIMER ŠTUDIJE

IZVLEČEK

Večina avstrijskih zveznih uprav že leta ustvarja dokumente v elektronski obliki. Odločitve o arhivskem izboru moramo sprejeti pred ustvarjanjem dokumentov (predvideno vrednotenje). V tej predstavitvi avtor prikazuje dve rešitvi, ki sta bili najdeni za morebitno vrednotenje elektronskih metapodatkov in elektronskih zapisov v Štajerski zvezni upravi. Če želite ustvariti programsko opremo z delovnim tokom, vključno z omejenim dostopom do metapodatkov, je pri tem potrebno tesno sodelovanje med IT-oddelkom, organizacijskim oddelkom ter arhivi.
Ključne besede: *vrednotenje, dokumentologija, arhivistika, upravljanje informacijskih tehnologij*

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BEWERTUNG DIGITALER AKTEN – EINE FALLSTUDIE

ABSTRACT

Die Arbeit mit digitaler Protokollierung begann in Österreich bereits in der zweiten Hälfte des 20. Jahrhunderts. Der elektronische Akt wurde im beginnenden 21. Jahrhundert in Österreichs Verwaltung ausgerollt. Die inhaltliche Bewertungsarbeit hat sich mit diesem Medienwandel nicht geändert. Wohl aber sind technische Standards und Workflows zusätzlich zu berücksichtigen. Die Bewertungstätigkeit erfolgt nun weitgehend prospektiv. Im Beitrag werden zwei Lösungen präsentiert, die die Bewertung von digitalen Metadaten sowie des digitalen Aktes erleichtern und die Bewertungsentscheidungen sichern.

Key words: *appraisal, records management, archival science, information management technologies*

1 EINLEITUNG

Die Verwaltung arbeitet heute international zunehmend mit dem elektronischen Akt. Eine Ausweitung der digitalen Verwaltung wird durch Digitalisierungsstrategien der Politik gefördert. So wurde auch im Regierungsprogramm der Republik Österreich für die Periode 2020 bis 2024 eine breit angelegte Digitalisierungsstrategie in Aussicht genommen, die verschiedene Bereiche umfassen soll. Neben der Förderung des digitalen Ausbaues in Bildung und Forschung setzt man auf die Digitalisierung der Verwaltung und forciert den Ausbau der dafür notwendigen Breitband-Infrastruktur. *Darauf aufbauend soll die öffentliche Verwaltung durch die Digitalisierung einfacher werden – modern, effizient und bürgerorientiert – mit Fokus auf die Menschen und deren Lebenssituationen. Höchstmöglicher Datenschutz und vollumfängliche Kontrolle über die eigenen Daten sind dafür Grundvoraussetzungen. Open Data schafft neue Möglichkeiten für gesteigerte Transparenz von Politik und öffentlicher Verwaltung. Eine vorausschauende Netzpolitik sichert Grund- und Persönlichkeitsrechte im digitalen Raum.* (Regierungsprogramm 2020, 219)

Der Weg ist damit klar vorgegeben: Die Verwaltung wird noch größere Mengen an digitalen Daten produzieren, die schließlich den Archiven zur Übernahme angeboten werden.

Dieser Beitrag widmet sich nicht der inhaltlichen Bewertung von digitalen Daten, sondern beschreibt zwei Bewertungstools, die im Steiermärkischen Landesarchiv im Einsatz sind, um die Bewertungsarbeit für digitale Metadaten sowie für den gesamten digitalen Verwaltungsakt zu systematisieren und zu erleichtern.

2 BEWERTUNG VON DIGITALEN METADATEN

Beginnend in den 1980er-Jahren stieg die steirische Landesverwaltung auf ein elektronisches Kanzleiinformationssystem um, das den Namen „AKVE" erhielt. Die Akteninhalte selbst blieben in analoger Form bestehen. Das Steiermärkische Landesarchiv ist daher bei der Übernahme dieser Akten mit einem Hybridsystem konfrontiert. Mit dieser Umstellung setzte ein gewisser Hype um die einfachere Suche nach Akten vom Schreibtisch aus ein, der allerdings einherging mit einem Verlust von Wissen über Schriftgutverwaltung. Die Einhaltung der Vorgaben einer Kanzleiordnung wurden zunehmend ignoriert, umso verbreiteter war die Meinung, mit Hilfe eines digitalen Kanzleimanagementsystems und dessen Suchfunktion alles finden zu können. War zuvor das Registraturpersonal eingehend geschult worden, kamen nun gering entlohnte Kanzleikräfte in der digitalen Proto-

kollierung zum Einsatz, für deren Einschulung mitunter die Zeit und auch das Verständnis fehlte. Die Qualität der Schriftgutverwaltung verschlechterte sich auch durch die Möglichkeit einer freieren Erstellung des Aktenplans. Musste zuvor der Aktenplan einer Abteilung von der Landesamtsdirektion genehmigt und auch eingehalten werden, so ermöglichte das Kanzleiinformationssystem ein eigenständiges Anlegen neuer Aktenplanabschnitte. Zusätzlich wurden Metadaten unvollständig oder manchmal sinnentleert vergeben. Als die Funktionalitäten des Kanzleiinformationssystems ausgeweitet wurden und auch Digitalisate mit den Metadaten verknüpft werden konnten, erfolgte an manchen Stellen die Vernichtung der Originale, obwohl in dieser Phase nur der analoge Akt rechtliche Gültigkeit hatte. Damit wurden, wie auch Markus Schmidgall für das Bundesland Vorarlberg feststellte, die Kriterien der Authenticity, Reliability, Integrity und Usability, wie sie nach DIN ISO 15489-1 für die Schriftgutverwaltung definiert sind, ignoriert (Schmidgall 2019:143f. Lutz 2012. ISO 30301:2011-11 Information and documentation). Diesem Missstand versuchte man mit Methoden und Werkzeugen des Records Managements zu begegnen. Zusätzlich zu den Qualitätsmerkmalen definiert der Standard die Anforderungen für ein elektronisches Records Management System und den dafür notwendigen Workflows und Geschäftsprozessen. (Schmidgall et al. 2018, 155–189)

Diese Entwicklung hatte gravierende Auswirkungen auf die Bewertung der Verwaltungsdaten. Denn die Bewertung erfolgte üblicherweise auf der Grundlage des Aktenplans einer Dienststelle. Da dieser Aktenplan jedoch nicht mehr eindeutig festgelegt, sondern frei erweiterbar und damit fließend war, stießen die Archivar*innen bei der Bewertung auf Komplikationen und der Bewertungsaufwand erwies sich als ungleich höher.

Als die steirische Landesverwaltung den Entschluss zum Umstieg auf den elektronischen Akt mit digitalen Metadaten und Contents fasste, wurden die Daten aus dem digitalen Kanzleiinformationssystem exportiert und in einem digitalen Zwischenarchiv gespeichert. Dieses digitale Zwischenarchiv mit dem Namen ZAZA (Zentrales Akten-Zwischen-Archiv) wurde von der IT-Abteilung des Landes Steiermark in Zusammenarbeit mit dem Landesarchiv und der Organisationsabteilung programmiert und ein Metadatenset erarbeitet für die Daten, die aus dem Kanzleiinformationssystem übernommen wurden. Dieses Zwischenarchiv ermöglicht einigen wenigen Personen in den Dienststellen den weiteren Zugriff auf die Metadaten und damit das Auffinden der Akten in den eigenen Aktenlagern. Das Berechtigungssystem wurde sehr restriktiv gehandhabt und den Dienststellen nur mehr lesender Zugriff vergeben. Das Steiermärkische Landesarchiv erhielt sowohl lesende als auch schreibende Berechtigung. Das Tool dient nämlich auch als Prüfmodul für die Bewertungsarbeit des Landesarchivs. Die aus der Zeit der analogen Verwaltungstätigkeit stammenden Bewertungsentscheidungen aus den Skartierplänen waren mit den einzelnen Dienststellen erarbeitet worden und sind bereits in das Kanzleiinformationssystem eingeflossen. ZAZA bietet die Möglichkeit, die Bewertungsattribute anhand der Metadaten zu überprüfen, die Bewertungsentscheidungen zu ergänzen und endgültig festzulegen.

Bei der Datenanalyse für das Mapping kamen weitere Unzulänglichkeiten in der Metadatenerstellung im Kanzleiinformationssystem zutage. So wurden etwa Datumsfelder willkürlich befüllt, wodurch der eindeutige Abschluss von Akten nicht ermittelt werden kann. Als Konsequenzen daraus ergeben sich verlängerte Sperrfristen, da diese erst mit dem Einpflegen der Akten in das Zwischenarchiv zu laufen beginnen können, denn der tatsächliche Abschluss der Akten ist aus den Metadaten nicht zu ermitteln. Bevor das Landesarchiv mit ZAZA eine endgültige Bewertungsentscheidung trifft, sind daher Datenanalysen notwendig. Diese betreffen auch die Eintragungen der aus den Skartierplänen übertragenen Bewertungsattribute.

Nach der Bewertung der in ZAZA zur Übernahme angebotenen Aktengruppen, erstellt das Tool einen Prüfbericht, welcher der aktenbildenden oder abgebenden Dienststelle übermittelt wird mit dem Auftrag, die archivwürdigen Aktengruppen zu übergeben und die nicht-archivwürdigen Akten zu vernichten. Die Metadaten werden hierauf in das Archivinformationssystem des Landesarchivs übertragen, sie bleiben aber auch in ZAZA erhalten, um den Dienststellen weiterhin die Suche zu ermöglichen. Auch Metadaten von nicht-archivwürdigen Akten verbleiben in ZAZA, da grundsätzlich alle Metadaten als archivwürdig gelten. Bis zur Implementierung eines digitalen Archivs für den elektronischen Akt werden somit alle Metadaten aus dem Kanzleiinformationssystem in diesem digitalen Zwischenarchiv gespeichert.

Mit dem Umstieg auf den elektronischen Akt (ELAK) war die Programmierung einer Schnittstelle von ZAZA zum ELAK notwendig, da nicht alle Akten abgeschlossen werden konnten, sondern im ELAK zur weiteren Bearbeitung zur Verfügung stehen mussten. Dieser Medienbruch innerhalb von Akten wurde sowohl im ELAK als auch in ZAZA gekennzeichnet.

3 BEWERTUNG DIGITALER AKTEN

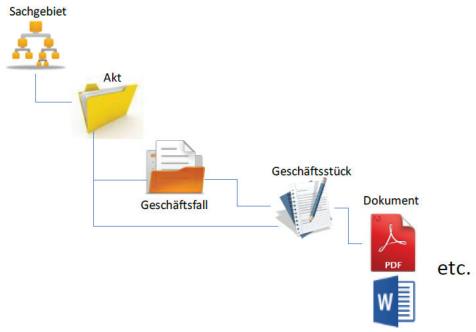
Im Jahr 2013 begann die Steiermärkische Landesverwaltung den elektronischen Akt auf alle Dienststellen des Landes auszurollen. Die Bundesverwaltung war bereits einige Jahre zuvor auf die digitale Verwaltung umgestiegen. Wie in der Bundesverwaltung und bei einer Reihe von anderen österreichischen Landesverwaltungen wird dafür die eGov-Suite der Firma Fabasoft verwendet. In der Steiermark konnte das Projekt 2017 weitgehend abgeschlossen werden. Einzelne Teilbereiche der Landesverwaltung wurden und werden erst zu einem späteren Zeitpunkt an die digitale Aktenführung angebunden. Zwischen dem Projektstart 2013 und der Fertigstellung 2017 wurden 39 Dienststellen mit dem ELAK ausgestattet. Täglich werden zwischen 6.000 und 8.000 Stücke im ELAK bearbeitet.

Das Steiermärkische Landesarchiv war von Beginn an Teil des Projekts und implementierte als eine der ersten Abteilungen den elektronischen Akt, um an den Vorgaben für die Erstellung von Metadaten mitzuwirken. Alle Beteiligten hatten aus den Erfahrungen der elektronischen Protokollierung gelernt. Daher wurden Richtlinien für die Erstellung von Metadaten erarbeitet und vermehrt Schulungen des Personals durchgeführt. In den Dienststellen mussten zum Zweck einer nachvollziehbaren, sinnvollen Strukturierung der Akten spezifische Arbeitsanweisungen erstellt werden, die laufend aktualisiert werden. Die Qualitätssicherung obliegt den Dienststellenleitungen und umfasst zumindest die regelmäßige Überprüfung der ordnungsgemäßen Aktenführung. (Büroordnung 2019)

Die inhaltliche Bewertung von digitalen Akten unterscheidet sich grundsätzlich nicht von der Bewertung analoger Akten. Die Bewertungsentscheidungen werden unabhängig von der Erscheinungsform der Daten getroffen. Für die inhaltliche Bewertung von Massenakten hat das Landesarchiv Baden-Württemberg ein automatisiertes Auswahlverfahren mit dem Namen Selesta programmiert, mit dem in der ersten Phase die Anklageschriften der Staatsanwaltschaft bewertet werden konnten. Auch hier handelt es sich um digitale Metadaten mit analogen Akten. Das System filtert die Akten nach verschiedenen Selektoren mit vordefinierten Kriterien. Unter anderem gleicht das System die Daten mit jenen einer Personendatenbank ab, die aus Wikipedia mit Daten über Personen des öffentlichen Lebens befüllt wird. Mittlerweile wurde Selesta an andere deutsche Bundesländer abgegeben und soll auf andere Behördendaten ausgeweitet werden. Aber auch für dieses inhaltliche Bewertungstool gilt, dass es immer nur so gut sein kann wie die zugrundeliegenden Daten(Koch et al., 2017. Naumann 2020).

In der steirischen Landesverwaltung hat sich etwa zeitgleich mit der Einführung der elektronischen Aktenführung die Verwaltungsstruktur grundlegend geändert. Damit verschoben sich Zuständigkeiten und dadurch mussten neue Aktenpläne für die neuen Abteilungen ausgearbeitet werden. Anstelle der kleinteiligen Aktenplanabschnitte wurden größere Sachgebiete eingeführt, die das Verwaltungshandeln nach Aufgabenbereichen gliedern. Die Sachgruppen der Dienststellen bilden die Grundlage für die Aktenführung. Thematisch orientieren sich die Sachgebietsdefinitionen an den Leistungsgruppen des Leistungskatalogs einer Abteilung, darüber hinaus werden ergänzende, grundlegende Attribute wie Archivwürdigkeit, Skartierfrist, Schutzfrist und Transferfrist festgelegt; diese Attribute sind dienststellenübergreifend einheitlich. Die Verwaltung von Sachgebietsdefinitionen erfolgt durch die Organisationabteilung. Das Landesarchiv prüft die Festlegungen der Archivwürdigkeit und die Fristen.

Jede Abteilung bearbeitet im ELAK ganz bestimmte Sachgebiete, die in ihren Zuständigkeitsbereich fallen. Ein Sachgebiet ist ein nach inhaltlichen Kriterien erstellter Teil des Aktenplans, basiert ausnahmslos auf einer Sachgebietsdefinition und ergänzt diese um dienststellenspezifische Eigenschaften. In diese Sachgebiete werden die Akten eingegliedert. Eine Ebene unterhalb der Akten befinden sich die Geschäftsstücke. Eine Zwischenstufe von Akt zu Geschäftsstück bildet der Geschäftsfall als Einheit mehrerer zusammengehöriger Stücke. Die Bewertung erfolgt auf der Ebene der Sachgebiete. Die Inhalte aller einer Organisationseinheit zugehörigen Sachgebiete wurden hinsichtlich deren Archivwürdigkeit bewertet. Befinden sich in einem Sachgebiet Betreffe und darin Akten, die nicht archivwürdig sind, wird dennoch das gesamte Sachgebiet als archivwürdig bewertet. Eine Einzelaktenbewertung ist aufgrund der Aktenmasse sind durchführbar.



Das Landesarchiv hat sich gemeinsam mit der Organisationsabteilung dazu entschlossen, grundsätzlich alle Metadaten zu bewahren. Die Bewertungsentscheidungen betreffen daher die Akteninhalte, die Contents. Deshalb gibt es derzeit nur zwei Bewertungsattribute, nämlich „archivwürdig" und „nicht archivwürdig". Der ELAK kennt aber weitere Archivierungsattribute: Metadaten archivwürdig (M), Metadaten und Content archivwürdig (MC), Samplebildung, Metadaten nicht archivwürdig, Metadaten und Content nicht archivwürdig, Bewertung ausständig.

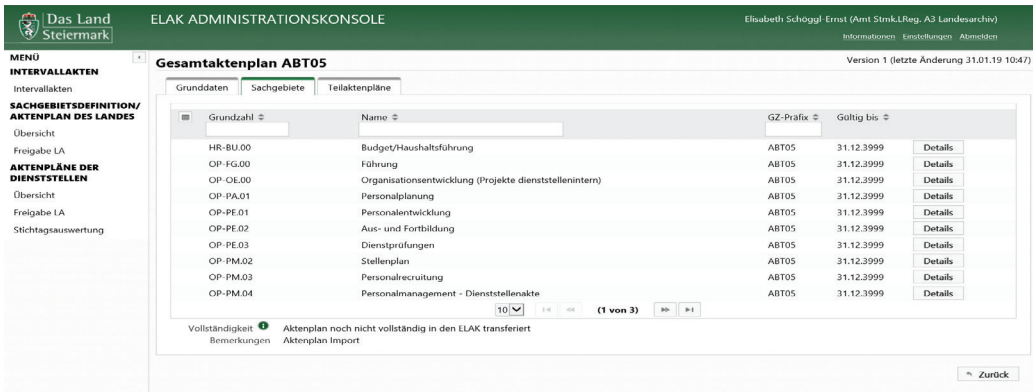
Für die Bewertung der elektronischen Akten wurde eine eigene Arbeitsgruppe gebildet, an der Mitarbeiter des Landesarchivs, der IT-Abteilung und der Organisationsabteilung des Landes mitwirkten. Erfolgte die Bewertung von analogen Akten retrospektiv anhand von Skartierungsplänen für jede einzelne Materie einer Dienststelle, so müssen Bewertungsentscheidungen beim elektronischen Akt prospektiv getroffen werden.

Die Bewertungstätigkeit erfolgt außerhalb des elektronischen Aktes. Für diese prospektive Bewertungsarbeit wurde von der IT-Abteilung eine eigene Software programmiert, die sogenannte ELAK-Administrationskonsole (ELAK-AK).

Die Landesverwaltung verfolgte mit diesem Tool die Ziele,

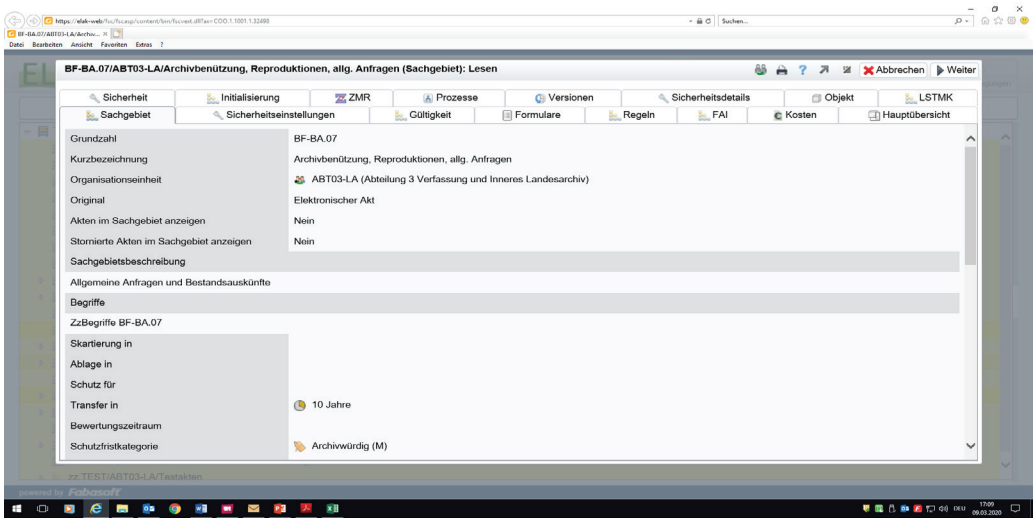
- eine einheitliche organisatorische und technische Abbildung des landesweiten Aktenplans mit Hilfe eines geeigneten Instruments zu schaffen,
- eine Vereinheitlichung der Umsetzung und Freigabe der Akten- und Fristenpläne in enger Abstimmung mit dem Landesarchiv,
- die standardisierte Umsetzung von individuellen Rechten auf ELAK Geschäftsobjekte durch ein geeignetes Instrument, das an das steirische Rechteverwaltungssystem angebunden ist.

Die ELAK-AK ist ein Werkzeug, das notwendige administrative Tätigkeiten, die vorher manuell, entsprechend aufwendig und fehleranfällig durchgeführt worden sind, unterstützt. Dieses Tool ist ein eigenentwickeltes Werkzeug, dem eine Java basierte Webanwendung zugrunde liegt. Da mehrere Dienststellen mit dieser Software arbeiten, ist ein dienststellenübergreifender Workflow integriert.



Sachgebietsverwaltung mit der ELAK-AK

In dieses Tool werden alle Sachgebiete mit den Sachgebietsdefinitionen nach Abteilungen gegliedert eingespielt. Das Landesarchiv erarbeitet mit den Abteilungen die rechtlichen und archivischen Bewertungsrichtlinien. Erst nachdem diese festgelegt sind, werden sie in die Software eingetragen und dem Landesarchiv noch einmal zur Überprüfung angezeigt. Nur Mitarbeiter*innen des Landesarchivs haben die schreibende Berechtigung für Bewertungsentscheidungen in dieser Software. Das Landesarchiv hat zu diesem Zeitpunkt noch die Möglichkeit, die Bewertungsentscheidung zu ändern. Nach Abschluss des Prüfvorganges werden die Bewertungsentscheidungen über eine Schnittstelle von der ELAK-AK in den ELAK implementiert und sind somit bei den einzelnen Sachgebieten hinterlegt. Erst ab diesem Zeitpunkt stehen die Sachgruppen den Dienststellen im ELAK zur Bearbeitung zur Verfügung. Das bedeutet, dass im Produktivsystem des ELAK die Bewertungsarttribute auf der Ebene der Sachgebiete eingetragen sind und keine nachträglichen Bewertungsentscheidungen durch Mitarbeiter von Dienststellen getroffen werden können. Der ELAK bietet auch keine Möglichkeit, die Bewertungen im Produktivsystem des ELAK zu überschreiben. Denn auf das Bewertungsfeld im ELAK haben die Dienststellen nur lesende Berechtigung. Bewertungsentscheidungen werden also prospektiv mit Hilfe dieses Tools und außerhalb des ELAK getroffen.



Im ELAK hinterlegte Bewertungsentscheidungen

Die Bewertungen wurden mittlerweile für alle Abteilungen durchgeführt, die den ELAK übernommen haben. Allerdings fallen bei jeder Umstrukturierung innerhalb der Landesverwaltung Änderungen in den diesen (neuen) Dienststellen zugeordneten Sachgebieten an. Daher müssen immer wieder Neubewertungen durchgeführt werden.

In der steirischen Landesverwaltung sind rund 700 Fachinformationssysteme (FIS) im Einsatz. Sofern die Ergebnisse und die wichtigen Eckdaten in den ELAK einfließen, kann von einer Bewertung dieser FIS Abstand genommen werden. Die Bewertung all jener FIS, die außerhalb des ELAK eingesetzt werden, steht noch bevor.

Dieses Bewertungstool verhindert, dass individuelle Bewertungsentscheidungen in den Dienststellen getroffen werden können. Es erleichtert in der Folge das Aussonderungsverfahren aus dem ELAK. Dieses Verfahren kann aber nur gelingen, wenn die einzelnen Sachbearbeiter gut geschult sind, die Protokollierung entsprechend dem Aktenplan und der Büroordnung umsetzen und die Metadaten in der vorgegebenen Art und Weise anlegen.

4 ZUSAMMENFASSUNG

In diesem Beitrag werden zwei Software-Programme vorgestellt, die dem Steiermärkischen Landesarchiv die Bewertung von Akten mit digitalen Metadaten und von digitalen Verwaltungsakten erleichtern und einen Workflow zwischen den Dienststellen der Landesverwaltung, der Organisationsabteilung des Landes und des Landesarchivs festlegen.

Die elektronische Protokollierung von analogen Akten, die seit den 1980er-Jahren in der steirischen Landesverwaltung im Einsatz war, wurde mit der Einführung des elektronischen Aktes eingestellt und die digitalen Metadaten in ein digitales Zwischenarchiv übertragen, das von der IT-Abteilung des Landes programmiert wurde und den Namen ZAZA (Zentrales Akten Zwischen-Archiv) erhielt. Mit diesem Tool können die Bewertungsentscheidungen, die das Landesarchiv mit den einzelnen Abteilungen erstellt hatte und die in die elektronische Protokollierung eingeflossen sind, überprüft und endgültig festgelegt werden. Das Programm erstellt nach abgeschlossener Bewertung der Akten einer Dienststelle einen Prüfbericht, welcher an diese Stelle geschickt wird mit der Aufforderung, die archivwürdigen Akten dem Landesarchiv zu übergeben. Alle Metadaten verbleiben in ZAZA so lange, bis ein digitales Archivierungssystem für den digitalen Verwaltungsakt eingerichtet wird.

Der Ablösung des analogen Aktes durch eine vollständig digitale Verwaltung war eine Änderung der Verwaltungsstruktur vorangegangen, im Zuge derer die kleinteiligen Aktenplanabschnitte einer Abteilung durch größer angelegte Sachgebiete ersetzt wurden. Jeder Dienststelle wurden entsprechend ihrer Funktion Sachgebiete zugewiesen, in denen ihre Behördenaufgaben schriftlichen Niederschlag finden. Für die Verwaltung dieser Sachgebiete wurde eine eigene Software, die ELAK-Aktenkonsole (ELAK-AK) geschaffen. Mit der ELAK-AK werden die Sachgebiete der jeweiligen Dienststellen festgelegt und die prospektive Bewertung dieser Sachgebiete durch das Landesarchiv definiert. Erst wenn diese Bewertung abgeschlossen ist, werden die Sachgebiete für die Bearbeitung im ELAK freigeschaltet. Die Bewertungsentscheidungen sind damit bei jedem Sachgebiet fix hinterlegt. Eine nachträgliche Überschreibung der Bewertungsentscheidungen durch Mitarbeiter der Dienststellen ist nicht möglich. Bei einer Aussonderung der Daten in ein digitales Archiv müssen daher die Bewertungen nicht mehr überprüft werden.

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SUMMARY

The appraisal process comprises a number of types of analysis to achieve an understanding of the context in which the appraisal work is being conducted, including organizational and technological features. In this paper, the author presents two software-programs which are used by the Provincial Archives of Styria for the appraisal of electronic metadata and of electronic records. These softwares define also the workflow between the organization department, all other departments of the Styrian State Administration and the Styrian Provincial Archives. The Styrian State Administration introduced an electronic data management system since the 1980th. In 2013, the administration switched to electronic records. The metadata from the period before were transferred into a digital intermediate archive called ZAZA. In ZAZA the archives staff verify the appraisal decisions, which were done before. After this appraisal work, ZAZA creates a report, which is sent to the departments with the order to transfer the analogue records of archival worth to the archives.

When the administration introduced electronic records, the Styrian Provincial Archives were part of the project from the very beginning and were one of the first departments to be involved in the creation of adequate metadata. In principle, content evaluation of digital records is not different to analogue records. However, the administrative structure changed fundamentally in the Styrian state administration around the same time as the introduction of electronic record management. This shifted responsibilities. As a result, new record plans for new departments had to be drawn up. Instead of small-scale record plan sections, larger sections were introduced, which divided administrative activities by area of responsibility. A separate working group was set up for the administration and evaluation of electronic records, comprising of employees from the Styrian Provincial Archives, the IT Department and the Organization Department. For the prospective appraisal work, the IT department wrote an own software, ELAK-AK. Through this software, appraisal was made from department to department and from subject to subject. We do our appraisal work with the help of this software and before files can be logged in the new subject area. Our appraisal decisions are incorporated by an interface between ELAK-AK into ELAK. This means appraisal decisions can only be done via ELAK-AK. Only the Styrian Provincial Archives has authorization for appraisal in this software. Thus, the staff of other departments can make no arbitrary appraisal. There is no possibility to overwrite the appraisal decisions in ELAK's production system. However, this procedure can only be successful if the individual clerks are well trained, implement data entry according to classification and given regulations, and create metadata in the prescribed manner.

Typology: 1.02 Review Article

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DIGITAL ARCHIVES: OPPORTUNITIES AND PROSPECTS

ABSTRACT

Digital transformation of the economy inevitably entails a change in the content of the activities of archives and the archive management as a whole. The widespread use of electronic documents and information resources, the formation of large databases, the creation of information systems for interaction requires the availability of infrastructure that provides for the storage, management and use of this huge array of digital information. The article analyzes current trends, problems, development strategies and possible consequences of digitalization of the archive industry. The study of the features of the transformation of archives seems relevant in the theoretical and applied aspect and can be activated by the archival professional community. The digital archive model involves digital management, the most advanced implementation of the latest technologies, which allows not only to automate and optimize certain processes, but also provide for the revision of a number of archive functions, the generation of new data that increase the efficiency of archives.

Keywords: *archive, electronic document, electronic archive, archives of Kazakhstan, long-term storage, information system;*

ARCHIVI DIGITAGLI: OPPORTUNITÀ E PROSPETTIVE

SINTESI

La trasformazione digitale dell'economia comporta inevitabilmente un cambiamento nel contenuto delle attività degli archivi e della gestione degli archivi nel suo complesso. L'uso diffuso di documenti elettronici e risorse informative, la formazione di grandi banche dati, la creazione di sistemi informativi per l'interazione, richiedono la disponibilità di un'infrastruttura che preveda l'archiviazione, la gestione, e l'utilizzo di questa vasta gamma di informazioni digitali. L'articolo analizza le tendenze attuali, i problemi, le strategie di sviluppo e le possibili conseguenze della digitalizzazione del settore degli archivi. Lo studio delle caratteristiche della trasformazione degli archivi appare rilevante sotto l'aspetto teorico e applicato e può essere attivato dalla comunità professionale archivistica. Il modello di archivio digitale prevede la gestione digitale, l'implementazione più avanzata delle ultime tecnologie, che consente non solo di automatizzare e ottimizzare alcuni processi, ma prevedere anche la revisione di una serie di funzioni di archivio e la generazione di nuovi dati che ne aumentano l'efficienza di archivi.

Parole chiave: *archivio, documento, archivio elettronico, archivi del Kazakhstan, conservazione a lungo termine, sistema informatico*

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ELEKTRONSKI ARHIVI: PRILOŽNOSTI IN MOŽNOSTI

IZVLEČEK

Digitalna transformacija gospodarstva neizogibno vključuje spremembo vsebine dejavnosti arhivov in upravljanja arhivov kot celote. Široka uporaba elektronskih dokumentov in informacijskih virov, oblikovanje velikih baz podatkov, ustvarjanje informacijskih sistemov za interakcijo zahteva razpoložljivost infrastrukture, ki omogoča shranjevanje, upravljanje in uporabo te velike množice digitalnih informacij. Članek analizira trenutne trende, probleme, razvojne strategije in možne posledice digitalizacije arhivske industrije. Raziskovanje značilnosti transformacije arhivov se zdi pomembna z vidika teorije in prakse ter bi lahko uspela ob podpori arhivske strokovne skupnosti. Model elektronskega arhiva vključuje digitalno upravljanje, najnaprednejšo uporabo najnovejših tehnologij, ki omogoča ne samo avtomatizacijo in optimizacijo določenih procesov, temveč tudi revizijo številnih funkcij arhiva, ustvarjanje novih podatkov, ki povečujejo učinkovitost arhivov.

Ključne besede: *arhiv, elektronski dokument, elektronski arhiv, arhivi Kazahstana, dolgoročna hramba, informacijski sistem;*

АННОТАЦИЯ

Цифровая траснформация экономики неизбежно влечет изменение содержания деятельности архивов и архивной отрасли в целом. Повсеместное использование электронных документов и информационных ресурсов, формирование больших баз данных, создание информационных систем взаимодействия предполагает наличие инфраструктуры, обеспечивающей хранение, управление и использование этого огромного массива цифровой информации. В статье анализируются современные тренды, проблемы, стратегии развития и возможные последствия цифровизации архивной отрасли. Исследование особенностей трансформации архивов представляется актуальным в теоретико-прикладном аспекте и может быть активизировано архивным профессиональным сообществом. Модель цифрового архива предполагает цифровое управление, максимально расширенное внедрение новейших технологий, позволяющих не только автоматизировать и оптимизировать определенные процессы, но и обеспечивать пересмотр ряд функций архивов, генерацию новых данных, повышающих эффективность работы архивов.

Keywords: *archive, electronic document, electronic archive, archives of Kazakhstan, long-term storage, information system;*

1 INTRODUCTION

In modern conditions, information in electronic form has become a valuable management resource. Electronic documents are increasingly becoming important means of keeping, storing and exchanging data. The mass connectedness of all spheres of economy and society are premises of emergence of a new format of social relations and historical course of time. Today it is already clear, this is especially acute in the context of the COVID-19 pandemic, that information technologies (Internet, social network, information systems) which are practically the only possible means of communication and information exchange.

The digital economy has a direct impact on archives, retaining a main role of keepers of both analogue and digital information. The changes taking place together with changes in the public administration system are so radical that the question about the future of the archiving system, the profession of archivist and archival sciences in general arises.

Over the past decades, the archives have done a tremendous job of automating work and introducing computer technology, which has entailed a revision of many well-established ideas about both the document itself and its carriers, and the methods of working with them. This is both an idea of an automated workplace for an archivist, and an idea of which works in the archive can be formalized in a computer environment, and which should be kept for the archivist in a traditional form. These are questions about ways and methods of document examination and determination of the degree of its value. It became obvious that the types of automation can be subjected to many types and directions of archival work. In particular, the creation of standardized descriptions of electronic documents, the development of an electronic scientific reference apparatus and an automatic search system. Moreover, rapid development of information technologies opens limitless, absolutely novel possibilities for digital transformation of archives. Research conducted in this area could become a "breakthrough decision" in the establishment of digital archive.

2 KAZAKHSTAN EXPERIENCE OF INFORMATIZATION OF THE ARCHIVAL INDUSTRY

The archive of the President of Kazakhstan is a pioneer of computerization of the archival sphere in the Republic. The archive of the President of the Republic of Kazakhstan adopted the Concept of computerization of the institution in 2014, for its phased implementation «the Program of computerization of the Archive for the years 2014- 2016, then for the years 2017-2019» was approved.

Work on the development of information technology required the development of a systematic approach based on the policy document. At the request of the Archive of the President of the Republic of Kazakhstan, the Archive Agency of the Russian Federation put into operation the program complex «Archive Fund» and signed an agreement on gratuitous use. By order of the President of the Republic of Kazakhstan dated June 15, 1999 No. 52 a new regulation on the Archive of the President of the Republic of Kazakhstan was approved, which establishes a fundamentally new obligation – to accept electronic documents for state storage together with software and appropriate electronic computing equipment. From 1999 began to operate the program complex «Archival Fund», which took into account the characteristics of accounting documents of the party organs, the party and investigative, personal and appellate cases of the Communists. In accordance with the State program for the formation and development of the national information infrastructure, approved by presidential decree No. 573 of 16 March 2001, the concept of an «Electronic archive of a state body» was envisaged and implemented,

which was designed to create an electronic archive and ensure the storage and retrieval of archival documents, as well as to provide ample opportunities for their classification and use. The archive of the President of Kazakhstan was included in the list of institutions of the first stage.

In 2001, the archive Fund database was again improved – the fields were expanded and data on the physical state of Affairs were entered: the number of damaged documents requiring filing and restoration, restoration of low-contrast text, the presence of particularly valuable documents, insurance Fund, use Fund and secret Affairs.

The system «Electronic archive» (SEAGO), supposed at that time for implementation, was intended for acquisition, storage, accounting and use of electronic documents in departmental and state archives. It is based on a document-oriented data warehouse with an information retrieval system based on the IBM Content Manager Software product that provides the ability to search for information both on the details of the attributed documents and their content (context). The industrial database management system (DBMS) DB2 is used as a database.

In the framework of Informatization since 2006, the Archive was opened to researchers have access to the database: «Decisions of the party committees», «Personal directory», «Personal file Cabinet», «archives», «the Acts of the President of the Kazakh SSR». At the same time, the creation of an electronic photo library and a thematic catalog for photo documents began.

In 2011, the third version of the database «Archive Fund» put into operation, which was developed by the Republican state enterprise «Banking service Bureau of the National Bank of Kazakhstan» on the basis of «Lotus Notus». The database was a separate module in the electronic archive system. The program provides automatically: a General list of funds by types and categories, the number of inventories, storage units, personnel of the insurance Fund of particularly valuable documents, personal, party investigation and personal Affairs, personal origin, passport Archive. The database is connected on a local network to the module «Reading room» and the researchers could receive, taking into account the degree of access to electronic inventories, cases and the entire scientific reference device to them (Макфадден К., Алпысбаева Н., Алимгазинов К. 2019).

Thus, by 2014, a number of local information retrieval systems (IPS) and databases for thematic complexes (funds) of archival documents were developed and implemented in the Archive, which were intended for operational reference and information services for consumers of archival information, as well as for the preparation of archival directories in an automated way. These include local databases (DB) of the most popular funds stored in the Archive: «Policy decisions of the Supreme authorities», «Archival Fund», «Acts of the President of the Kazakh SSR», «Acts of the President of Kazakhstan», «Especially valuable documents», «Institutions – sources of acquisition of the Archive of the President of Kazakhstan», «Personal catalogue of documents of personal origin», «Personal file of documents of personal origin», «reference and information Fund», «Library Fund», «Nomenclature personnel of Soviet Kazakhstan». A total of 16 information retrieval modules were developed and implemented in the main areas of the Archive.

The creation in the Archive of a single electronic database of primary documentary information by digitizing paper originals, as well as audio, video and photo documents, lagged far behind modern needs. The objective reasons preventing the mass digitization of documents were a huge amount of source material, the high cost and complexity of work, the limited involvement of foreign organizations in its implementation due to the «regime» conditions. An important and promising component of the IPS Archive is the organization of on-line access of virtual users to its information resources on the

Internet in the form of a specialized archive portal.

In 2018, Kazakhstan launched the implementation of the State Program "Digital Kazakhstan", which provides for the transformation of traditional sectors of the economy, the development of human capital, the digitalization of government agencies, the development of digital infrastructure, as well as a breakthrough in the development of an ecosystem of entrepreneurship in the field of digital technologies and, as a result, a change models of production and value added in the real sector of the economy (Постановление Правительства Республики Казахстан от 12 декабря 2017 года № 827 "Об утверждении Государственной программы "Цифровой Казахстан"").

As part of the implementation of this Program in 2018-2020 accessible information system "Unified archive of electronic documents" was developed, which ensures order, storage and management of electronic documents. Information system allows automatizing state and departmental archives. The processes of sending documents to archives, recording and making expertise of documents' value, storing of archival documents has become automatized. The creation of web portal of the "Unified archive of electronic documents" provides users with online access. The web portal has function of providing access to full-text and attribute search of publicly available archival data and to apply for granting access to archival documents. Through integration platform external informative systems of public bodies are integrated.

Control and administration of "Unified archive of electronic documents" information system provides automatization of administrative and access differentiating functions. Moreover, control and analysis of data could be done by software of "Unified archive of electronic documents" information system.

3 OPPORTUNITIES AND PROSPECTS FOR DIGITAL TRANSFORMATION OF ARCHIVES

Meanwhile, in the context of digital transformation, new ideas are emerging in the archive industry and the potential for transformations dictated by new development needs is being formed. It is obvious that the period digitalization, informatization and intelligent archiving has completely new opportunities for a technological breakthrough. The model of a modern archive presupposes digital management, the most expanded implementation of new technologies, which undoubtedly entails a widespread growth in the number of volumes and the role of digital assets.

The main challenge of our time for archives is the increase in the volume of information that is created. According to the forecast of the analytical company IDC "Data Age 2025" by 2025 the volume of all data worldwide will be 163 zettabytes (ZB). This is 10 times more than the total data as of 2016 *(Reinsel D., Gantz J., Rydning J. 2018)*. This requires the development of better methods for its collection, storage, processing, protection and transmission.

In the present time there is a tendency to wide acceptance of distributed storage of data. In particular, the systems providing transfer of distributed data are developed. As a rule, most of them are connected with "block chain" technology *(Galiev A., Ishmukhametov Sh., Latypov R., Prokopyev N., Stolov E., Vlasov I. 2019)*. Active utilization of block chain technology in economics formed a data set mostly of financial character which uses cryptography to protect documents during creation and storage. In a long-term perspective it seems relevant to use this technology in development of archive management system to provide authenticity and safety of electronic documents. The BlockSign platform developed by New-York company named Basno is an example of using open-access register which stores documents signed by electronic signature.

Another promising areas of development of archives is the management of completely new types of electronic objects, based on the use of "smart" technologies. The ability to manage this array of information in order to store and efficiently use it becomes especially important. Such opportunities are provided by Big Data technologies, which have become widespread in recent years. Big Data tools enable researchers to manipulate and analyze data stored in different formats (Marciano R., Lemieux V., Hedges M., Esteva M., Underwood W., Kurtz M., Conrad M. 2018). Moreover, for archives, they can be used to conduct an examination of the value of documents, i.e. automatic selection of records that can be useful for analytical studies. Also, one of such Big Data tools as search can be used to help archivists improve access to a huge number of records in various formats, etc.

Thus, archives are already successfully using optical character recognition programs for scanning and recognizing both printed and handwritten texts. The technology breaks down words into a series of images of individual letters - for this it recognizes letter spacing. Then it compares the image to the letters from memory. Having found the best match, the program translates the letter into a computer code and thus turns on the text search function.

Artificial intelligence technologies provide borderless potential and new possibilities in solving the tasks of collection, evaluation, selection and management of digital data. For example, a joint project of the Ben-Gurion University in Negev and Microsoft allows historical written and printed works of the Prime-Minister David Ben-Gurion to be easily accessed by researchers who plan to create a comprehensive archive of documents with the use of artificial intelligence. Artificial intelligence technology finds random similarities in archival documents and activates technical tracing methods so that to connect those documents through interactive map. Microsoft also will integrate diary notes of Ben-Gurion in Microsoft Outlook to provide open access to public. This technology which is currently under research will provide deep evaluation of historical documents in minutes which was earlier impossible to do. It is a pioneer project of Ben-Gurion Archive and Microsoft Israel with the use of machinery education (Keyser Z. 2019).

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Typology: 1.02 Review Article

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QUOD NON EST IN ACTIS...

ABSTRACT

For historical science and its related disciplines, the files produced by state agencies in the last two centuries and held in the state archives in Germany can be considered as the backbone of historical tradition for this period. There were high hopes that this could be seamlessly continued with digital files when digitalization in administration was introduced. But to this day, the existing 'eAkte' systems have not fulfilled these expectations in many respects. It remains doubtful whether legislation like 'eGouvernmentgesetze', making digital data and document management compulsory, will change this. On the contrary, it is to be expected that data vital for the reproduction of administrative acts and especially for scientific research are held in ever more complex systems of data integration that even today already transcend territorial boundaries and jurisdiction domains. So, it seems to become evident that before long, scientific research interests as well as other legitimate interests can hardly be served in the traditional way of appraisal and file archiving. It is therefore necessary to focus on essential data from specialized digital systems and databases although the same data may still be backed in documents and files.

Key words: *digital records, appraisal, archiving, archival records, Germany*

SINTESI

Per la scienza storica e le relative discipline, i file prodotti dalle agenzie statali negli ultimi due secoli e tenuti negli archivi di stato in Germania possono essere considerati come la spina dorsale della tradizione storica per questo periodo. C'erano grandi speranze che ciò potesse venir continuato senza soluzione di continuità con i file digitali, quando è stata introdotta la digitalizzazione nell'amministrazione. Ma fino ad oggi, i sistemi „eAkte" esistenti non hanno soddisfatto queste aspettative sotto molti aspetti. Resta il dubbio che una legislazione come „eGouvernmentgesetze", che rende obbligatoria la gestione dei dati digitali e dei documenti, possa cambiare questa situazione. Al contrario, ci si può aspettare che i dati vitali per la riproduzione degli atti amministrativi e soprattutto per la ricerca scientifica siano tenuti in sistemi sempre più complessi di integrazione dei dati che ancora oggi trascendono i confini territoriali e quelli di giurisdizione. Sembra quindi evidente che in poco tempo gli interessi della ricerca scientifica e altri interessi legittimi difficilmente possono servire nel modo tradizionale di valutazione e archiviazione dei file. È quindi necessario concentrarsi sui dati essenziali provenienti da sistemi e banche dati digitali specializzati, anche se gli stessi dati possono ancora essere supportati in documenti e file.

Parole chiave: *documenti digitali, valutazione, archiviazione, documenti d'archivio, Germania*

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IZVLEČEK

Za zgodovinsko znanost in z njo povezane discipline lahko spise, ki so jih v zadnjih dveh stoletjih ustvarile državne agencije in se hranijo v državnih arhivih v Nemčiji, štejejo za hrbtenico zgodovinske tradicije v tem obdobju. Upali smo, da se bo to lahko nemoteno nadaljevalo z digitalnimi datotekami, potem ko je bila uvedena digitalizacija v administraciji. Toda obstoječi sistemi »eAkte« do danes v mnogih pogledih niso izpolnili teh pričakovanj. Še vedno pa je dvomljivo, ali bo zakonodaja, kot je »eGouvernmentgesetze«, kjer je upravljanje digitalnih podatkov in dokumentov obvezno, to spremenila. Nasprotno, pričakovati je, da so podatki, ki so ključni za reprodukcijo upravnih aktov in še posebej za znanstvene raziskave, v vedno bolj zapletenih sistemih integracije podatkov, ki že danes presegajo ozemeljske meje in pristojnosti. Zdi se torej očitno, da znanstvenih raziskav in drugih legitimnih interesov kmalu ne bo mogoče postreči na tradicionalen način ocenjevanja in arhiviranja datotek. Zato se je potrebno osredotočiti na bistvene podatke iz specializiranih digitalnih sistemov in podatkovnih baz, čeprav so lahko isti podatki še vedno hranijo v dokumentih in datotekah.

Ključne besede: *digitalno gradivo, ocenjevanje, arhiviranje, arhivsko gradivo, Nemčija*

ABSTRACT

Für die letzten beiden Jahrhunderte gelten die Aktenbestände der staatlichen Archive in Deutschland als Rückgratüberlieferung für die Geschichtswissenschaft und ihre Teildisziplinen. Mit der Digitalisierung der Verwaltung war die Hoffnung verbunden, diese Kontinuität mit der eAkte fortsetzen zu können. Bis heute kann die eAkte diese hohen Erwartungen allerdings in vielen Bereichen nicht erfüllen. Ob die eGovernmentgesetze und die damit verbundene Verpflichtung zur elektronischen Aktenführung hier zu einer Konsolidierung führen werden, scheint unwahrscheinlich. Vielmehr werden wesentliche Informationen mit hoher Aussagekraft zur Nachvollziehbarkeit des Verwaltungshandelns wie auch zur wissenschaftlichen Auswertung in immer komplexere Systeme der Datenhaltung und Datenintegration ausgelagert, die längst territoriale Grenzen und Zuständigkeitssprengel überschritten haben. Damit zeichnet sich immer deutlicher ab, dass künftige Forschungsinteressen wie auch andere berechtigte Belange von Nutzerinnen und Nutzern künftig kaum durch die Aktenüberlieferung befriedigt werden können. Vielmehr ist es höchste Zeit bei der Bewertung den Primat auf archivwürdige Daten aus Fachverfahren und Fachdatenbanken zu legen, auch wenn Einzelinformationen nach wie vor Aktenrückhalt besitzen.

Schlüsselwörter: *digitale Aufzeichnungen, Bewertung, Archivierung, Archivaufzeichnungen, Deutschland*

1 INTRODUCTION: AKTEN UND IHRE BEDEUTUNG FÜR ARCHIVE UND GESCHICHTSWISSENSCHAFT

Akten gelten nach wie vor als das zentrale Werkzeug für die Dokumentation nicht nur staatlichen Handelns und sind in ihrer sekundären Nutzungsform wichtige Grundlage historischer Forschung. Gerade für die letzten beiden Jahrhunderte gelten die Aktenbestände der staatlichen Archive in Deutschland als Rückgratüberlieferung für die Geschichtswissenschaft und ihre Teildisziplinen. Noch immer werden finanziert von öffentlichen Geldern großangelegte Editionsprojekte zu prominenten Aktenüberlieferungen nicht nur des 19. und 20. Jahrhunderts vorangetrieben, wie etwa die Projekte zu den Akten zur bundesdeutschen Außenpolitik, zu den Protokollen des Bayerischen Staatsrats 1799 bis 1817 oder des kaiserlichen Reichshofrats zeigen. Und die gegenwärtig unter dem Eindruck der Einführung der eAkte ausgesonderten papierenen Aktenmassen, die zumindest in Einzelfällen noch bis in die unmittelbare Nachkriegszeit des Zweiten Weltkriegs zurückreichen, werden, sofern archivwürdig und erschlossen, Ansatzpunkte für zahlreiche neue Forschungen und wissenschaftliche Auswertungen liefern. Schließlich wurden dort jeweils die wesentlichen Informationen zu einem Sachverhalt gebündelt und prozessbezogen abgelegt, auch wenn freilich die Qualität der Aktenführung stets abhängig von organisatorischen Regelungen und deren Durchsetzung war. Lange gingen die Archivarinnen und Archivare in Deutschland davon aus, dass sich dies, trotz der sich bereits früh abzeichnenden Probleme auch im digitalen Zeitalter mit der eAkte fortsetzen ließe und engagieren sich seit vielen Jahrzehnten mit entsprechender Energie bei der (Fort-)Entwicklung von Standards für die elektronische Aktenführung wie auch bei konkreten Einführungs- oder Nachbesserungsprojekten. Schließlich lassen auch die in den eGovernmentgesetzen formulierten geltenden rechtlichen Anforderungen eine Kontinuität der Aktenführung über den Medienwechsel hinweg erwarten. Folgerichtig setzen die Archive deshalb auch weiterhin auf die Auswahlarchivierung von Akten anhand der in den letzten Jahrzehnten entlang vertikaler und horizontaler Kriterien erarbeiteten Bewertungsmodelle.

2 INFORMATIONSVERLUSTE VON AKTEN ZUGUNSTEN VON FACHVERFAHREN

Allerdings zeigt sich, dass trotz aller Bemühungen die eAkte häufig auch heute den aus Perspektive der Überlieferungsbildung an sie gestellten Erwartungen nicht gerecht wird. Die eAkten enthalten häufig durchaus nicht mehr alle aktenrelevanten Informationen. Teils fungieren DMS lediglich als Container für abgeschlossen Dokumente und weisen keinerlei oder nur mehr unvollständige prozessbezogene Geschäftsganginformationen mehr auf, wie etwa bei den Ermittlungs- und Kriminalakten der Polizeibehörden in Bayern, für die diese und weitere inhaltliche Metadaten im angeschlossenen Vorgangsbearbeitungssystem IGVP gespeichert werden. Bei anderen Abgabestellen existieren lediglich File-Ablagen, die in möglicherweise nach Aktenplan strukturierten Ordnern Eingänge und Reinschriften ohne weitere prozessgenerierte Informationen vorhalten, während Vorgängerversionen von Dokumenten und Metadaten zum Geschäftsgang wie auch zu den einzelnen Dokumenten selbst fehlen. Teils entfallenen üblicherweise in den Fallakten vorhandene Dokumente, wie etwa die Steuerbescheide in den Steuerakten, die nur mehr ad hoc aus angeschlossenen Fachverfahren heraus erzeugt werden. (Ernst, 2017: 74). Freilich wurden auch früher nicht und keineswegs bei sämtlichen aktenführenden Stellen alle Informationen zu den Akten genommen, die eine detaillierte Nachvollziehbarkeit des Verwaltungshandeln gewährleisten oder alle Wünsche späterer Forscher im Rahmen einer Sekundärnutzung befriedigen würden und dies ist auch kaum zu erwarten. Aber im Gegensatz zur analogen Aktenführung, bei der entsprechende Informationen häufig erst gar nicht verschriftlicht wurden, werden prozessbezogene Metadaten zur Erstellung und

Löschung, zu Lese- und Schreibzugriffen sowie inhaltlich für den jeweiligen Sachverhalt relevante Informationen nun außerhalb der so bezeichneten eAkten in nie gekannter Fülle in Fachverfahren und Vorgangsbearbeitungssystemen gespeichert. Dies liegt bereits darin begründet, mit welcher Intention elektronische Fachverfahren entwickelt und implementiert werden. Üblicherweise werden damit regelmäßig anfallende Verwaltungsakte im Verhältnis Bürger und Behörde bzw. zwischen den Behörden teilautomatisiert und beschleunigt abgewickelt. Da Fachverfahren also grundsätzlich prozessbezogenen Charakter haben, dürfte in der Regel davon auszugehen sein, dass dort auch aktenrelevanten Informationen gespeichert werden. Und diese werden häufig nicht mehr oder nicht mehr vollständig in Form von Dokumenten in angeschlossenen eAktesystemen abgelegt, sondern nur mehr virtuell für den Sachbearbeiter über eine GUI angezeigt. Schon alleine um auch künftig, vollständige Akten in einem materiellen Sinne aus verteilten Systemen für die Nachwelt sichern zu können, sollten Archivarinnen und Archivare deshalb also ein Interesse daran haben, Daten aus Fachverfahren zu übernehmen. Schließlich nehmen Archive im Gegensatz zu anderen Gedächtnisinstitutionen bis heute in Anspruch, archivwürdige Information in ihrem prozessbezogenen Entstehungskontext authentisch aufzubewahren. Aber das ist freilich bei weitem nicht der einzige Grund, wieso klassische Archive sich stärker bei der Archivierung von Fachverfahrensdaten engagieren sollten.

Denn in sogenannten Dateien und Wissensnetzen werden Einzelinformationen aus Akten vertikal zu neuen Kontexten verbunden, verarbeitet und ausgewertet, ohne dass die auf diese Weise entstehenden Informationen zwangsläufig ihrerseits veraktet würden. Vielmehr werden diese neuerzeugten Kontextinformationen immer häufiger lediglich in Fachverfahren vorgehalten, unterliegen nicht den für Akten üblichen Regelungen der Integritäts- und Vollständigkeitssicherung und werden aus Datenschutzgründen meist ohne Anbietung an das zuständige Archiv gelöscht. Durch die Übernahme der Akten und des Verzichts auf angeschlossene Fachverfahren und vermeintlich redundanter Informationssammlungen in Dateien gehen diese häufig archivwürdigen Kontextinformationen für die Nachwelt verloren.

3 BEWERTUNG VON FACHVERFAHRENSDATEN DURCH DIE ARCHIVE

Freilich sind bei weitem nicht alle Fachverfahrensdaten als archivwürdig einzustufen. Bei der überwiegenden Mehrzahl der eingesetzten Systeme, wie etwa Zeiterfassungs- oder Schlüsselverwaltungssysteme, werden lediglich Daten von geringer oder nur kurzfristiger Bedeutung gespeichert. Etwa 10-20% der Fachverfahren dagegen halten nach derzeitiger Einschätzung des Landesarchivs Hessen und der Staatlichen Archive Bayerns Daten, die per se und unabhängig von ihrer Aktenrelevanz von dauerndem Wert für Zwecke der Verwaltung, für berechtigte Belange betroffener oder Dritter sowie v.a. für die Wissenschaft und Forschung sind (Bischoff, 2014, S. 46f. sowie Miegel, 2018: S. 1).[2] Als Grundgesamtheiten beispielweise bei Sozialhilfe- oder Personaldaten bieten sie ein Meer an Information, aus dem die zugehörigen und in Auswahl archivierten Akten als Inseln hervortreten (Keitel, 2018: S. 114). Vor allem aber bieten sie im Gegensatz zu Akten über Datenbankexporte unmittelbar zugängliche Rohdaten, die von Wissenschaft und Wirtschaft massiv nachgefragt und nachgenutzt werden können. Sofern die Archivwürdigkeit sich also auch, wie in den Archivgesetzen in der Bundesrepublik Deutschland festgelegt, am dauernden Wert der Informationen für Wissenschaft und Forschung bemisst, stellt sich die Frage, ob die Bewertung dieser Daten nicht in deutlich mehr Fällen zugunsten der Archivwürdigkeit getroffen werden müsste.

2 Von den 208 Fachverfahren (keine Fachanwendungen), die bei den Regierungen in Bayern derzeit im Einsatz sind, wurden nur 38 als archivwürdig eingestuft.

4 GESAMTGESELLSCHAFTLICHE BEWERTUNG VON FACHVERFAHRENSDATEN

Zu Recht wurden Datenbanken nämlich schon vor einem Jahrzehnt als tragende Säulen der Informationsgesellschaft bezeichnet (Rausch, 2012: 75). Und die Nachfrage nach diesen der öffentlichen Verwaltung entstammenden Daten wird in den kommenden Jahren stark ansteigen. Die EU-Kommission ging bereits 2018 davon aus, dass der volkswirtschaftliche Wert der Informationen des öffentlichen Sektors im Gemeinschaftsraum mindestens 52 Milliarden Euro betragen dürfte und dieser potentielle monetäre Nutzen sich bis ins Jahr 2030 etwa vervierfachen wird (Europäische Kommission 2018). Der gesamtgesellschaftliche Wert, der Daten wie etwa Geoinformationen beigemessen wird, ist also immens (Bundesministerium des Innern, 2017: 12). Um die hier bislang kaum genutzten Potentiale zu heben und diese Daten v.a. für die Zwecke der Wissenschaft dauerhaft zu sichern, interpretierbar und nachnutzbar zu halten, veröffentlichte die EU-Kommission 2018 eine Reihe von Vorschlägen zur Verbesserung der Zugänglichkeit und Weiterverwendbarkeit der Daten des öffentlichen Sektors sowie zur gemeinsamen Nutzung wissenschaftlicher Daten, die in den bereits begonnenen Aufbau einer European Science Cloud münden. Damit soll die Verknüpfung und der Ausbau von Forschungsinfrastrukturen im gesamten Europäischen Forschungsraum zu einem Ökosystem für Forschungsdaten realisiert und der grenzüberschreitende Zugang zu diesen erleichtert werden (ESFRI White Paper, 2020: 23-31).

5 POTENTIAL DER ARCHIVE FÜR NATIONALE UND INTERNATIONALE FORSCHUNGSDATENINFRASTRUKTUREN

Auf nationaler Basis wurde in der Bundesrepublik Deutschland 2019 die Initiative zum Aufbau einer Nationalen Forschungsdateninfrastruktur (NFDI) gestartet, um die Nachnutzbarkeit von Forschungsdaten zu sichern, indem die Datenbestände von Wissenschaft und Forschung systematisch erschlossen, nachhaltig gesichert, zugänglich gemacht und (inter-) national vernetzt werden sollen. Unter Forschungsdaten sind in diesem Zusammenhang keineswegs nur Zwischenstände und Ergebnisse wissenschaftlicher Analysen zu verstehen, sondern vielmehr auch nicht selbst gewonnene Daten, wie etwa amtliche Statistiken und Behördendaten, auf die die Wissenschaft zu Forschungszwecken zugreift, um sie für den konkreten Forschungsprozess zu nutzen. Dabei handelt es sich also um Daten wie sie üblicherweise in klassischen Archiven vorgehalten werden (Rat für Informationsinfrastrukturen, 2019: B-3). D.h. die klassischen Archive verwahren in großem Umfang analog gebundene und elektronisch erzeugte Forschungsdaten in diesem Sinne und sollten sich nicht nur deshalb in breitem Maße an diesen nationalen und supranationalen Initiativen beteiligen. Vielmehr besitzen die Archive als etablierte Partner der Wissenschaft ein hohes Maß an institutioneller Erfahrung bei der Begleitung von Forschungsvorhaben und der Nachnutzung von Informationen. Dies betrifft insbesondere die Beratung von Wissenschaftlern, deren Forschungsinteresse und Fragestellungen mit dem ursprünglichen Primärzweck der Informationen scheinbar in keinem Zusammenhang stehen. Zudem haben klassische Archive in den letzten Jahren praktische Erfahrungen im Aufbau und Betrieb OAIS-konformer digitaler Langzeitarche aufgebaut und besitzen damit Kompetenzen bei der Sicherung prozessbezogener Kontextinformation, der Konzeption von Aussonderungsschnittstellen, der Formatmigration in langzeitfähige Archivierungsformate und der Anreicherung von Primärdaten mit aussagekräftigen Metadaten für die Archivierung und Erschließung. Die bei der Umsetzung der geltenden Standards gewonnenen Erfahrungen sind auch bei der Realisierung einer Forschungsdateninfrastruktur wertvoll. Damit sind die Archive, als etablierte Gedächtnisinstitutionen und Forschungsinfrastruktureinrichtungen nicht nur für die historisch arbeitenden Wissenschaftler und die geschichtswissenschaftliche Forschungslandschaft

unverzichtbare Akteure und sollten sich mit ihrer Beteiligung beim Aufbau entsprechender Forschungsdateninfrastrukturen auch nicht auf ihren klassischen Kundenbereich der Geistes- und Kulturwissenschaften beschränken. Gerade die staatlichen Archive sind zuständige Spezialbehörden für die Langzeitarchivierung von analogen und elektronischen Informationen aus dem Umwelt-, Land- und Forstwirtschafts-, Gesundheits-, Vermessungs-, Statistik-, Kultur- und Sicherheitsbereich sowie den klassischen Sparten der öffentlichen Verwaltung und Daseinsvorsorge. Sie pflegen damit Informationen für ein weit gefächertes Spektrum an Fachrichtungen und Forschungsansätzen, das weit über die Geschichtswissenschaft und ihre Teildisziplinen hinausweist und etwa auch die Erdsystem- und Agrarwissenschaften oder die Biodiversitätsforschung umfasst. Die Archive sollten sich deshalb auch verstärkt für diese Wissenschaftsdisziplinen öffnen und sich aktiv an den verschiedenen Konsortien der Fachdisziplinen beteiligen (Maier, 2020: 18), wo häufig bislang lediglich Spezialisten für die Interoperabilität aber nicht für die Langzeitarchivierung elektronischer Daten agieren. Für diese Neuausrichtung bleibt allerdings nur mehr wenig Zeit. Der Aufbau der Forschungsdateninfrastruktur ist bereits im Werden begriffen und in zahlreichen Wissenschaftsdisziplinen ist der Aufbau eigener Repositorien und digitaler Langzeitspeicher ohne institutionelle Anbindung an klassische Archive bereits weit fortgeschritten. Konkret bedeutet dies, dass Daten aus Fachverfahren und Fachdatenbanken nicht mehr bei klassischen Archiven langzeitarchiviert werden. Vielmehr übernehmen hier Museen, Forschungseinrichtungen und v.a. Bibliotheken klassische Aufgaben der Archive, häufig allerdings ohne im Einzelfall die Anforderungen für eine dauerhafte Erhaltung der Interpretierbarkeit der elektronischen Informationen gewährleisten zu können.

6 BEDEUTUNGSVERLUST VON ARCHIVEN FÜR DIE LANGZEITARCHIVIERUNG ELEKTRONISCHER INFORMATIONEN

Währenddessen werden Universitätsarchive, auch jene mit langer Tradition, zu Teilabteilungen von Bibliotheken degradiert (Berwinkel, 2019: 140). Auch im staatlichen Bereich, wo entsprechende archivgesetzliche Regelungen die Zuständigkeit für die Übernahme, Erschließung, dauerhafte Sicherung und Auswertung eindeutig den Archiven zuweisen, wird diese gerade in letzter Zeit häufiger in Frage gestellt. Teils wird diese Entwicklung auch durch Gesetzesnovellierungen weiterbefördert, wie etwa der Gesetzentwurf für die Neufassung des Geologiedatengesetzes des Bundes zeigt, der die Archivierung und Bereitstellung geologischer Fachdaten den für die Bodenuntersuchung zuständigen Behörden zuweist. Damit werden de facto Behördenarchive geschaffen, denen nach §2 Abs. 5 des Gesetzentwurfs durch entsprechende landesrechtliche Regelung auch die Archivierung weiterer für die Erdsystem- und Klimaforschung relevanter Daten zur Zusammensetzung der Luft, des Bodens und des Wassers sowie weitere Daten übertragen werden, die nicht zum Zwecke geologischer Untersuchungen gewonnen worden sind oder gewonnen werden (Geologiedatengesetz, 2020: § 2). Im Extremfall werden künftig also Boden-, Umwelt- und Klimadaten in großem Umfang nicht mehr den bislang zuständigen staatlichen Archiven angeboten werden, sondern verbleiben dauerhaft bei der für die Untersuchung zuständigen Landesbehörde, die diese Daten auch für die Sekundärnutzung zur Verfügung zu stellen hat. In vielen Ländern der BRD dürfte dies ohnehin dem Stand der Dinge entsprechen, da sich die Archive, mit ihren überwiegend historisch gebildetem Fachpersonal in den letzten Jahrzehnten häufig mit zu wenig Nachdruck für die Archivierung dieser Informationen interessierten und im Zweifel eher die Akten dieser ohnehin eher archivfernen naturwissenschaftlich geprägten Institutionen übernommen haben, ohne Messdaten und mitunter schwer nachvollziehbare Untersuchungsergebnisse zu archivieren. Die Bedeutung der Archive als Gedächtnis- und Wissenschaftsinstitutionen schwindet damit.

7 CONCLUSION

Die Archivare treibt die Frage um, ob die Archivalien und die Archive mit Ihnen nicht stark an Relevanz für die Forschung verlieren, wie bei einer Tagung des Hessischen Landesarchivs zum Thema Geschichtswissenschaft und Archive im Februar 2020 festgestellt wurde (Tagungsbericht Geschichtswissenschaft und Archive: 2020). Zu Recht, könnte man angesichts der skizzierten Entwicklungen antworten. Und von hier aus weiterfragen, ob die Archive sich nicht stärker und aktiver in den Dialog mit der Wissenschaft und anderen Infrastruktureinrichtungen beim Aufbau von Forschungsdateninfrastrukturen für die verschiedenen Wissenschaftsdisziplinen einbringen sollten. Schließlich bieten sie Kompetenzen beim Management und der dauerhaften Sicherung der Interpretierbarkeit prozessbezogener Informationen sowie der offenen und interdisziplinären Nachnutzung dieser Informationen. Mittelfristig wird dabei freilich auch von Bedeutung sein, ob Fachverfahrensdaten nicht per se zu Gunsten einer vermeintlich vollständigen Aktenüberlieferung kassiert, sondern in größerem Umfang als bisher als archivwürdig eingestuft werden, v.a. dann, wenn sie sich als Anteile materieller Akten oder als neue Kontextinformationen erweisen. Aber auch dann, wenn sie in Form von Grundgesamtheiten leicht zugängliche Informationen bieten, die miteinander in Verbindung gesetzt und ausgewertet werden können. Hierfür ist freilich auch eine grundlegende Verbesserung der Zugangsmöglichkeiten erforderlich, die idealerweise ebenfalls im Rahmen oder doch in Abstimmung mit den neu entstehenden Forschungsdateninfrastrukturen erfolgen sollte. Schließlich ist nicht zuletzt die Verbesserung der Zugänge zu den Quellen eine der wesentlichen Forderungen der Geschichtswissenschaft an die Archive (König, 2020: 249-251). Dann könnten sich, wie bisher, auch künftig Synergieeffekte für die Forschenden ergeben, die aus Perspektive verschiedener Wissenschaftsdisziplinen ausreichend dokumentierte und integre prozessgeborene und kontextualisierbare Daten für ihre Forschungszwecke in den Archiven nachnutzen möchten.

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SUMMARY:

Files formerly produced by government agencies and held by state archives are still considered as highly important sources for historical science and related disciplines. Following the growing importance of digital files and eGovernment systems, archivists strive to integrate these new formats by developing special standards for digital files and data management systems, especially with respect to long-term archiving. But it has increasingly become clear that digital files (eAkte) quite often do not provide comprehensive data, lacking especially operative or process-related information (essential to file management and archiving.) These specific process-related metadata may be retained by affiliated, automatised specialised data systems, connecting file content and metadata. From an archival perspective, it is therefore very important to archive these process-related metadata as well, considering that providing step-by-step transparency of administrative and government decisions through the files is one of the state archive's key assets. Another reason for archives to focus on specialised data management systems (Fachverfahren) is the increasing tendency of interconnections between these systems, forming information and knowledge networks transcending the given context and so creating new complex data sets that are not mirrored in files as such. Although no more than 10-20% of data sets created by these specialized data management systems might be qualified for archiving, these data then are extremely valuable from different perspectives, not least as directly accessible raw data for various scientific disciplines and approaches. Precisely these ever-increasing data sets and data bases have recently been acknowledged as a major future basis of scientific research for a variety of disciplines. Demand for these data is expected to be growing, as is their economic value. Consequently, the European Union as well as the FRG have implemented programs to further the development and open-access scientific use of these data sets, e.g. for geo sciences. The German NFDI initiative here ties in with other national and supranational efforts to link data sets in the interest of science and ultimately society. This is where state archives have a hitherto but little acknowledged potential, as they retain masses of analogue and digital data, often as raw data, from mainly state and government sources but pertaining to a variety of areas, e.g. life sciences, environmental issues and the like. These data transcend the traditional focus on historical science and point towards new potentials and challenges for state archives in their search for a new position in today's information society. Given their expertise in data management, collaboration with scientists and long term archiving, the archives are well prepared for this, given a close cooperation with state and scientific agencies producing and processing these data. Archives should use this opportunity to maintain their role as partner of science.

Typology: 1.02 Review Article

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LEVELS, PROCEDURES AND CHALLENGES OF DIGITAL OR DIGITIZED RECORDS APPRAISAL FOR ELECTRONIC ARCHIVING. RUSSIAN PERSPECTIVE.

ABSTRACT

The records appraisal in general and electronic records and documents appraisal in particular has a unified methodological base, implemented in the legal regulation and methodological recommendation of the selection of documents for archival storage, both at the level of an organization or an individual, and at level of the system of state archives. This article presents a structured system of regulation and organization of records appraisal in Russia at the national and organizational levels. The emphasis is on the appraisal of electronic records, as well as the problem of appraisal of paper documents for replacement scanning for electronic archiving, the tasks of organizing the work of experts for records appraisal and digital platform facilities for supporting this work and creating expert knowledge base for records and documents appraisal.

Keywords: *digital platform, digital records, electronic records management system, levels of records appraisal, organization folder register, records appraisal, records appraisal expert commission, records classification list with retention terms, replacement scanning.*

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LIVELLI, PROCEDURE E SFIDE DELLA VALUTAZIONE DEI RECORD DIGITALI O DIGITALIZZATI PER L'ARCHIVIAZIONE ELETTRONICA. LA PROSPETTIVA RUSSA

SINTESI

La valutazione dei registri in generale e della valutazione elettronica dei documenti e dei documenti in particolare ha una base metodologica unificata, attuata nella regolamentazione giuridica e nella raccomandazione metodologica della selezione dei documenti per l'archiviazione archivistica, sia a livello di organizzazione o di individuo, sia a livello del sistema degli archivi di Stato. Questo articolo presenta un sistema strutturato di regolamentazione e organizzazione della valutazione dei registri in Russia a livello nazionale e organizzativo. L'accento è posto sulla valutazione delle registrazioni elettroniche, nonché sul problema della valutazione dei documenti cartacei per la scansione sostitutiva per l'archiviazione elettronica, sui compiti di organizzazione del lavoro di esperti per la valutazione dei registri e sulle strutture delle piattaforme digitali per sostenere questo lavoro e sulla creazione di una base di conoscenze specialistiche per la valutazione di documenti e documenti.

Parole chiave: *piattaforma digitale, record digitali, sistema elettronico di gestione dei record, livelli di valutazione dei record, registro delle cartelle dell'organizzazione, valutazione dei record, commissione di esperti di valutazione dei record, elenco di classificazione dei record con termini di conservazione, scansione sostitutiva.*

RAVNI, POSTOPKI IN IZZIVI DIGITALNE ALI DIGITALIZIRANE EVIDENCIJE ZA ELEKTRONSKO ARHIVIRANJE. RUSKA PERSPEKTIVA

IZVLEČEK

Vrednotenje dokumentov na splošno in elektronsko vrednotenje dokumentov ima enotno metodološko podlago, ki je vključena v zakonsko ureditev, in metodološko priporočilo izbora dokumentov za arhivsko hrambo, tako na ravni organizacije ali posameznika kot na ravni sistema državnih arhivov. Članek predstavlja strukturiran sistem regulacije in organizacije vrednotenja gradiva v Rusiji na nacionalni in organizacijski ravni. Poudarek je na vrednotenju elektronskih dokumentov, kot tudi na problematiki vrednotenja dokumentarnega gradiva v fizični obliki za nadomestno skeniranje za elektronsko arhiviranje ter predstavlja organizacijo dela strokovnjakov za vrednotenje zapisov, naprave za digitalno platformo za podporo temu delu in ustvarjanje osnove strokovnega znanja za vrednotenje dokumentarnega gradiva.

Ključne besede: *digitalna platforma, digitalni zapisi, elektronski sistem vodenja evidenc, stopnje ocenjevanja evidenc, register map organizacije, ocenjevanje zapisov, strokovna komisija za ocenjevanje zapisov, klasifikacijski seznam zapisov s pogoji hrambe, nadomestno skeniranje.*

The emergence of information ecology as a science emphasizes the importance of records appraisal as a system and methodology for determining documented information that is crucial for the sustainability and development of civilization. On the one hand, the digital society and the digital environment form new requests for technological solutions, and on the other hand, it confirms the applicability of the previously developed mechanisms and organizational forms for records appraisal.

Before starting to consider the structure of the record appraisal, it is necessary to determine what is meant by archival storage in relation to electronic documents. In Russian records management approach, there are standard periods of storage of documents established by the List of standard administrative archival documents generated in the course of activities of state bodies, local self-government bodies and organizations (Росархив No 236, 2019). These include: permanent, 75 years, 50 years, 10 years, 5 years, 3 years and 1 year (specified terms may be added indicating the need for the record appraisal upon completion of this term), and two types of conditional phrases: "until required" and "until it is replaced with a new one". Thus, documents that should be stored for 1 to 5 years are also treated as archival. Indeed, in accordance with Rules for the organization of storage, acquisition, records keeping and use of documents of the Archive Fund of the Russian Federation and other archival documents in state authorities, local self-government bodies and organizations (Минкультуры России No 526, 2015), records must be transferred to the organization's archive no later than 3 years after the end of their life cycle in the department of the organization. Thus, documents that have a storage period of 4 to 5 years must be archived in the organization for at least one to two years after they are transferred to the archives. According to the results of the record appraisal, the storage period can be extended. The number of short-term storage documents created in electronic form has increased significantly. In the practice of office management in organizations, such records are often stored in the electronic document management system, and in the absence of tools for automated selection of electronic documents for disposition and destruction, even longer than the established storage periods. In accordance with Russian legislation, it is not a violation to keep documents longer than the established time limit. Rather, the destruction of documents earlier than the storage period specified in the List is a violation.

It is important to note that the List sets retention periods only for the core set of documents. The organization must determine the retention period for most of the documentation itself based on an analysis of the risks of record disposition and destruction and the cost of storage.

It should be noted that the Russian legislation on records management makes a clear distinction between record-documents and record-files. The first type – "official records" - is subject to specific legal requirements, while the records of state bodies are subject to even more stringent requirements, including requirements for formats. There are fewer requirements for records of non-state organizations. In many cases, organizations can determine the formats themselves, especially if they do not submit documents to the state or municipal archive and these documents are not classified as permanently stored on the basis of the List. It is these documents at the organization level that should be subjected to appraisal.

Criteria for the appraisal of electronic documents and their selection for archival preservation according to most experts coincide with the criteria of value of paper (traditional media) documents, because the value of the document in most cases comes primarily in the content information or it belonginess to the subject or person. It should be noted that the criteria for the value of a document are developed and actualized regardless

of the media and format of the information. But the organization and procedure of appraisal of electronic documents and their selection for electronic archival storage will differ significantly, as will the implementation of procedures in software systems (applications) that provide preliminary expert assessment. Also, for electronic archiving, such tasks as record appraisal for replacement scanning for subsequent electronic archiving and record appraisal on traditional media for scanning to ensure wider access to them and use are becoming increasingly relevant.

Considering all the above, we will consider the components of the record appraisal, the procedure for conducting it, and the tools at the two most significant levels-the national level and the organization level.

Value assessment consists of two components. The first component is to identify, define, and refine criteria for the value of documents. The second component is to determine whether the document meets the established value criteria.

1 CRITERIA FOR RECORD APPRAISAL

The criteria for the record appraisal depend on the level (records of Archival Fund of the Russian Federation or the rest records) and system documentation (personnel records, administrative records, research and development records, etc.). At the early stage of record existence, the key role of the record is for existing objects and active subjects (state, social, economic, legal, etc.). After the object or subject that the document is associated with has ceased to exist, the role of the document as a historical source comes to the fore.

Before considering the criteria used for the records appraisal in the Russian Federation, it must be noted that at the international level, the program "Memory of the World" defines criteria for classifying documents as the world's documentary heritage (UNESCO, *1995, 2002)*. These criteria are generally similar to the general criteria of records appraisal used in Russian practice (Лобанова, 2018).

1.1 General criteria of records appraisal for the Archive Fund of the Russian Federation

When determining whether a document is included in the Archive Fund of the Russian Federation and whether it should be kept permanently, the following groups of general criteria for the value of the document are considered (Орлова, 1984):

- Content Criteria: significance of the event (phenomenon) reflected in the document; value of the information available in the document; repetition of the document information in other documents; type of document; authenticity of the document;
- Criteria of Origin: the role and place of the organization in the system of public administration or a specific industry; the significance of its functions; the importance of an individual in society (i.e., the value of the Fund-maker); the time and place of creation of the document;
- Criteria for External Features: the form of recording and transmitting the content, identity, and design of the document (including artistic, linguistic, and features of creating a document); the physical state of the document.

More goal oriented criteria for the records appraisal are highlighted in the definition of the Archive Fund of the Russian Federation, given on the website of the Federal Archival Agency – Rosarchive (Официальный сайт Росархива, 2018). Documents are included in the Archive Fund of the Russian Federation if they:

- reflect the material and spiritual life in society,
- have historical, scientific, social, economic, political or cultural significance,

- are an integral part of the historical and cultural heritage of the people of the Russian Federation,
- relate to information resources that are subject to permanent storage in accordance with Russian legislation.
- The selection, perpetual storage and use of these documents contributes to the strengthening of federalism, the formation of civil society, the establishment of the state of law, the formation of democratic views, and the education of Russians in the spirit of citizenship, patriotism, and tolerance.

Permanent storage documents are not homogeneous. Among them, special-value and unique documents are distinguished.

1.2 Criteria for special-value documents

To define the *special-value* documents the following criteria are used *(Елпатьевский, Химина, 2006)*: the value of the information contained in documents, the authenticity of documents, legal power, significance of the creator, authorship (and the recipient) of the document, the document creation time, the presence of paleographic, art and other features of the document subsidiary criterion – the size of the safety assessment document (cash value insurance). It should be noted that the general appraisal criteria and criteria *for special-value* documents are defined but methodology of using these criteria is not specified and therefore the core work of the appraisal rests with the experts and is highly dependent on subjective opinion.

1.3 Criteria for unique documents of the Archive Fund of the Russian Federation

To identify unique documents in the Archive Fund of the Russian Federation, mandatory conditions and two groups of criteria were defined: exclusivity criteria and value criteria, and the procedure for applying these criteria was formulated (Герчикова, Лобанова, Звавич, 2019). The mandatory conditions include authenticity of the document, the legal value of the document, provide the order of documenting of the appropriate period and jurisdiction of the species (kinds) of documents refers to the document set such requirements; the document must be public, open.

The criteria for exclusivity are:

- highest historical, social, spiritual, and general cultural significance – a document is of cultural or historical value (i.e., the very appearance of a document becomes a historical (cultural) event) and must meet at least one criterion of value.
- uniqueness – a document is the only document that defines, characterizes, reflects or confirms at least one of the criteria of value.
- completeness of disclosure – the document most fully, objectively (factographically) defines, reflects, characterizes or confirms at least one of the criteria of value. Completeness is determined by the process of comparative analysis of documents according to the established criterion of value.

The criteria of value include:

- key events, processes, phenomena that have had a decisive impact on the development of humanity or of a particular country, which has become significant, or occurred for the first time (including in the life and work of great historical figures).
- outstanding, iconic ideas, discoveries, works of individuals or groups of people who have contributed to the development of world civilization and national identity.
- an object whose highest social, historical, political, and / or civilizational significance is generally recognized.

- chronological affiliation – the document was created directly during the period of major social and / or cultural changes, crisis, upswing, and adequately reflects the events, phenomena, and the state of this period.
- art design or method of documenting - a masterpiece in terms of art design or execution, or the document is the most striking or first created representative of the method of documentation, media type, or format.

The procedure for applying these criteria is that in order to determine that a document is potentially unique, it must meet one or more criteria from both groups of criteria. This method was established in the Guidelines for determining unique documents to be included in the State register of unique documents of the Archive Fund of the Russian Federation (Герчикова, Лобанова, 2020).

1.4 Criteria for determining organizations-sources of acquisition of state and municipal archives

As already noted, archival storage of documents is understood as storage in the state or municipal archive, as well as storage in the organization's archive. An organization that is required by Russian law to submit documents to the state or municipal archive is called a "source of acquisition of the state or municipal archive". Such an organization is determined on the basis of the following principles: historicism, consistency, integrity, Federal structure of the Russian Federation and considers the following criteria (Росархив No 24, 2020):

- form of ownership (private, state, municipal and other forms of ownership);
- location (residence) of a legal entity or individual;
- types of documents or media;
- the importance of the activities of organizations, public associations and citizens in the political life, socio-economic development of the state and society;

The principles and criteria for selecting other organizations as sources of acquisition of state and municipal archives are specified in the *Methodological recommendations "Identification of organizations-sources of acquisition of state and municipal archives* (Росархив No 6/2226-H, 2012). These should be organizations that are leading in a particular industry, field of activity, or their sets of documents reflect the profile functions. This considers:

- special role of the organization (scale of activity; novelty of activity; participation in international, state, regional programs; extreme working conditions; merits-awards, awards, public recognition; stability of existence, etc. , as well as historical continuity of receiving its documents in the archive);
- significance of the organization among other organizations in the area of acquisition of the state and municipal archives, including city-forming organizations and organizations that are most typical for this territory;
- continuity of the activity profile of the predecessor state organization (if any);
- Multidisciplinarity of activitiy;
- founders;
- whether the organization is an association of organizations (corporations, associations, etc.);
- procedures of records management; applying a clear procedure for removing the "trade secret" label from the records;
- for public associations, the following factors are also considered: popularity among the population; number of members; completeness of documentation of activities.

There are two groups of organizations that transfer records for permanent archival storage to state and municipal archives. The division into groups is carried out according to the form of reception: full reception and selective reception (divided into group and specific). Full reception organizations transfer a full set of documents of permanent storage period to the state and municipal archives after the appraisal. Organizations of selective reception group transfer for storage to state and municipal archives a full set of documents of permanent storage from particular organizations of the entire group. Organizations of specific selective reception transfer only certain types of documents of permanent storage period for storage in state and municipal archives.

The number of samples (organizations or documents) is determined by each archive considering: the number and uniformity of organizations of a certain type; the value and uniformity of certain types of documents.

1.5 Criteria for appraisal in various documentation systems

At the organization level, the key criteria for determining whether a record should be archived and stored permanently are its organizational, legal, and informational significance of the record -its relation to the main activity of the organization. At the same time, various documentation systems are distinguished, which are divided by functional and industry characteristics (Митяев, 1959). Management (administration) documentation that characterizes the organization's management system and is fairly typical for most organizations is grouped by functional feature: financial, contractual, accounting, personnel documentation systems, and so on). Industry documentation is specific to the activities that the organization is engaged in: banking, scientific and technical, transport, customs, insurance, and so on.

Additional criteria are defined for individual documentation systems. So as part of the management documentation, personnel documentation is allocated. According to *Federal law No. 125 "On archival Affairs in the Russian Federation"* personnel records, created before January 1, 2003 are kept for 75 years, and those completed after January 1, 2003-for 50 years (Федеральный закон No 125-ФЗ, 2004). Upon expiry of the specified storage periods, personnel records created in the organization - sources of acquisition of state and municipal archives are subject to appraisal. When carrying out the appraisal of personnel records, the following guidelines is used: *"The appraisal and selection of personnel records to the Archive Fund of the Russian Federation" (Росархив, ВНИИДАД, 2014)*. There are two groups of criteria: general and additional.

The general criteria are:

- the role of a person (employee) in a particular organization (management positions) that have awards, degrees, and titles;
- the role of the organization in the specific territory (functional purpose) in which the person works;
- chronological period (time when documents were created) that is significant for a specific organization and for the country;
- Peculiar features of the territory where the organization is located – the place of work of a particular person;
- significance of information (employee information, organization information);
- the authenticity of the document;
- repetition of information about personnel documents in other documents (accounting, reporting, administrative, etc.);
- type of document;

- physical and technical condition of the document carrier (paper, electronic);
- security of the organization's documents.

Additional criteria are whether the employee is a participant of the World War II and other wars and armed conflicts, participation in liquidation of consequences of natural and man-made disasters, is a member of a professional dynasty, belongs to a creative profession, was the employee punished/ rehabilitated; take into account the experience (in general and in organizations in specific, the most important for her periods), the role and record of the employee in public and other spheres of activity outside the organization; whether the employee has a permanent or temporary registration in a specific territory, as well as what is the value of general information, completeness of the set of records, number of records, availability of copies of records (inside and outside the organization).

For scientific and technical (research and development) documentation, the type of document is recognized as a criterion of selection for archival storage. This is reflected in the *List of scientific and technical documentation to be received by the state archives of Russia* (Росархив, 1997). This list regulates the composition of the main types and varieties of scientific and technical documentation of the state part of the Archive Fund of the Russian Federation, subject to reception to the state archives from institutions, organizations, industrial enterprises and higher educational institutions with different forms of ownership. The list contains 154 articles grouped into five sections: research documentation, design documentation, technological documentation, and patent documentation. Some articles have clarifications in the form of sub-paragraphs. Pay attention that unlike the lists discussed below, this list does not specify the retention period for records. It applies to organizations that are sources of acquisition of state and municipal archives. Other organizations can transfer such documentation to state and municipal archives voluntarily on the basis of a contract. This method of selection is the easiest and most accessible from the point of view of coding and implementation in software applications, both in the case of a digital document format, and in the case of a digitized document and tracked in a content management system.

However, the type of document is not the main condition for selecting such documentation. The methodology of appraisal of scientific, technical, industrial, design and construction documents, allows the identification of problems and research topics, projects, goods of industrial production, technological processes, urban planning, land use and forest management projects, capital projects and automated systems and databases, software systems, etc. that are meaningful. The results of this work is a list of topics, projects and objects, which must be approved by the Expert and Audit Commission of the Federal State Archive, or Expert and Audit Commission of the Authorized Body of the Executive Authority of the Russian Federation for Archives depending on the level of themes, projects and facilities (Турищев , 1986).

2 RECORDS CLASSIFICATION LIST WITH RETENTION TERMS

The record appraisal and compliance with the terms of document storage established by law is a labor-intensive activity. The experience and expertise of the record appraisal and legal requirements to the record retention periods is set out in a records classification list with retention terms. The most general and relevant at the moment is the *The Classification list of administrative archival record types created in the activities of state bodies, local self-government bodies and organizations, indicating the terms of their storage (Росархив No 236, 2019)*. This list includes the 657 articles, divided into 12 sections: management, planning, funding and lending activities, accounting and re-

porting, international cooperation, information activities, labour relations, staffing, logistics activities, administrative support activities, security regime, civil defense and protection from emergency situations, social issues. Each article contains the name of the type(s) of documents and their common content. For each article, the retention period of records is indicated. Compliance with the terms of record storage specified in this list is mandatory for all organizations.

The list is updated periodically. The previous list (Росархив No 558, 2010) contained 1003 articles, which indicates that the requirements for storing records from the state are becoming softer, and the risks associated with errors in the record appraisal in the organization has shifted to the organizations themselves. Accordingly, the role of this activity in the records management of organizations is increasing.

Records classification list with retention terms for individual documentation systems are developed too. For example, for scientific, technical and production documentation, there is the *Scientific, technical and production records classification list with retention terms* (Минкультуры России No 1182, 2007). The List contains 1990 articles divided into 13 sections: research activities, development of technological processes, design of industrial products, design of real estate objects, development, accounting and protection of intellectual property objects, accounting and monitoring of natural resources, construction, reconstruction, restoration and repair of real estate objects, production, technical supervision of industrial safety of production facilities and installations, product quality and safety; technical regulation, certification, metrological support of production; environmental protection and automated systems.

This records classification lists with retention terms are applicable to all organizations.

Separate records classification list with retention terms are developed for the documentation of individual industries and agencies, which contain record types specific to these industries and agencies. Here are two lists as an example.

The Classification list of record types of Federal courts of General jurisdiction with an indication of retention periods, approved by Order of the Judicial Department at the Supreme Court of the Russian Federation (Судебный департамент при Верховном Суде No 112, 2011) contains 596 articles divided into 17 sections, including both administrative records and records reflecting the activities of courts of General jurisdiction.

The Classification list of record types created in the activities of the Federal customs service, subordinate customs authorities and organizations under the jurisdiction of the Federal customs service, indicating the storage period (Федеральная таможенная служба России No 990, 2019) contains 1751 articles, which are divided into 22 sections, including both administrative records and records of customs activities. 9 articles of this list include databases, and 31 articles define digital records of permanent storage period (for records of short-term storage periods the digital format is much more common).

For the organization of work on developing of records classification lists with retention terms, *Methodological recommendations on developing of records, created in the activities of Federal Executive bodies, as well as in the activities of organizations under their jurisdiction, classification lists with retention terms (2011)* are developed. The process of development of records classification list with retention terms for executive bodies and industries includes:

- comparison of the organization's records types with records types given in the lists of typical records and identification of features. If such features are few, a list can be prepared containing only records on functions in this field of activity;

- analysis of executive bodies or industry records, including analysis of the regulatory framework;
- analysis of the records classification list with retention terms of the parent organization, subordinate organizations, and industry organizations;
- study of the flows of information (records) within each organization, through the system of interconnected organizations and between organizations.
- analysis of the procedure for documenting the functions of the organizations;
- study of the chains of interrelated records for each function.

As a result of the study, an array of documents for each organization is formed, which is maintained in electronic form.

The classification lists with retention terms are included into a centralized database, which is used for methodological support of the work of expert commissions when updating classification lists with retention terms and defining retention terms.

The described activity of developing such lists is directly related to the record appraisal and represents the essence of the work of experts. A particularly complex and responsible component of the record appraisal is determining the retention period of records. The decision to set storage periods in organizations is always made by authorized persons who are members of the expert commission.

Lists of records types with retention periods can also be developed by organization or a group of organizations.

All of the above lists of documents with retention periods contain provisions for direct regulation and non-direct regulation of document retention periods.

3. ORGANIZATION OF RECORDS APPRAISAL FOR THE ARCHIVAL FUND OF THE RUSSIAN FEDERATION

The existence of criteria for the records appraisal does not allow unambiguous selection of documents for archival storage or for archival storage on separate conditions (for special-value documents, unique documents, electronic copies and electronic duplicates of documents, documents obtained as a result of digitization or replacement scanning, etc.). This decision is made by commissions consisting of officials and representatives of the scientific and business communities. There are three levels of commission in the Archive Fund of the Russian Federation. The first level is the Central Expert and Audit Commission - an advisory body operating under the Federal Archival Agency of the Russian Federation (Росархив No 173, 2019). This Commission coordinates the main methodological aspects of the records appraisal at the state level: criteria for the appraisal, lists of documents with retention periods, both general and agencies', lists of organizations that are sources of acquisition of Federal state archives.

The next level is represented by expert and audit commissions of sixteen Federal state archives (Росархив No 62, 2018) and expert verification commissions of authorized Executive authorities on the subjects of the Russian Federation for archives (Росархив No 63, 2018).

This level is a link between the Central Expert and Audit Commission operating under 'Rosarkhiv' and the expert commissions of organizations that are sources of state and municipal archives acquisition. These commissions, in addition to the function of monitoring the activities of archives, carry out an examination of the methodological work of archives and organizations to compile lists of projects/objects, problems/topics, scientific and technical documentation of subject which are to be transferred for permanent storage;

evaluation of document inventories proposed by citizens for acquisition by archives; lists of organizations which are sources of acquisition, lists of citizens who act as sources of acquisition of state archives of the subject of the Russian Federation and municipal archives. It also approves the results of record appraisal: inventory of permanent storage cases, inventory of electronic cases, documents (or documents on electronic media) of permanent storage, inventory of photo documents, film documents, permanent storage of phonodocuments, inventory of particularly valuable cases and documents.

All record classification list with retention terms specified in section 2 of this article contain:

- the provisions of strict regulation of time limits for retaining documents when a document relating to a particular field, specify the period within which the document must be stored;
- the position of a soft regulation of period of records storage after the retention period, indicates that the decision on whether the record to be destroyed or the retention period be extended is made by the Expert and Audit Commission which the organization is subject to.

4 ORGANIZATION OF RECORDS APPRAISAL AT THE LEVEL OF THE ORGANIZATION/ GROUP OF ORGANIZATIONS

Organizations that are sources of acquisition of state and municipal archives must have an expert commission to conduct an appraisal. The central expert commissions (Росархив No. 31, 2019) work in Federal state bodies, and the expert commissions work in other organizations (Росархив No. 43, 2018). A special category includes scientific organizations that are designated by the Government of the Russian Federation and have an Expert and Audit Commission, since, as a rule, these organizations have archives in their own structure (Росархив No. 61, 2018).

Because of the greater connection with state and municipal archive organizations – sources of acquisition for state and municipal archives, the records appraisal at such organizations relates to the state appraisal methodology in a more systematic way. Decisions of expert commissions of such organizations must be approved by the relevant expert and audit commission.

One of the functions of the expert commission of the organizations is the development of proposals on determination, specifying the storage periods of the documents referred to (provided for) records classification list with retention term for their subsequent submission for approval of the Central Expert and Audit Commission that is directly involved in the development of principles and criteria of records appraisal.

Another function of the expert commission, which is directly related to records appraisal is the participation in the development folder organization register, a working copy of which is formed at the beginning of the year, and the year-end is made actual. Organization folder register is a classification scheme of records of an organization with an indication of the storage period for each item, which are determined by records classification list with retention terms, if such documents are specified in them, or are determined by the expert commission independently. Need to focus on the fact that the terms archival storage of documents are defined in the Organization folder register before the document is created, the period of archival storage does not refer to a specific document or record, it refers to the category information that must be stored. For records whose retention periods are not regulated by the state, organizations need to develop their own system of criteria and a mechanism for applying this system.

5 CHALLENGES OF DIGITAL TRANSFORMATION OF RECORDS APPRAISAL

For the first component of the records appraisal - identifying, defining and clarifying the criteria for the appraisal – in order to identify new significant topics and trends at the national level, methods of frequency analysis are applied with subsequent expert selection of topics and trends by specialists. The work of experts can be organized on the digital platform of the archive industry, which allows you to solve a wide range of tasks *(Лобанова, Тюрин 2018)*. The mechanism of interaction of experts on the digital platform will generate a broader set of lists of prominent individuals, key themes, areas, objects, and to organize the identification of new digital documents (posts, blogs, vlogs, data bases, electronic registers and others), which have the potential to be electronically archived, their characteristics and requirements (e.g. information system /social network source).

The implementation of the second component of the record appraisal - determining the degree of compliance of the document with the established criteria of value - can also not be fully performed by software, including artificial intelligence, but having clearly defined criteria for identifying and constructing algorithms for classifying information as potentially worthy of digital archival storage, makes it possible to use knowledge engineering for pre-selection with subsequent decision - making by the commission.

In organizations, if the organization folder register is created correctly, records of permanent storage folders can be transferred to the electronic archiving system by the mechanism of algorithmic regulation. Similarly, records may be selected that require expert evaluation, or must be stored for other periods, or must be destroyed.

The main purpose of archiving the organization's documents is to ensure the organization's leadership in its field of activity, sustainable development and risk minimization. A fairly extensive Records classification list with retention terms *(Росархив No. 236, 2019)*, the storage period of which is regulated by the state (when compiling the list, a deep and comprehensive analysis of laws and regulations is carried out) in most cases saves organizations from regulatory risks, as well as the cost of assessing the risks associated with storage of documents.

At the same time, organizations create a large number of records that are often not even included in the organization's document system or in the organization's content management system, but exist as files in the file system on the organization's information infrastructure servers or employees' personal computers. These documents-files often contain strategically and operationally important information for the sustainable operation of the organization, which may not only be not transferred to archive storage in the future but may also be lost when an employee changes or for other reasons. Identification of such information-topics, projects, key tasks, as well as software systems that generate and / or store files containing key information-is the main task of the first component of the records appraisal of the organization's documented information. Another task is to determine the types of documents or file formats that contain the most complete information. This work should be more formalized, systematic and regular at the level of the organization's expert commission. If criteria and types of documents are defined, it is necessary to immediately create requirements for the registration of such information, and its metadata should contain the retention period. In this case, it is possible to develop a software algorithm that forms a link to this record for creating inventories of permanent storage documents, other storage periods. If this is not done beforehand, then, a significant part of such records is stored outside of electronic records management systems and a software is required that can search and identify records in the organization's electronic repositories that meet the established criteria. This is much more time-consuming.

The possibility of converting paper documents into an electronic duplicate form or electronic double without losing legal and historical significance has not yet been regulated at the legislative level. Currently, replacement scanning in organizations is only possible for those documents that have already passed the standard storage period (i.e., not for permanent storage records), but the organization considers it appropriate to save the information for work. And this decision to digitize such documents is also made based on the results of the appraisal.

The digital transformation of records appraisal will allow us to develop more relevant criteria and conditions for selecting information for electronic archival storage and improve procedures and mechanisms at all levels.

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ELECTRONIC ENGINEERING AND TECHNICAL DOCUMENTATION: CHALLENGES AND SOLUTIONS FOR LONG-TERM PRESERVATION.

ABSTRACT

Electronic records management systems provide many benefits for organizations, but they also create difficulties for long-term preservation of electronic documents, require adequate consideration for the choice of appropriate procedures, systems and formats to ensure that the documents stay reliable and authentic, maintain integrity, and are usable over the required period of time. As for the engineering and technical documents, their creation in electronic form is one of the preconditions of the technical progress in general, because of the great possibilities that computerized modeling, interactive simulation, numerical calculation, virtual testing and other digital-based technologies are providing. This documentation is highly dependent on the system environment it is created and stored. Proprietary software programs and file formats are mostly used, and that is the big challenge to the long-term preservation purposes. This documentation is produced, stored and used according to the conditions fixed in the contracts between creators, customers, investors, and end-consumers. It is also the object of intellectual rights and is often confidential by various reasons. All these and other circumstances cause the necessity of proper normalization and regulation of the sphere of creation, exchange, preservation and use of electronic engineering and technical documentation, sufficient but flexible enough to serve the interests both of the state and of the organizations of different types. Recognizing the global scale of the problem of the long-term preservation of engineering and technical documentation, the author shares the experience of the Russian Federation in this area and formulates the questions which are still waiting for their solution.

Key words: *technical documentation, electronic records, archives, long-term preservation, proprietary software, All-Russian Scientific Research Institute for Records and Archives Management (VNIIDAD)*

INGEGNERIA ELETTRONICA E DOCUMENTAZIONE TECNICA: SFIDE E SOLUZIONI PER LA CONSERVAZIONE A LUNGO TERMINE

SINTESI

I sistemi di gestione dei documenti elettronici offrono molti vantaggi alle organizzazioni, ma creano anche difficoltà per la conservazione a lungo termine dei documenti elettronici, richiedendo un'adeguata considerazione per la scelta di procedure, sistemi e formati appropriati per garantire che i documenti rimangano affidabili e autentici , mantengano l'integrità e siano utilizzabili per il periodo di tempo richiesto. Per quanto riguarda i do-

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cumenti ingegneristici e tecnici, la loro creazione in forma elettronica è una delle precondizioni del progresso tecnico in generale, a causa delle grandi possibilità che stanno fornendo la modellazione computerizzata, la simulazione interattiva, il calcolo numerico, i test virtuali e altre tecnologie digitali. Questa documentazione dipende in larga misura dall'ambiente di sistema in cui viene creata e archiviata. Vengono utilizzati principalmente programmi software e formati di file proprietari, e questa è la grande sfida per le finalità di conservazione a lungo termine. Questa documentazione viene prodotta, archiviata e utilizzata secondo le condizioni fissate nei contratti tra creatori, clienti, investitori e consumatori finali. È anche oggetto di diritti intellettuali ed è spesso riservata per vari motivi. Tutte queste e altre circostanze causano la necessità di un'adeguata normalizzazione e regolamentazione della sfera della creazione, dello scambio, della conservazione e dell'uso dell'ingegneria elettronica e della documentazione tecnica, sufficientemente flessibile per servire gli interessi sia dello stato che delle organizzazioni di diverso tipo. Riconoscendo la scala globale del problema della conservazione a lungo termine della documentazione tecnica e ingegneristica, l'autore condivide l'esperienza della Federazione Russa in questo settore e formula le domande che sono ancora in attesa di soluzione.

Parole chiave: *documentazione tecnica, documenti elettronici, archivi, conservazione a lungo termine, software proprietario, Istituto di ricerca scientifica russo per la gestione dei documenti e degli archivi.*

ELEKTRONSKA INŽENIRSKA IN TEHNIČNA DOKUMENTACIJA: IZZIVI IN REŠITVE ZA DOLGOROČNO HRAMBO

IZVLEČEK

Sistemi za elektronsko vodenje dokumentov organizacijam prinašajo številne koristi, hkrati pa povzročajo težave pri dolgoročnem hranjenju elektronskih dokumentov, zahtevajo ustrezen premislek pri izbiri ustreznih postopkov, sistemov in formatov, da se zagotovi, da dokumenti ostanejo zanesljivi in verodostojni, ohranjajo integriteto, in so uporabni v zahtevanem časovnem obdobju. Kar zadeva inženirsko-tehnične dokumente, je njihovo ustvarjanje v elektronski obliki eden od predpogojev tehničnega napredka na splošno, saj imajo veliko možnosti računalniškega modeliranja, interaktivne simulacije, numeričnega izračuna, navideznega testiranja in druge digitalne tehnologije. Ta dokumentacija je zelo odvisna od sistemskega okolja, ki ga ustvari in shrani. Večinoma se uporabljajo lastniški programi in formati datotek, kar je velik izziv za dolgoročno hrambo. Ta dokumentacija se izdela, shrani in uporablja v skladu s pogoji, določenimi v pogodbah med ustvarjalci, kupci, vlagatelji in končnimi potrošniki. Je tudi predmet intelektualnih pravic in je pogosto zaupen iz različnih razlogov. Take in drugačne okoliščine povzročajo potrebo po ustrezni normalizaciji in ureditvi področja ustvarjanja, izmenjave, hrambe in uporabe elektronske inženirske in tehnične dokumentacije, ki je dovolj prilagodljiva, da služi interesom države in organizacij različnih vrst . Ob prepoznavanju globalnega obsega problema dolgoročne hrambe inženirske in tehnične dokumentacije avtor deli izkušnje Ruske federacije na tem področju in oblikuje vprašanja, ki še čakajo na njihovo rešitev.

Ključne besede: *tehnična dokumentacija, elektronski zapisi, arhivi, dolgoročno hramba, lastniška programska oprema, Vseruski znanstvenoraziskovalni inštitut za upravljanje dokumentacije in arhivov (VNIIDAD)*

ЭЛЕКТРОННАЯ НАУЧНО-ТЕХНИЧЕСКАЯ ДОКУМЕНТАЦИЯ: ПРОБЛЕМЫ ДОЛГОСРОЧНОГО ХРАНЕНИЯ И ПРЕДЛАГАЕМЫЕ РЕШЕНИЯ

Системы электронного документооборота дают много преимуществ организациям, но они также создают трудности для архивного хранения электронных документов, требуют взвешенного подхода при выборе соответствующих процедур, систем и форматов для обеспечения аутентичности, достоверности, целостности и пригодности для использования документов в течение требуемого, часто довольно длительного, периода времени или постоянно. Что касается научно-технических документов, то их создание в электронном виде является одной из предпосылок технического прогресса в целом, поскольку существуют большие возможности для компьютерного моделирования (в том числе интерактивного), осуществления расчетов, виртуального тестирования и других цифровых технологий. Эта документация сильно зависит от системной среды, в которой она создается и хранится. Поскольку в основном используются проприетарные программы и форматы файлов, это является большой проблемой для целей архивного хранения. Эта документация образуется, хранится и используется в соответствии с условиями, установленными в договорах между исполнителями, заказчиками, инвесторами и потребителями. Она также является объектом интеллектуальных прав и часто содержит тот или иной вид конфиденциальной информации. Все эти и другие обстоятельства обуславливают необходимость надлежащего регулирования сферы создания, обмена, хранения и использования электронной научно-технической документации, достаточной, но достаточно гибкой, чтобы служить интересам как государства, так и организаций различного типа. Признавая глобальный масштаб проблемы организации архивного хранения научно-технической документации, автор делится опытом Российской Федерации в этой области и формулирует вопросы, которые еще ждут своего решения.

Ключевые слова: *техническая документация, электронные документы, архив, архивное хранение, проприетарное программное обеспечение, Всероссийский научно-исследовательский институт документоведения и архивного дела (ВНИИДАД)*

1 INTRODUCTION

The main challenges for the archives nowadays are in great measure connected with the tasks of acquisition, preservation and use of electronic records. As for administrative records management systems, especially those of government, state and municipal organizations, there are certain levers of influence, including normative and legal, administrative, procedural and technological measures, which permit to establish requirements to different stages of the e-records life circle and to create necessary conditions for their realization. Control over the records from their very creation is the guaranty of their reliability, authenticity, integrity, and usability.

The situation with private and non-government organization is more complicated, and it is much more difficult for archives to deal with electronic records of individuals.

As for scientific and technical documentation, there are many specific features in this field, which are showing up even more brightly in the modern conditions of digital transformation of all the processes.

In this paper, the term "technical documentation" is understood in the wide sense, as any type of documentation with product-related data and information, including product definition and specification, description of features, functions, interfaces and architecture; design, manufacturing, quality assurance; service and repair, safe disposal *[electronic source*, 1]. As fo the "products", these are results of design and architect-engineering, software engineering, etc. In this paper the special attention is given to design and architect-engineering technical documentation, though the main findings are applicable to other types of scientific, technical, technological documentation too.

All the engineering processes and their results require special related documentation. The whole development lifecycle needs to be documented in a proper way, which will allow for discussing all significant questions arising between stakeholders and developers in the future. There can be several interacting organizations, which are interested to have a complete set of technical documentation or a part of it (related to one or another part of the whole engineering object or the certain stage of the project). These are contractors and subcontractors, customers, developers, investors, providers, quality assurance inspectors, supervisory authorities, etc.

For these interacting organizations technical documentation is essential for several purposes: to be an official confirmation of the contractual obligations fulfilled (technical documentation as annexes to the contracts, or delivery and acceptance certificates); to be used as intellectual right object by providing licenses, permissions, etc.; to serve as a basis for further development of technologies and methods applied; to provide further support for the operation, maintenance and modernization of an object (maybe for many years or decades, depending on the object).

As the commercial interests are involved, they play the role of the best regulators and the major premises for the proper long-term storage of scientific and technical documentation. From the other side, the state or the municipality can also perform the role of one or another interacting party, and in this case it's important to create conditions for further use and appropriate storage of documentation in the interests of citizens and society in general as the end consumers.

2 DEVELOPMENT OF NORMATIVE LEGAL REGULATIONS

Even if it is impractical and beyond the purpose to settle rules on technical records management for private companies and organizations that are guided by commercial interests and considerations, it is important that state and local government bodies, state corporations, state and municipal organizations follow certain common general rules in their activities connected with the storage, acquisition, recording, and use of scientific and technical documentation. This will allow to insure proper conditions for proper administrating and preserving of records in state and municipal bodies and organizations and their transfer to state and municipal archives in complete sets, sufficient for comprehensive use (for historical, restauration, reconstruction, educational and scientific/technical purposes).

The project of this normative and legal act was developed by the All-Russian Scientific Research Institute for Records and Archives Management (VNIIDAD) [*electronic source*, 2] in 2019. The institute performed the task formulated by the Federal archival agency [*electronic source*, 3]. The necessity of elaboration of regulations was emphasized in the decree of the Government of the Russian Federation within the framework of the Plan ("Roadmap") on improvement of legislation and elimination of administrative barriers in order to ensure the implementation of the National technological initiative in the direction of "TechNet"(Advanced production technologies) [*electronic source*, 4].

Why the establishment of new regulations was perceived as "elimination of administrative barriers"? The history and the background of the question is that after the disintegration of the USSR many previously accepted normative legal acts still stayed in force, even if they were not viable anymore. Among them – the "Basic rules on work with scientific and technical documentation in organizations and enterprises" of 1988 [*electronic source*, 5]. These rules were describing all the processes of technical records management and archives systems in detail, in a way which is not applicable anymore. They were intended to use by all types of organizations but they weren't observed in practice, and they didn't touch upon the questions connected with electronic records.

The authors of the new Draft had to take into account big changes in the legal framework which took place the last decennaries, transformation of practical needs of organizations, latest modifications of national and interstate standards.

The draft was approved by the Scientific and Methodical Commission of the Federal Archival Agency and was published at the official portal https://regulation.gov.ru for public discussion in November 2020 [*electronic source*, 6].

3 MAIN PROVISIONS OF THE DRAFT RULES ON ORGANIZATION OF STORAGE, ACQUISITION, REGISTRATION AND USE OF SCIENTIFIC AND TECHNICAL DOCUMENTATION IN STATE AUTHORITIES, LOCAL SELF-GOVERNMENT BODIES, STATE AND MUNICIPAL ORGANIZATIONS

The project includes 9 parts: aside from general principles, there are regulations on the current storage of different types of technical documentation, including the order of introduction of modifications in them and the preservation of all the parts changed during their current storage, conducting quality assurance and reliability checklist and control measures, requirements for the inventories and other descriptive and control forms, organization of archival storage of records in organizations, and the order of their transfer to state and municipal archives for permanent storage.

Special attention is paid to electronic scientific and technical documentation and the systems they are stored in. Taking into account the close connection of documents related to the same issue or project, it is prescribed to use batches (packages) for transmission and storage of electronic technical documents in the integral sets, while preserving all the linking elements and the description of the electronic structure of the workpiece or another object. Requirements to control cards are stated based on combination of metadata of the records produced or acquired and registration of the basic actions towards the records (modifications, converting, etc.).

It is appropriate at this point to recall that storage of technical documentation in the organization is accompanied by their constant or possible changing, after receiving the appropriate official notifications. For traditional paper documents, it is possible to replace a sheet or a part of the document, and the replaced parts are to be preserved at the archive. As for electronic technical documentation, the project provides for their complete replacement or replacement of their independent components when making changes in their content. In this case, all previous versions should also be preserved. Batches (packages) of electronic records are signed by electronic signature of an authorized official after being changed, before and after being transmitted.

The Rules comprise the requirements for electronic scientific and technical documentation storage systems, including requirements for metadata structured on several levels and groups. The principle of compatibility or interconnection of electronic archival systems with the CAD-systems is stated.

The new Rules are intended to become an integral part of the normative legal base in the sphere of documenting and documentation support of engineering processes. One of their important features is that they don't come into collision with the acting standards (national and interstate), but create certain conditions to follow during further standardization process which is developing now. It should be mentioned though that Rules will be in force only in the territory of the Russian Federation, while the most part of the standards for engineering and technical processes are international and provide conditions for international scientific, industrial and business cooperation. So it's important to stay integrated into the common processes but to establish the strict system of archiving for state purposes.

The Rules are also harmonized with the provisions of the "Standard functional requirements for electronic records management systems and electronic records storage systems in the archives of state bodies" (2020) [7].

The Rules are stating only basic requirements. Methods, procedures and technology applied are left to the discretion of organizations.

So not all the questions received univocal answers. There are still many difficulties concerning long-term and permanent preservation of electronic technical documentation. Challenges are rather serious.

4 CHALLENGES FOR LONG-TERM PRESERVATION

4.1. Proprietary nature of software and formats used

Nowadays engineering technical documents are created and supported mainly in electronic form. Digital-based technologies, such as computerized modeling, interactive simulation, numerical calculation, virtual testing and others, provide great possibilities for the development of higher technology industries and are widely used. At the same time there are certain side effects, one of them for the archives and records management sphere is the dependence of technical documentation on the system environment where it is created and stored. Proprietary software programs and file formats are mostly used, and that is the big challenge to the long-term preservation purposes.

Computer-aided design (CAD), or computer-aided design and drafting (CADD), is technology for design and technical documentation, which replaced manual drafting with an automated process. 2D or 3D CAD programs are widely used nowadays, such as AutoCAD, BricsCad, etc. There can be used free and open source CAD software (such as FreeCAD, NanoCAD, etc.), but in big companies are mostly used proprietary CAD software programs.

The formats used for creation and exchange of technical documents are also rather specific and can often be used only inside various CAD-systems. Proprietary nature and inadaptability for preservation purposes are among their disadvantages. The data in these formats can be ordered and stored only according to a particular encoding-scheme, which is mainly a commercial secret of the organization, or the encoding is published but restricted through various licenses. So the organizations which use these formats are very dependent on the software companies or other right holders. That is not only about spending finances on the licenses or service contracts, but also the inability to prevent risks of termination of the activities of the software company in general or in the certain direction, which will cause the end of the program maintenance and support. The exchange of documents without loss of data is also possible only inside the certain net of organizations.

There can be some political and security reasons to be cautious with foreign software products as well, for example, in defense industry. For these reasons import substitution policy in the strategically important areas is implemented, but there is still some technological dependence on the world leaders in the field.

Most of the file formats used within CAD-systems are proprietary formats There is no single solution for converting from proprietary into open formats, and visualization programs can solve the problem only partially.

As for the recommended open formats, one of them is PDF/E defined in the standard ISO 24517-1:2008 Document management—Engineering document format using PDF—Part 1: Use of PDF 1.6 (PDF/E-1) [*electronic source*, 8]. This standard defines a format (PDF/E) for the creation of documents used in geospatial, construction and manufacturing workflows. The format reduces requirements for expensive and proprietary software, promotes trustworthy exchange across multiple applications and platforms. ISO 24517-1:2008 does not define the following: method of creation or conversion from paper or electronic documents to the PDF/E format; method of electronic distribution; specific technical design, user interface, or implementation; required computer hardware and/operating systems; methods for validating the conformance of PDF/E files or readers. The first part of the standard does not address 3D, video or other dynamic content, integrated source data.

Another standard which may be applicable in some cases is PDF/X, a subset of the PDF ISO standard, formalized in ISO standards 15929 and 15930. The purpose of PDF/X is to facilitate graphics exchange.

However, the conclusion should be made that existing open formats, which are not encumbered by any copyrights, patents, trademarks or other restrictions, do not provide comprehensive solutions for creation, exchange, or storage of electronic technical documents in all their variety.

As CAD-systems are internationally used and are the most developed and targeted to electronic engineering purposes, proprietary formats are widely used and thereafter the most highly technological products exist only within such systems. The storage of this documentation is usually well organized in big enterprises and corporations, but there is no chance for state or municipal archives to receive them in electronic form,

or they obtain just some parts of it, visualized electronic or paper copies. As for paper copies, they are two-dimensional and static, the links between the elements are not evident, and therefore they are not sufficient to reflect all the particularities of electronic technical documentation.

Proprietary software and formats are maybe the biggest challenges for long-term preservation of electronic technical documentation and its data, and the obstacle for its transmission to state and municipal archives for permanent storage.

4.2. Trade secrets and intellectual property rights

The value of technical documentation is conditioned by its unique content. So the owners take reasonable measures to keep secret. In Russian jurisdiction trade secrets are referred to as confidential information. So the users and the employees have only limited possibilities to access electronic technical documentation and systems they are stored in. The special position of data controller often exists in the organizations. The current tendency is to spread this approach to the broadest possible space, and it's always rather hard to make it open.

The other juridical difficulty when we deal with technical documentation of great public interest, which we desire to be transferred to state and municipal archives for permanent storage, is that the conditions for its use are initially fixed in the contracts between creators, customers, investors, end-consumers, etc. So rather many sides can be involved and the procedure of gathering all the permissions may take too much time.

Aside for trade secrets, scientific and technical documentation contains objects of intellectual rights: inventions and designs (protected by patents), trademarks, know-hows, a copyright protected works, etc. It means that state and municipal archives will hardly get technical records before these rights expire.

4.3. Disinterest of organizations in maintaining documentation for the purposes other than practical and commercial

Technical, technological, and juridical obstacles are even less problematic for archivists than the disinterest of organizations in maintaining and preserving documentation for other, than practical and commercial, purposes. The most common situation that the archives meet in the organizations is their unwillingness to cooperate, accompanied by the awful state of technical documentation inside the premises and information systems of organizations. It's easier to destroy or erase records than to try to make any order or to permit others to do it for you.

The Law is making it obligatory to transfer records to state and municipal archives at least for state and local self-government bodies, state and municipal organizations, included in the lists of sources of acquisition of state and municipal archives. That is why it is so important to establish rules and to build an effective control system to make sure that the rules are observed in order to keep electronic technical documents reliable, authentic, integral, and usable for many years until they are transferred to the state and municipal archives. These rules will be recommended to follow for nongovernment organizations as well, but just as a general guidance, not as regulatory requirement.

5 CONCLUSIONS

In Russia the new Rules on organization of storage, acquisition, registration and use of scientific and technical documentation in state authorities, local self-government bodies, state and municipal organizations are in the draft. The draft Rules are being discussed by the experts and all those interested in this matter in Russia nowadays. As their

provisions create only general conditions for the development of systems of archival storage of electronic technical documentation in the organizations, it is obvious that a range of other regulations, instructions, technical and technological requirements, as well as methodic guidelines is still indispensable. The further standardization in this area is also extremely in demand. The next normative and legal act in the area that will be reviewed in the nearest future is the List of typical archival documents generated in the scientific, technical and production activities of organizations, with indication of the storage period [*electronic source*, 9]. The main aims are to identify currently existing types of scientific and technical documents, and to set their retention periods, which differ in different organizations depending on their role functions. One of the tasks is also to ensure that electronic technical documentation is deposited by complete sets in the state organizations, where the proper conditions for their preservation and transfer to the state and municipal archives, in accordance with the normative legal requirements, are being provided.

There are still many challenges, which should come into sharp focus, to be scrupulously studied by archivists, records managers together with technical specialists. State and public attention to the problem of proper preservation the results of human mind, scientific and technical activity should be among the priorities of development strategies of the governments and Mankind in general.

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Typology: 1.04 Professional Article

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METODOLOGIJA UPRAVLJANJA S TVEGANJI NA PODROČJU E-HRAMBE

ABSTRACT

Purpose: *This paper will define and study risk factors and risk management in the field of e-storage. The aim is to identify individual risks and vulnerabilities for information security and e-storage.*

Method / approach: *We used a systematic review and analysis of existing literature and sources.*

Results: *The results show that it is important for each organization to make a risk assessment in order to manage the risk in accordance with law, organization, business, environment, technology and human resources. It must be based on a documented methodology.*

Conclusions / practical applicability: *The results are useful in further research in this field.*

Key words: *e-storage, risks, uniform technological requirements, security*

SINTESI

Scopo: *In questo documento, definiremo e studieremo i fattori di rischio e la gestione del rischio nel campo dell'e-storage. Scopo di questo documento è identificare i rischi individuali e le vulnerabilità per la sicurezza delle informazioni e l'archiviazione elettronica.*

Metodo / approccio: *Abbiamo utilizzato una revisione e un'analisi sistematiche della letteratura e delle fonti esistenti.*

Risultati: I *risultati mostrano che è importante per ogni organizzazione una valutazione del rischio che gestisca il rischio legalmente, organizzativamente, ed aziendale, ambientale, tecnologico e delle risorse umane. Deve basarsi su una metodologia documentata.*

Conclusioni / applicabilità pratica: *I risultati sono utili per ulteriori ricerche in questo campo.*

Parole chiave: *e-storage, rischi, requisiti tecnologici uniformi, sicurezza.*

ABSTRAKT

Namen: *V prispevku bomo opredelili in proučevali dejavnike tveganja in upravljanje s tveganji na področju e-hrambe. Cilj prispevka je ugotoviti posamezna tveganja in ranljivosti za informacijsko varnost in e-hrambo.*

Metoda/pristop: *Uporabili smo sistematičen pregled in analizo obstoječe literature in virov.*

Rezultati: *Rezultati kažejo, da je pomembo, da vsaka organizacija izdela oceno tveganja, s katero se obvladuje tveganje tako pravno, organizacijsko, poslovno, okoljsko, tehnološko kot tudi s človeškimi viri. Temeljiti mora na dokumentirani metodologiji.*

Sklepi/praktična uporabnost: *Rezultati so uporabni pri nadaljnjih raziskavah na tem področju.*

Ključne besede: *e-hramba, tveganja, enotne tehnološke zahteve, varnost.*

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1 UVOD

Področje elektronskega arhiviranja ureja Zakon o varstvu dokumentarnega in arhivskega gradiva in arhivih (ZVDAGA). Gre za zadnji sistemski zakon, ki je bil potreben, da bi bilo področje elektronskega poslovanja celovito zaokroženo. Tehnična infrastruktura za elektronsko poslovanje in arhiviranje obstaja že nekaj časa (infrastruktura javnih ključev, overitelji digitalnih certifikatov, overitelji časovnih žigov itd.), s sprejemom ZVDAGA pa je odpadla zadnja sistemska ovira za praktično uvajanje elektronskega poslovanja in elektronskih arhivov v podjetja.

Zakon zahteva od vseh organizacij, ki bodo vzpostavile elektronski arhiv, vzpostavitev celovitega sistema načrtovanja, izvajanja in spremljanja elektronskega arhiviranja, predvsem sprejem notranjih pravil za zajem in hrambo dokumentarnega gradiva, izdelavo drugih dokumentov v zvezi s pripravo na zajem in hrambo gradiva v digitalni obliki, periodično dopolnjevanje notranjih pravil zaradi spremembe veljavnih predpisov, tehnološkega napredka in spoznanj stroke ter izvedbo drugih aktivnosti (Inštitut za ekonomijo, pravo in informatiko, 2020).

Strategija in izvedbeni narčt razvoja slovenskega elektronskega arhiva 2016-2020 navaja, da slovenski elektronski arhiv predstavlja skupno storitev dolgoročnega ohranjanja elektronskega arhivskega gradiva, katere skrbnik so slovenski javni arhivi. Storitev vključuje prevzem elektronskega arhivskega gradiva od ustvarjalcev, dolgoročno ohranjanje po načelih varne dolgoročne hrambe, kot jih določa ZVDAGA (dostopnost, uporabnost, celovitost, avtentičnost, trajnost) in zagotavljanje nadaljnje dostopnosti do tega gradiva vključno z možnostjo njegove ponovne uporabe za bodoče uporabnike. Vendar pa dolgoročno ohranjanje elektronskega arhivskega gradiva z možnostjo njegove nadaljnje uporabe ni enostavno primerljivo z dolgoročnim ohranjanjem gradiva v fizični obliki. Zahteva aktivnosti skozi celoten življenjski cikel elektronskega ahrivskega gradiva, ki se začne s kreiranjem (ali prejemom) posameznega dokumenta - kot enoto gradiva - pri ustvarjalcu pa vse do prevzema v elektronskih arhivih. Posamezni elektronski dokument v svojem življenjskem ciklu praviloma zamenja več informacijskih okolij, kontekstov in tudi skrbnikov.

Obveznsoti in pristojnosti slovenske javne ahrivske službe glede prevzemanja arhivskega gradiva ne glede na njegov nastanek (v papirni ali elektronski obliki), zagotavljanja njegove dolgoročne hrambe in omogočanja njegove uporabe, so določene v varstvu dokumentarnega in arhivskega gradiva ter arhivih (ZVDAGA). Zakonska določila podrobneje opredeljuje tudi Uredba o varstvu arhivskega gradiva in arhivih (UVDAG). ZVDAGA in UVDAG urejata upravljanje dokumentarnega in arhivskega gradiva na splošnem nivoju, upravljanje gradiva v elektronski obliki in njegovo varno hrambo pa v praksi natančneje določajo enotne tehnološke zahteve.

Upravljanje dokumentarnega gradiva je za organe državne uprave, uprave samoupravnih lokalnih skupnosti ter druge pravne in fizične osebe, kadar na podlagi javnih pooblastil opravljajo upravne naloge, določeno z Uredbo o upravnem poslovanju. Za upravljanje oziroma varstvo dokumentarnega in arhivskega gradiva v elektronski obliki sta pomembna tudi Zakon o elektronskem poslovanju in elektronskem podpisu in Uredba o pogojih za elektronsko poslovanje in elektronsko podpisovanje.

1.1 Enotne tehnološke zahteve

Enotne tehnološke zahteve (ETZ), ki jih je sprejel Arhiv Republike Slovenije, podrobneje opredeljujejo poslovne, organizacijske in tehnološke pogoje za izpolnjevanje Zakona o varstvu dokumentarnega in arhivskega gradiva ter arhivih (ZVDAGA) in na njegovi podlagi izdanih podzakonskih predpisov. ETZ so povezovalni element med zakonskimi zahtevami, ki izhajajo iz temeljnih načel zagotavljanja varne e-hrambe, in hitro spreminjajočimi se potrebami prakse.

Spremenjena arhivska zakonodaja predvideva določitev vsebine zahteve za potrditev notranjih pravil, certificiranje strojne in programske opreme, storitev zajema in hrambe gradiva v elektronski obliki ter spremljevalnih storitev, registracijo ponudnikov in storitev digitalne hrambe v skladu s Pravilnikom o enotnih tehnoloških zahtevah. Ker slednji še ni sprejet, ostajajo v veljavi ETZ (verzija 2.1) iz leta 2013 (Ministrstvo za kulturo, 2020).

Zahteve za e-hrambo opredelimo kot pravne, tehnološke in poslovne. Predpisane so predvsem v ZVDAGA, UVDAG, ETZ in področni zakonodaji (npr. glede rokov hrambe). Poslovne zahteve se npr. nanašajo na razpoložljivost, varnost in zanesljivost sistema e-hrambe (opreme, storitev, gradiva) ter na skladnost s predpisi (Ministrstvo za kulturo, 2013).

ETZ so torej povezovalni element med zakonskimi zahtevami, ki izhajajo iz temeljnih načel (dostopnost, uporabnost, celovitost, avtentičnost, trajnost) zagotavljanja varne e-hrambe, in hitro se spreminjajočimi se potrebami prakse (Hajtnik, 2011).

1.2 Tveganje in ocena tveganja

Murphyev zakon pravi: »Če lahko gre kaj narobe, bo narobe tudi šlo.« Mednarodna organizacija za standarde (ISO) tveganje opredeljuje tveganje kot kombinacijo verjetnosti dogodka in njegovo posledico. SIST EN ISO 12100 definira tveganje, da je zaradi neke nevarnosti kombinacija verjetnosti, da se bo pojavila škoda zaradi te nevarnosti ter največje možne razsežnosti te škode oziroma tveganje je kombinacija največje možne razsežnosti škode zaradi neke nevarnosti in verjetnosti, da se bo ta škoda pojavila. Ukrepi in postopki informacijske varnosti morajo temeljiti na oceni tveganja, ki jo mora organizacija izdelati že v predhodni pripravi na zajem in e-hrambo. Ta ocena je zgolj podlaga za izvajanje zajema oz. vzpostavitev varnega sistema e-hrambe ter podlaga za poznejše upravljanje tveganja, zato da se gradivo ustrezno zavaruje med hrambo. Tveganje je možnost (verjetnost), da bo informacijski vir ali skupina virov ogrožena zaradi svoje ranljivosti in da bo povzročena izguba oz. škoda na njih.

Tveganja so lahko različna:

- Pravna in poslovna tveganja (najem zunanjih izvajalcev, tveganja, ki izvirajo iz notranje in zunanje organizacije, tveganja, povezana s skladnostjo s predpisi, itd.). Glede ocene pravnega tveganja organizacija določi zakone in druge predpise, ki jih mora spoštovati pri zajemu oz. e-hrambi glede na vrsto gradiva oz. vrsto podatkov, ki jih to gradivo vsebuje.
- Tveganja, povezana s človeškimi viri (nenamerna/namerna dejanja, usposobljenost osebja, pristojnosti in odgovornosti osebja itd.).
- Tveganja, povezana z okoljem:
- ne tehnološka tveganja (požar, izlitje vode, naravne ujme - poplava, neurje, potres, požar v okolju, vihar, vročina, strela, teroristični napad itd.),
- tehnološka tveganja (povezana z informacijsko tehnologijo, npr. odpoved delovanja, zastaranje strojne in programske opreme, zastaranje nosilcev podatkov, zastaranje oblik zapisa itd.).
- Druga tveganja, povezana tudi z informacijsko varnostjo in izvajanjem e-hrambe (tveganja, povezana z upravljanjem sprememb informacijske tehnologije in sistemov, itd.).

Izdelava ocene tveganja mora temeljiti na metodologijah, ki omogočajo naknadno preverjanje ugotovitev ocene in njeno poznejše posodabljanje (Ministrstvo za kulturo, 2013).

Organizacija mora pri pripravi oz. organiziranju zajema in e-hrambe izpolniti vse predpisane varnostne zahteve, bistvene za posamezno vrsto gradiva (npr. dokumentarno gradivo; arhivsko gradivo; gradivo v fizični ali digitalni obliki) oz. vrsto podatkov, ki jih bo vsebovalo zajeto oz. hranjeno gradivo (osebni, tajni, zaupni, javni ipd. podatki).

Iztočnica za načrtovanje, organiziranje in izvajanje varovanja gradiva je ocena tveganja pri zajemu oz. e-hrambi. Na njeni podlagi organizacija določi, vzpostavi in izvaja ukrepe ter postopke varovanja gradiva in delovnih postopkov ter opreme za zajem oz. e-hrambo.

Organizacija mora zagotavljanje informacijske varnosti urediti z notranjimi pravili. Pri tem mora upoštevati predpise, ki določajo način varovanja podatkov v zajetem oz. hranjenem gradivu. Med pomembnejšimi predpisi je Zakon o varstvu osebnih podatkov (ZVOP–1) , saj pravzaprav ni organizacije, pri kateri vsaj del zajetega oz. e-hranjenega gradiva ne bi vseboval tudi osebnih podatkov. Sprejetje notranjega akta kot podlage za organiziranje sistema informacijske varnosti zahteva 25. člen ZVOP-1 (npr. Pravilnik o postopkih in ukrepih za zavarovanje osebnih podatkov), poleg njega pa številni drugi predpisi, ki urejajo obdelavo manj pogostih ali na določena področja omejenih vrst podatkov (npr. 38. člen Zakona o tajnih podatkih za tajne podatke, 42. člen Zakona o državni statistiki za statistično tajnost, 54. člen Zakona o maturi za izpitno tajnost).

Določbe za organiziranje, vzpostavitev in upravljanje sistema informacijske varnosti v organizaciji morajo temeljiti na določbah ZVDAGA in drugih pravnih predpisov, ki se morajo upoštevati glede na vrsto zajetega oz. hranjenega gradiva. Pri pripravljanju ukrepov in postopkov informacijske varnosti ter aktov o ureditvi sistema te varnosti si organizacije lahko pomagajo s standardi, priporočili in dobrimi praksami s tega področja (npr. ISO 27001 in ISO 27002) (Ministrstvo za kulturo, 2013).

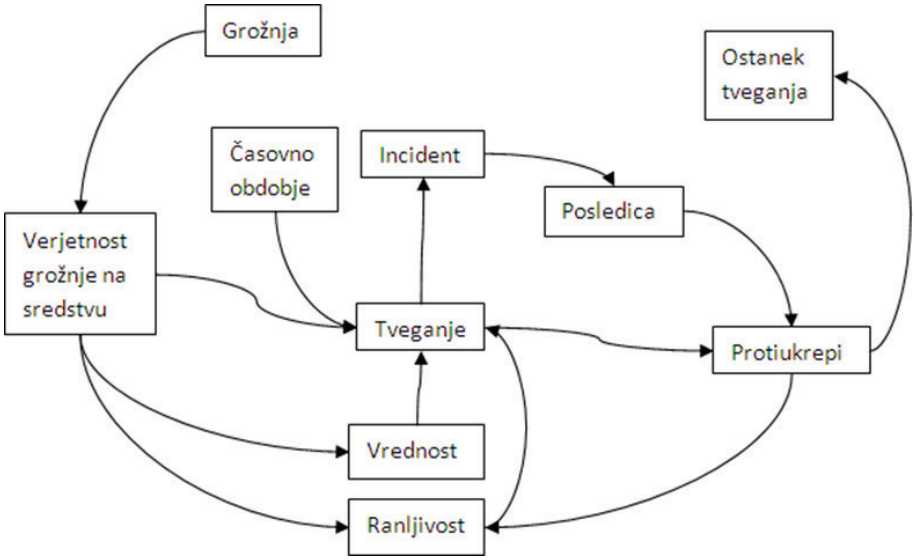
Organizacija mora izdelati oceno tveganja, s katero prepoznava in obvladuje tveganje, povezano s človeškimi viri, ter pravno, poslovno, organizacijsko, okoljsko in tehnološko tveganje, vezano na zajem oz. e-hrambo gradiva. Če organizacija vloži zahtevek za potrditev notravnjih pravil v državni arhiv, mora k vlogi priložiti tudi poročilo o izvedeni oceni tveganja. Ocena tveganja mora temeljiti na dokumentirani metodologij in mora biti najmanj enkrat na leto in ob spremembah, ki vplivajo na tveganje, posodobljena tako, da izraža dejansko stanje. Enako velja za izbrana nadzorstva (ukrepe), ki izhajajo iz ocene tveganja (Ministrstvo za kulutro, 2013).

Ocenjevanje tveganja je prvi korak pri obvladovanju tveganj. Organizacije uporabljajo ocene za določitev obsega potencialnih groženj in tveganj, povezanih z IT sistemi. Rezultat tega procesa pomaga identificirati primerne kontrole za zmanjšanje ali odpravo tveganja (Žvanut, 2011).

1.3 UPRAVLJANJE S TVEGANJI

Upravljanje s tveganji je temelj vsake informacijske varnostne politike kot tudi dolgoročne e-hrambe in e-arhiviranja. Upravljanje s tveganji mora biti stalen proces (Hajtnik, 2020).

Standardni postopek za opravljanje z tveganji poteka tako, da poskušamo identificirati tveganje, oceniti kako veliko je tveganje, poskušati odpraviti ali zmanjšati tveganje in kot zadnje narediti poročilo. Konstantno poskušamo najdi tveganja in se spopasti z njimi, saj v nasprotnem primeru lahko pride, da tveganje izkoristi ranljivost in tako pride do izgube. Poleg analize tveganj se uporablja za uspešno zaščito še protokole, standarde, varnostne politike in dobre praske. Najbolj znani standardi, ki se uporabljajo pri informacijski varnosti so ISO, ANSI, OASIS, OMG, 3GPP, ENISA, ITU-T, IEEE, Cloud Security Alliance in drugi (Hribar, 2015).



Slika 1: Upravljanje s tveganji (vir: Žvanut, P., 2011)

Pri upravljanju s tveganji se gibljemo v okviru sredstev in groženj. Sredstvo predstavlja določeno vrednost organizaciji in grožnja pomeni vsak možen vzrok za incident. Tveganje je posledica interakcije med njima in pomeni možnost, da dana grožnja izkoristi ranljivost sredstva ter tako povzroči škodo. Ranljivost v tem primeru pomeni slabost, ki jo lahko izkoristi grožnja. Za zmanjšanje tveganja je potrebno ocenjevanje tveganja, kar pomeni identifikacijo tveganj, njihovo jakost in protiukrepe. predstavlja določeno tveganje. Če se grožnja uresniči, pomeni to incident (dogodek), ki ima določene posledice. Za odpravo te ranljivosti in posledično grožnje, je potrebno uveljaviti pravilne protiukrepe. Po uveljavitvi protiukrepov še zmeraj ostane določeno tveganje (ostanek tveganja), ker ne moremo vedno 100 % odpraviti ranljivosti (Žvanut, 2011).

Upravljnje s tveganji vsebuje in opredeljuje ustrezne ukrepe, vire, odgovornosti in prioritete za upravljanje s tveganji. Vzpostavljen mora biti v kontekstu notranjih pravil in informacijske varnostne politike z jasno opredeljenim pristopom k tveganjem in merili za njihovo sprejemanje (Hajtnik, 2019).

Ranljivost informacijskega sistema je vsaka pomanjkljivost informacijskega sistema, ki jo lahko določena grožnja izrabi. Je posledica slabe zaščite informacijskega sistema zoper določeno grožnjo ali aktivnosti napadalca. Ranljivost sama po sebi ne povzroča škode, je zgolj stanje ali serija stanj, ki dopušča, da grožnja vpliva na informacijski sistem (Koščak, 2011).

Obvladovanje tveganj je proces prepoznavanja ranljivosti in grožnje za informacijske vire, ki jih uporabljajo organizacije za doseganje poslovnih ciljev, in odločanje o nasprotnih ukrepih, če so ti potrebni za zmanjševanje tveganj na sprejemljivo raven, osnovano na vrednotah informacijskih virov organizacije. Proces obvladovanja tveganj je ponavljajoč proces, ki je neomejen. Poslovno okolje se neprestano spreminja in nove grožnje ter ranljivost se pojavljajo vsakodnevno. Izbira nasprotnih ukrepov (kontrole) z obvladovanjem tveganj mora oblikovati ravnovesje med produktivnostjo, ceno, učinkovitostjo nasprotnih ukrepov, in varovanje vrednosti informacijske pridobitve.

Tveganje je verjetnost, da se zgodi nekaj slabega, kar povzroči podjetju materialno ali nematerialno škodo. Ranljivost je šibkost, ki lahko ogrozi ali povzroči podjetju materialno ali nematerialno škodo. Grožnja je nekaj, kar ima potencial za povzročitev škode.

Tveganje ustvarja verjetnost, da bo grožnja izrabila ranljivost za povzročitev škode. Posledice nastopijo kadar grožnja izrabi ranljivost ter povzroči škodo. V kontekstu informacijske varnosti, je posledica izguba razpoložljivosti, neokrnjenosti ter zaupnosti in morda še drugih izgub (izguba dobička, izguba življenja, izguba lastninske pravice). Ugotovimo lahko, da ni možno identificirati vsa tveganja, niti jih izločiti. Ostalo tveganje je imenovano preostalo tveganje. Z ukrepi je možno tveganja zmanjšati na sprejemljivo raven.

Skladno z ISO/IEC 27002:2005 postopek za upravljanje informacijske varnosti zahteva oceno tveganja, ki zahteva sledeča preverjanja:

- varnostna politika,
- organizacija informacijske varnosti,
- upravljanje dobička, varnost človeških virov,
- fizična in okoljska varnost,
- komunikacijsko in operacijsko upravljanje,
- kontrola dostopa,
- pridobitev informacijskega sistema,
- razvoj in vzdrževanje,
- informacijska varnost obvladovanja incidentov,
- upravljanje neprekinjenega poslovanja in
- normativna skladnost.

Proces upravljanja z tveganji je sestavljen iz:

- Identifikacije premoženjskega stanja in ocene vrednosti. Vsebuje: ljudi, stavbe, računalniško strojno opremo, programsko opremo, podatke (digitalne, tiskane, ostalo), sredstva za oskrbo.
- Ocene tveganja. Vsebuje: vplivi narave, posledice vojne, nesreče, zlonamerno delovanje, ki izvira iz notranje in zunanje organizacije.
- Ocene ranljivosti in verjetnost, da bo le-ta izkoriščena. Vrednotenje politike, postopkov, standardov, izobraževanja, fizične varnosti, kvalitete kontrole, tehnične varnosti (Housing, 2020).

2 INFORMACIJSKA VARNOST

Informacijska varnost je vedno spreminjajoča in razvijajoča se aktovnost, ki pomeni varstvo podatkov in informacijskih sistmov pred nazkonitim dostopom, uporabo, razkritjem, ličitvijo, spremembo ali uničenjem (Von Sloms, 2009 v Bernik in Selan, 2011). Glavni elementi informacijske varnosti, poznani kot CIA model, so zaupnost, celovitost in razpoložljivost. Informacijska varnost ni le tehnični izziv, ampak tudi izziv celotne organizacije in vodenje le-te, ki zajema tvegani management, poročanje in odgovornost (Bernik in Selan, 2011).

Informacijska varnost obsega organizacijske in tehnične ukrepe ter postopke varne hrambe izvirnega, zajetega ali pretvorjenega gradiva. Namen izvajanja ukrepov in postopkov informacijske varnosti je:

- varovanje gradiva pred njegovo izgubo, nepooblaščenimi spremembami ali nepooblaščenim razkritjem,
- omejevanje dostopa do shranjenega gradiva na pooblaščene uporabnike,

- zagotavljanje varnosti in razpoložljivosti informacijskih sistemov za zajem in e-hrambo oz. s tem povezane spremljevalne storitve,
- zagotavljanje pravne veljavnosti e-hranjenega gradiva, kar omogoča uporabo tega gradiva kot dokazila v različnih uradnih postopkih.

Za doseganje načel varne e-hrambe moramo zagotoviti ukrepe in postopke, s katerimi bomo varovali gradivo pred njegovo izgubo in okrnitvijo ter dokazovanjem celovitosti:

- Prvo zahtevo, ki se nanaša na preprečevanje izgube, izpolnjujemo z ustreznim številom varnostnih kopij gradiva na različnih mestih, s prepisovanjem njegove vsebine na nove nosilce zapisa, preden obstoječi propadejo, s stalnim preverjanjem nosilcev zapisa in s pravočasno pretvorbo gradiva iz ene obliko zapisa v drugo pred zastaranjem oblike, v kateri je hranjeno.
- Drugo zahtevo, ki se nanaša na varovanje pred okrnitvijo in dokazovanjem celovitosti gradiva ter obsega zagotavljanje njegove točnosti, nespremenljivosti in popolnosti oz. reprodukcije njegove vsebine in dokazljivosti njegovega izvora ves čas hrambe, pa izpolnjujemo s tvorbo in hrambo ustreznih metapodatkov in revizijskih sledi o zajemu, pretvorbi, popravkih ali dopolnitvah hranjenega gradiva.
- Gradivo oz. reprodukcija njegove vsebine sme biti ves čas trajanja hrambe dostopno (le) pooblaščenim uporabnikom. Zahteva po omejevanju dostopa obsega tudi:
- omejevanje dostopa do prostorov, v katerih sta oprema in infrastruktura informacijskega sistema za zajem in e-hrambo,
- omejevanje dostopa do prostorov, v katerih se hranijo nosilci zapisov gradiva oz. v katerih je nameščena oprema informacijskega sistema za zajem in e-hrambo,
- varnostne ukrepe in postopke v zvezi z osebjem, ki sodeluje pri zajemu in e-hrambi.

Za delovanje informacijskega sistema za zajem in e-hrambo je pomembno tudi zagotavljanje potrebne okoljske varnosti.

Zgornje navedbe o hrambi arhivskega gradiva oz. gradiva javnopravnih oseb spadajo v t. i. materialno varstvo gradiva (Ministrstvo za kulturo, 2013).

2. 1 Pravna ureditev informacijske varnosti

Odločitev o formalni obliki notranje pravne ureditve informacijske varnosti je odvisna predvsem od ugotovitev ocene pravnega tveganja, po katerih se organizacija odloči, ali bo to področje uredila:

1. neposredno z notranjimi pravili oz. s posebnim aktom o (za)varovanju zajema oz. e-hrambe (npr. s pravilnikom, poslovnikom, navodilom, politiko informacijske varnosti);

2. z ustrezno dopolnitvijo obstoječih aktov organizacije s področij:

- (za)varovanja podatkov (npr. pravilnika o zavarovanju osebnih podatkov, o zavarovanju tajnih podatkov, o zavarovanju poslovnih skrivnosti),
- urejanja drugih varnostnih vprašanj (npr. požarne varnosti, hišnega reda ipd.),
- organiziranosti ter opisa del in nalog zaposlenih (npr. akt o organizaciji in sistemizaciji delovnih mest),
- upravljanja dokumentarnega gradiva (npr. pravilnik o pisarniškem poslovanju) ipd.

Vsebina aktov oz. dokumentov, s katerimi organizacija uredi informacijsko varnost, je odvisna od ugotovitev ocene tveganja, varnostne razvrstitve informacijskih virov ter organiziranosti in področja poslovanja organizacije.

Če organizacija sprejme politiko informacijske varnosti kot samostojno dokumentacijo, je ta sestavni del notranjih pravil. Navadno jo sestavljajo krovni dokument na najvišji ravni in področne varnostne politike na drugi ravni, ki jih dopolnjujejo različna navodila, obrazci in notranji standardi na tretji ravni.

V krovnem dokumentu politike informacijske varnosti se zapišejo obvezujoča pravila in predpisi, ki se nanašajo na splošna načela upravljanja informacijskega sistema, npr.:

- namen in cilj varnostne politike,
- odgovornosti (vodstva, zaposlenih, tretjih oseb),
- odgovorne osebe za informacijsko varnost in njeno izvedbo,
- usklajenost (npr. s predpisi, tehnologijo),
- način in pogostost preverjanja in dopolnjevanja varnostne politike,
- način obravnavanja varnostnih incidentov pri varovanju informacij (kršenje politike in disciplinski ukrepi),
- organizacija dokumentacije, ki predstavlja politiko informacijske varnosti in se nanaša na posamezna področja,
- veljavnost.

V področnih varnostnih politikah pa so natančneje opredeljene zahteve po uvedbi varnostnih ukrepov in postopkov varovanja na posameznih področjih, ki morajo izhajati iz ocene tveganja ter odgovornosti za izvedbo, način uvedbe in nadzor nad njimi. Z vidika zahtev po varovanju, kakršne določa ZVDAGA, lahko opredelimo področne varnostne politike, ki se npr. nanašajo na: varovanje v zvezi z osebjem, upravljanjem informacijskih virov in informacijske infrastrukture ter operativnega delovanja, s fizičnim in tehničnim varovanjem, z upravljanjem dostopnih pravic, naročanjem storitev pri zunanjih izvajalcih in neprekinjenim poslovanjem.

Za organiziranje in izvajanje ukrepov ter postopkov informacijske varnosti mora organizacija imenovati odgovorno osebo (vodjo informacijske varnosti), katere naloge so predvsem:

- nadzor stanja informacijske varnosti,
- odrejanje ukrepov za zagotavljanje informacijske varnosti,
- nadzor nad upravljanjem in izvajanjem varnostnih ukrepov in postopkov pri zagotavljanju informacijske varnosti,
- vodenje razvida informacijskih varnostnih incidentov,
- vodenje seznamov oseb, pooblaščenih za samostojen vstop v prostore, v katerih so nameščene ključne naprave sistema za zajem oz. e-hrambo,
- vodenje seznamov oseb, pooblaščenih za dostop do hranjenega gradiva,
- sodelovanje pri sistemih za upravljanje identitet in dostopnih pravic uporabnikov sistema za zajem oz. e-hrambo.

Zaposleni v organizaciji (redno in začasno) in morebitni zunanji sodelavci morajo podpisati izjavo o zaupnosti oz. varovanju informacij. S podpisom te izjave potrdijo, da so seznanjeni s predpisi in akti, ki v organizaciji urejajo varovanje gradiva in njegove vsebine kot predmeta zajema in e-hrambe (Ministrstvo za kulturo, 2013).

3 ISO STANDARDI

Standardi za informacijsko varnost se področno razlikujejo, vendar je najboljši pristop še vedno v centraliziranem upravljanju pri implementaciji varnostnih mehanizmov (SUVI – Sistem upravljanja varovanja informacij).

ri razvoju e-hrambe je smiselno implementirali različne standarde s področja dolgoročnega ohranjanja elektronskega gradiva, predvsem pa:

- ISO 14721 Space data and information transfer systems - Open archival information systems - Reference model.
- ISO 15489-1 Information and documentation - records management.
- ISO 27001 Information technology - Security techniques - Information security management systems – Requirements.
- ISO 27002 Information technology - Security techniques - Information security management systems - Code of Practice.
- ISO 13008 Information and documentation - Digital records conversion and migration process.
- ISO 20652 Space data and information transfer systems – Producer–archive interface – Methodology abstract standard.
- ISO 27005 Information technology – Security techniques – Information security risk management.
- ISO 18128 Information and documentation – Risk assessment for records processes and systems.
- ISO 27002 Information technology – Security techniques – Code of practice for information security controls.

4 UKREPI IN ZAŠČITNI MEHANIZMI

Za zagotavljanje informacijske varnosti je pomembno, da zagotovimo zapunost, neokrnjenost in razpoložljivost informacij. Zaupnost pomeni, da so informacije dostopne samo pooblaščenim osebam. Neokrnjenost pomeni, da je zagotovljena točnost in popolnost informacij in programske opreme (sama po sebi se ne sme spreminjati). Razpoložljvost pomeni, da so informacije in računalniške storitve na voljo pooblaščenim uporabnikom. Če vse to želimo zagotoviti, moramo vzpostaviti zaščitne mehanizme:

- fizični: zagotavljanje fizične varnosti in delovanja,
- logični: zagotavljanje tehničnih mehanizmov,
- proceduralni (organizacijski ukrepi): zagotavljanje varnostne politike, standardov, smernic.

Obravnavanje tveganj je odvisno od tega, kje podatke uporabljamo in koliko so za nas vredni. Tveganje lahko obravnavamo na različne načine:

- izogibanje tveganju,
- zmanjševanje tveganja,
- prenos tveganja na drugo napravo,
- sprejem tveganja (sprejmemo dejstvo, da obstaja).

Popolna varnost v realnosti ne obstaja, je pa pomembno, da uporabljamo kombinacijo naslednjih ukrepov:

- preventivni: zmanjšujejo možnost uresničitve grožnje,
- detekcijski: zaznajo grožnjo,
- korektivni: zmanjšujejo posledice napadov.

Najprej je potrebno zagotoviti zaščito strojne opreme, kar dosežemo z varovanimi prostori, zaklepanjem računalnikov, nedostopnostjo, čiščenjem in ustreznim vzdrževanjem. Programsko opremo zaščitimo z izvajanjem nadzora nad dostopi in delovanjem. S kontrolo dostopa se zaščitijo podatki, uporablja se: identifikacija, avtentikacija, avtorizacija. Gesla predstavljajo šibko zaščito, zato običajno niso primerna za visoko stopnjo zaščite. Za kontrolo dostopa in varovanje se uprablja še: požarni zidovi, antivirusni programi, programi proti vohunskim programom, sistemi za zaznavanje vdorov.

Varnostni protokoli v komunikacijskem protokolu TCP IP omogočajo vzpostavitev varne šifrirane povezave med strežnikom in odjemalcem. Najpogostejši uporabljeni protokoli za vzpostavitev varnega kanala med strežnikom in odjemalcem so:

- SSL (Secure Sockets Layer)
- TLS (Transport Layer Security)
- WTLS (Wireless Transprot Layer Security) – zasnovan na TLS in SSL, optimiziran za uporabo na ozko pasovnih komunikacijskih kanalih (Bernik, 2014).

Določiti je potrebno (organizacijski ukrep):

- postopke, odgovornosti, dokumentiranja:
- izdelati oceno tveganja, ki mora biti redno revidirana
- upoštevati načela varovanja - sprejeta, zapisana v hierarhično organizirani varnostni dokumentaciji
- določiti odgovorne osebe, ki poročajo vodostvu
- uvajanje nalog s področja varovanja informacij v poslovne procese organizacij
- dvig varnostne kulture zaposlenih in poslovnih partnerjev...

Tehnološki ukrep kot implementacija varnostnih tehnologij:

- za zaščito sistemov, dostopov, podatkov, komunikacij
- varnostno kopiranje
- oddaljene lokacije
- protivirusna zaščita
- požarni zid (firewall), ločevanje odsekov mreže
- nastavljanje varnostnih parametrov v opremi
- sistemi za nadzor dostopa do sistemov in mrež (pametne kartice, generatorji gesel za enkratno uporabo)
- varni elektronski podpis
- uvajanje sistemov fizične varnosti (alarmi, video nadzor, pristopne kontrole)
- zagotavljanje visoke razpoložljivosti sistema
- navidezno zasebno omrežje (VPN)..

Zmanjševanje tveganj, poveznih z informacijskimi sredstvi:

- popis vseh pomembnih informacijskih virov (oprema, podatki /informacije, evidence, navodila, licence, SW,...)
- varnostna razvrstitev v skladu z oceno tveganj in občutljivostjo gradiva glede na stopnjo škode škode ob izgubi
- odgovornosti za varovanje skrbniki virov ali skupin
- pravila za ravnanje; nabava, hramba, prenos, nadzor uporabe, uničenje gradiva...

Fizično in tehnično varovanje:

- zmanjševanje tveganj, poveznih s prostori in opremo:
- opredelitev varovanega območja v skladu s pomembnostjo in ranljivostjo informacijskih virov
- omejen in nadzorovan fizični dostop v posamezna varovana območja
- zaščite pred okoljskimi nevarnostmi - požar, izlitje ali vdor vode, nenadne spremembe temperature ali vlage, ... (Domanjko, 2020).

5 ZAKLJUČEK

Napredek informacijsko telekomunikacijskih tehnologij in vzporedno tudi napredno elektronsko poslovanje kažeta na motive, zaradi katerih se dokumenti, ki nastajajo pri vsaki organizaciji, vlagajo v e-hrambo. Prvi motiv je stalna dostopnost ne glede na lokacijo, drugi motiv je manjši stroški napram hrambi gradiva v fizični obliki in tretji motiv je ohranitev izvornega – digitalnega gradiva. Posledično s tem pa se pojavljajo tveganja na področju e-hrambe. Tveganja pri e-hrambi so zelo specifična; od prostorov, dostopa do prostorov, zaposlenih, vse do informacijske infrastrukture. Zato je nujno, da vsaka organizacija izdela oceno tveganja, s katero se obvladuje tveganje tako pravno, organizacijsko, poslovno, okoljsko, tehnološko kot tudi s človeškimi viri. Temeljiti mora na dokumentirani metodologiji in mora biti vsaj enkrat letno posodobljena tako, da izraža dejansko stanje. Zato je nujno zagotavljati posodobljeno informacijsko varnost v skladu z veljavno zakonodajo in predpisanimi standardi, z upoštevanjem dobrih praks, z uvedbo SUVI (učinkovitega in celovitega sistema upravljanja informacijske varnosti) in nenazadnje z organizacijskimi, tehnološkimi in fizičnimi ukrepi. Na ta način se lahko zagotovi visoka zaščita zagotavljanja varnosti.

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Typology: 1.04 Professional Article

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COVID-19 - HOW MUCH MATERIAL WILL WE BE ABLE TO PRESERVE

ABSTRACT

We can say that we live in very exciting times. History is being written before our eyes. In most countries, due to the COVID-19 pandemic, strict quarantines were introduced, which led to a complete standstill of public life, and the volume of economic activities was greatly reduced. Work, education and social life took place only online. All this happening, however, produces a large amount of material that will one day be very interesting for researchers. Therefore, we checked the various channels through which we obtain information and who should preserve it.

Since most of the records that are being created today are in digital form, we were interested in whether they will be preserved for posterity. Therefore, in the article we check whether today someone is already systematically collecting and storing these records, or if there are any plans for that. Since the importance of collecting and storing these materials was pointed out in communique first by the UNESCO and then the International council on Archives (ICA) we checked what is being done, or is planned to do, about it in our archives and museums. The results of the research confirmed our assumptions that some archives and museums have already realized the value of the material and are therefore already collecting it, but that much work still remains in this area. We also checked what is happening in this area abroad, where the collection of material is in progress on a much larger scale.

Keywords: *COVID-19, pandemic, archives, archival material, preservation of material, long-term storage*

COVID-19 – QUANTO MATERIALE RIUSCIREMO A CONSERVARE?

SINTESI

Possiamo dire che viviamo tempi molto emozionanti. La storia si sta scrivendo davanti ai nostri occhi. Nella maggior parte dei paesi, a causa della pandemia di COVID-19, sono state introdotte rigide quarantene, che hanno portato a un completo stallo della vita pubblica, ed il volume delle attività economiche è stato notevolmente ridotto. Il lavoro, l'istruzione e la vita sociale si sono svolte solo online. Tutto ciò che accade, tuttavia, produce una grande quantità di materiale che un giorno sarà molto interessante per i ricercatori. Pertanto, abbiamo controllato i vari canali attraverso i quali otteniamo informazioni e chi dovrebbe conservarle. Poiché la maggior parte dei dischi che vengono creati oggi sono in forma digitale, eravamo interessati a sapere se saranno conservati per i posteri. Pertanto, nell'articolo controlliamo se oggi qualcuno stia già raccogliendo e archiviando sistematicamente questi record o se ci sono piani per questo. Poiché l'importanza della raccolta e della conservazione di questi materiali è stata sottolineata in

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un comunicato prima dall'UNESCO e poi dal Consiglio internazionale degli archivi (ICA), abbiamo verificato ciò che si sta facendo, o si prevede di fare, al riguardo nei nostri archivi e musei. I risultati della ricerca hanno confermato le nostre ipotesi secondo cui alcuni archivi e musei hanno già realizzato il valore del materiale e quindi lo stanno già raccogliendo, ma che molto lavoro rimane ancora in questo settore. Abbiamo anche verificato ciò che sta accadendo in questo settore all'estero, dove la raccolta di materiale è in corso su scala molto più ampia.

Parole chiave: *COVID-19, pandemia, archivi, materiale d'archivio, conservazione del materiale, stoccaggio a lungo termine*

COVID-19 – KOLIKO GRADIVA BOMO USPELI OHRANITI

IZVLEČEK

Lahko rečemo, da živimo v zelo razburljivih časih. Zgodovina se piše pred našimi očmi. V večini držav so zaradi pandemije COVID-19 uvedli stroge karantene kar je povzročilo popoln zastoj javnega življenja, zelo se je zmanjšal obseg gospodarskih dejavnosti. Delo, izobraževanje in družabno življenje se odvijata samo še preko spleta. Vse to dogajanje pa producira veliko količino gradiva, ki bo nekoč zelo zanimivo za raziskovalce. Zato smo preverili različne kanale preko katerih pridobivamo informacije in kdo je zadolžen za njihovo hrambo.

Ker je večina zapisov, ki se danes kreirajo, v digitalni obliki nas je zanimalo ali se bodo ohranili tudi za zanamce. Zato v članku preverjamo ali danes kdo te zapise že načrtno zbira in ustrezno shranjuje, oziroma če za to obstajajo kakšni načrti. Glede na poziv UNESCA, in nato še Mednarodnega arhivskega sveta (ICA), o pomembnosti ohranitve gradiva smo preverili kako so ali se, na to pripravljajo naši arhivi in muzeji. Rezultati raziskave so potrdili naša predvidevanja, da so nekateri arhivi in muzeji že spoznali vrednost gradiva in ga zato že zbirajo, da pa veliko dela na tem področju še ostaja. Preverili smo tudi kaj se na tem področju dogaja v tujini kjer je zbiranje gradiva v teku v veliko večjem obsegu.

Ključne besede: *COVID-19, pandemija, arhivi, arhivsko gradivo, ohranjanje gradiva, dolgotrajna hramba*

1 UVOD

Vsak dan me pri prihodu na delo pozdravi seznam navodil, ki mi prepoveduje vstop v stavbo, če sem bolan, zapoveduje fizično distanco do sodelavcev, redno razkuževanje rok in podroben opis higiene kašlja. Vse to nam je bilo še pred nekaj meseci nepredstavljivo sedaj pa smo se na to že kar privadili. Tudi ko je bolezen, ki jo poznamo pod imenom Covid 19 ali koronavirus, prišla v našo soseščino in se začela bliskovito širiti po Italiji, smo bili prepričani da bo vsega skupaj kmalu konec. Nato pa se je v samo nekaj dneh v začetku marca vse spremenilo. Posamezne države, in nato vsa Evropa, so se začele zapirati in sprejemati ukrepe za katere si še pred kratkim ne bi predstavljali da jih bomo kdaj potrebovali kaj šele uveljavili in po njih živeli.

Potem pa se je v zelo kratkem času vse ustavilo. Gospodarska dejavnost se je zelo zmanjšala, odpovedana so bila vsa športna srečanja in kulturne prireditve. Dogodki, ki se napovedujejo in pripravljajo leta vnaprej so se najprej prestavljali potem pa množično odpovedovali. Turistična dejavnost se je iz skoraj neobvladljivo množične popolnoma zaustavila. Zaprle so se meje med državami in kmalu nato je stopila v veljavo še omejitev prehodov med občinami. Vse se je dogajalo nepredstavljivo hitro. Zaprle so se vse javne ustanove, gostilne, bari, gledališča,.. družabno življenje se je ustavilo. Življenje se je preselilo med štiri stene doma, v naša življenja je z velikimi koraki prišla informacijska tehnologija, ki nam je omogočila nadaljnje življenje. Učenci, dijaki in študenti so pouku prisostvovali preko spleta, zaposleni so delali od doma. Kar nekaj tehnologije, ki nam vse to omogoča še pred nekaj leti ni niti obstajalo. V dejavnostih kjer delo od doma ni mogoče se je veliko ljudi srečalo z negotovostjo. V Sloveniji je bila epidemija razglašena 12.3. in je trajala do 15.5.

Rečemo lahko, da se zgodovinski dogodki odvijajo pred našimi očmi. V našem članku nas zanima koliko informacij bo o vsem tem prelomnem dogajanju ostalo zanamcem. Povod za nastanek članka je bil poziv Mednarodnega arhivskega sveta z naslovom COVID-19: Dolžnost dokumentiranja v krizi ne preneha, temveč postane še pomembnejša (Internet 1), nastalega na pobudo UNESCA (Internet 2), ki poziva ustvarjalce dokumentarnega in arhivskega gradiva k dokumentiranju vseh odločitev v boju proti bolezni, k varovanju in ohranjanju nastalega gradiva, in k omogočanju dostopa do digitalnega gradiva na podlagi katerega se odločitve sprejemajo. Glede na to, da so strokovnjaki pri iskanju rešitve za tokratno pandemijo preučili vse informacije o ti. Španski gripi, ki je divjala po koncu prve svetovne vojne, in ki se nahajajo po arhivih po svetu, nas je zanimalo kaj arhivi danes delajo, da bi se informacije o tokratni ohranile. Ali se lahko zanesemo na arhive, da se bo gradivo ohranilo? Bi morali biti arhivi bolj aktivni pri zbiranju gradiva, dokler je to še na voljo? Pri tem smo se usmerili na digitalne informacije saj so te bolj za izgubo bolj občutljive.

2 VIRI INFORMACIJ

Večina današnjih informacij nastane in ostane zgolj v digitalni obliki za katero vemo, da niso večne. Popularno mnenje sicer pravi, da ko je informacija enkrat na spletu je tam za vedno, čemur pa seveda ni tako. Če za zapisano digitalno informacijo ne skrbimo bo kmalu izginila. Analogni zapis na fizičnem nosilcu lahko, brez da zanj skrbimo, ostane berljiv še stoletja v kolikor se fizično ne poškoduje – požar, vlaga, živali,.. Tudi, če se ohrani samo delno bomo z njega še vedno pridobili določene informacije. Za informacije v digitalnem okolju pa to ne velja. Za njihovo ustvarjanje, uporabo in hrambo potrebujemo informacijsko tehnologijo. Brez nje do informacij ne moremo dostopati. Ta tehnologija pa se hitro razvija in spreminja in s tem še dodatno oteži ohranjanje informacij.

V nadaljevanju članka bomo preverili različne vire kjer pridobivamo vsakodnevne informacije. Zanima nas ali se bodo te informacije ohranile in kdo, če sploh kdo, je zadolžen za njihovo hrambo. Oceno ogroženosti posameznega vira digitalnih informacij smo povzeli po „Bitnem seznamu" digitalno ogroženih vrst (Internet 3)[1], ki ga izdaja Koalicija za digitalno ohranjanje (Digital Preservation Coalition - DPC)[2].

1. Elektronski mediji –televizija in radio
   i. Zanje skrbi RTV SLO, ki jih tudi arhivira
   ii. Stopnja ogroženosti za komercialne radijske in televizijske postaje Ogroženo
2. Splet – informacije, ki jih pridobimo na spletu:
   a. Novičarske strani – spletne strani z dnevnimi novicami
      i. Zanje skrbijo uredniki spletnih strani
      ii. Stopnja ogroženosti Kritično ogroženi – znanje za ohranitev je manjka pa volja
   b. Spletni dnevniki – blogi, vlogi,..
      i. Zanje skrbijo uredniki spletni strani pa tudi avtorji
      ii. Stopnja ogroženosti Kritično ogroženi – avtorji prenehajo objavljati, finančne in kadrovske možnosti urednikov so majhne, vprašanja avtorskih pravic
   c. Družabna omrežja
      i. Zanje skrbijo lastniki družabnih omrežij
      ii. Stopnja ogroženosti Ogroženo – poskusi arhiviranja so, so pa ovirani s strani lastnikov
3. Elektronska pošta
      i. Zanjo skrbi lastnik
      ii. Stopnja ogroženosti Ogroženo – arhiviranje zaradi kompleksnosti samih sporočil, priponk, avtorskih pravic predstavlja velik tehnološki zalogaj, ki še ni v celoti rešen
4. Tiskani mediji
      i. Zanje skrbi izdajatelj
      ii. Za arhiviranje tiskanih medijev pri nas skrbi NUK (Narodna in univerzitetna knjižnica) na podlagi Zakona o obveznem izvodu (ZOIPub 2006)
5. Navodila in priporočila delodajalcev, ponudnikov storitev, šol
      i. Zanje skrbijo izdajatelji
      ii. Če so ustvarjalci AG potem bo to gradivo arhivirano
6. Osebna korespondenca – analogna (pisma, dopisi,..) in elektronska (SMS, wordovi dokumenti,..)
      i. Zanjo skrbi lastnik
      ii. Stopnja ogroženosti (za digitalno gradivo) Kritično ogroženo – lastniki nimajo interesa ali znanja za ohranitev gradiva

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1 Člani koalicije nominirajo posamezne digitalne vire, posebna komisija sestavljena iz strokovnjakov za posamezna področja pa nato vsakemu viru določi eno od šestih kategorij ogroženosti:
- Nizko tveganje (Lower risk) – sem spadajo viri, ki ne sodijo v ostale kategorije kljub temu pa potrebujejo določeo skrb za ohranitev
- Ranljivo (Vulnerable) – viri, ki nimajo posebnih tehnoloških zahtev pri ohranjanju ranljivi pa so zato ker njihovi skrbniki ne vidijo potrebe da bi zanje skrbeli
- Ogroženo (Endangered) – viri, ki že potrebujejo tehnološko pomoč pri ohranjanju a tega njihovi skrbniki ne delajo ali pa ne znajo delati
- Kritično ogroženo (Critically endangered) - – viri, ki že potrebujejo tehnološko pomoč pri ohranjanju pa ni skrbnikov, ki bi to opravili ali pa skrbniki tega nočejo ali ne morejo narediti
- Praktično izumrli (Practically extinct) – viri, ki so praktično že izgubljeni. Za njihovo povrnitev je potrebno veliko znanja in sredstev
- Opazovati (Concern) – digitalni viri katerih ogroženost še ni določena

2 Koalicija za digitalno ohranjanje je bila ustanovljena za zagotovitev naše digitalne zapuščine. Svojim članom pomaga pri zagotavljanju zanesljivega dolgoročnega dostopa do njihovih digitalnih gradiv in uslug, pomaga jim pri izkoriščanju vrednosti njihovih digitalnih virov in opozarja na pomembnost varovanja digitalnega gradiva ter na strateške, kulturne in tehnološke izzive, ki jih pri tem čakajo.

3 PRI NAS

Ker pričakujemo, da bodo raziskovalci čez 30 let gradivo za raziskave iskali predvsem v arhivih nas je zanimalo kako na to gledajo naši arhivi. Naredili smo krajšo raziskavo v naših arhivih v kateri smo jih spraševali, če v posameznem arhivu že sedaj zbirajo gradivo o epidemiji oziroma, če imajo za to kakšne načrte. To nas je zanimalo zato, ker so nekateri muzeji na tem področju že aktivni[3].

Odgovore smo prejeli iz vseh arhivov naše javne arhivske mreže. Večinski odgovor je bil, da arhivi v tem trenutku aktivno ne zbirajo gradiva o epidemiji, prav tako tega nimajo v načrtu. Pričakujejo, da bo tovrstno gradivo, ki ga sedaj ustvarjajo ustvarjalci arhivskega gradiva v arhive prišlo tekom redne oddaje arhivskega gradiva. Izjemi sta bila odgovora iz novomeške enote Zgodovinskega arhiva Ljubljana, ki zbira gradivo o epidemiji v okviru projekta Kronist Novega mesta in iz Zgodovinskega arhiva Celje kjer so svojim ustvarjalcem arhivskega gradiva posebej priporočili zbiranje gradiva povezanega z epidemijo.

4 V TUJINI

Preverili smo kako na to gledajo v tujini. Poleg že omenjenega poziva o zbiranju gradiva s strani Mednarodnega arhivskega sveta smo našli še nekaj pozivov za aktivno zbiranje gradiva o pandemiji Covid-19 dokler ta še traja. Med njimi so pozivi Škotskega sveta za arhive[4], arhiva v Hampshire-u[5], Univerze Cambridge[6], Univerze v Winsconsin-u[7], muzeju Smithsonian[8]. V svojem članku za Library journal Jennifer A. Dixon citira naslednji poziv arhivarke Madeline Moya iz Austina v Texasu[9]:

»Zbiranje gradiva o COVID-19 se je začelo, ko so arhivisti ugotovili, „da bi morali delovati proaktivno, da bi morali privabiti gradivo, ne pa pasivno čakati, da pride k nam po koncu pandemije,...«

»Odločili smo se, da bomo ljudi prosili, naj prispevajo svoje gradivo preden se spomini na čas v karanteni izgubijo in se vsi vrnejo v normalno življenje. Verjamemo, da bodo izkušnje veliko bolj pošteno dokumentirane medtem ko se dogajajo, kot pa po spominih leta kasneje. „ Moya je poudarila pomen dokumentiranja izkušenj navadnih ljudi v Austinu med pandemijo, ne le ukrepov lokalnih in državnih vlad.«

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3 Muzej novejše zgodovine Slovenije (http://www.muzej-nz.si/si/muzej/1349), Slovenski etnografski muzej (https://www.etno-muzej.si/sl/novice/kdo-sem-v-casu-pandemije-zbiramo-misli-razmisljanja-verze-zgodbe), Mestni muzej Ljubljana (https://mgml.si/sl/mestni-muzej/razstave/518/koronaprojekt/). Pridobljeno 16.5.2020

4 Collecting Covid-19 - https://www.scottisharchives.org.uk/latest/news/collecting-covid-19/. Pridobljeno 16.5.2020

5 Collecting Covid-19 archives - Making History: Collecting Covid-19 archives - What are we doing and why? https://www.hants.gov.uk/librariesandarchives/archives/collections/collecting-covid19-archives. Pridobljeno 16.5.2020

6 Collecting COVID-19 - Cambridge University Library appeals for help in building a collaborative history of the coronavirus outbreak, pridobljeno na https://www.cam.ac.uk/stories/CollectingCovid-19. Pridobljeno 16.5.2020

7 Documenting COVID-19 pridobljeno na https://www.library.wisc.edu/archives/archives/donate-your-materials/documenting-covid-19/. Pridobljeno 16.5.2020

8 STATEMENT: National Museum of American History Implements Collecting Strategy in Response to COVID-19 Pandemic, pridobljeno na https://americanhistory.si.edu/press/releases/statement-national-museum-american-history-implements-collecting-strategy-response. Pridobljeno 16.5.2020

9 Documenting the Pandemic: Libraries Launch COVID-19 Archival Projects, pridobljeno na https://www.libraryjournal.com/?detailStory=Documenting-Pandemic-Libraries-Launch-COVID-19-Archival-Projects-archives. Pridobljeno 16.5.2020

Podoben poziv je na svojem blogu objavila Oya Y. Rieger iz neprofitne organizacije ITHAKA S+R[10].

5 UGOTOVITVE IN ZAKLJUČEK

Nobenega dvoma ni, da bo gradivo, ki sedaj nastaja v zvezi z epidemijo COVID-19 nekoč pomembno arhivsko gradivo. Še posebno, če se podobna epidemija ponovno zgodi. Tokrat je med dvema velikima svetovnima pandemijama preteklo dobrih sto let zato bi morali poskrbeti da se bo tudi sedanje gradivo ohranilo vsaj toliko let.

Za gradivo državnih elektronskih medijev – televizije in radia skrbijo hišni arhivisti zato tu nimamo skrbi da se gradivo ne bi ohranilo. Drugo vprašanje pa je kaj bo z gradivom komercialnih postaj.

Prav tako smo lahko prepričani, da se bo ohranilo gradivo iz tiskanih medijev za katere preko oddaje obveznega izvoda skrbita Narodna in univerzitetna knjižnica v Ljubljani in Univerzitetna knjižnica Maribor.

Informacije, ki jih pridobimo na spletu – novice, blogi, zapisi na družabnih omrežjih so najbolj ranljivo gradivo saj ga nihče sistematično ne arhivira. Pri nas se z arhiviranjem spletnih strani ukvarja Narodna in univerzitetna knjižnica v Ljubljani, ki:

»Zajemanje izvajamo s tremi različnimi metodami:

1. *Selektivno, redno in z različnimi frekvencami (od 1x tedensko do 1x letno) zajemamo manjši izbor slovenskih spletnih mest (okoli 1.500 domen). Ta izbor skušamo zajeti čim bolj globoko in popolno. Predstavlja neke vrste vzorec slovenskega spleta in vsebuje najrazličnejše vsebine – od spletnih mest vladnih organov do spletnih mest, namenjenih prostočasnim aktivnostim ter družabnih omrežij.*
2. *Dodatno vsaki dve leti opravimo tudi zajem čez 70.000 domen, ki so registrirane na vrhnji domeni .si in so aktivne (neaktivne preskočimo). Ti zajemi so bolj plitki.*
3. *Občasno v krajših in časovno zamejenih obdobjih izvajamo tematske zajeme, znotraj katerih ciljno zajemamo samo manjši izbor spletnih strani, ki se nanašajo na določeno tematiko (npr. volitve).«*

Med spletnimi viri, za katere je zelo dvomljivo, da se bodo ohranili bi izpostavili med našimi politiki trenutno najbolj uporabljano družabno omrežje Twitter, ki ga pogosto uporabijo za objavo neuradnih informacij. Ker včasih reakcije javnosti niso pozitivne se objave hitro brišejo in s tem izgubijo.

Navodila in priporočila delodajalcev, ponudnikov storitev, šol se bodo ohranila v kolikor so njihovi izdajatelji ustvarjalci arhivskega gradiva.

Za osebno korespondenco in našo elektronsko pošto pa smo zadolženi sami. Koliko gradiva se bo ohranilo je odvisno od nas. Osebno arhiviranje je sicer še v povojih a njegov čas še prihaja. Morda bo prav to prelomno obdobje tisto, ki bo ljudi spodbudilo k ohranjanju lastnega gradiva, ki bo nato arhivskemu gradivu, ki se bo obranilo v naših arhivih, dodalo tisto osebno noto, ki je sedaj nima.

V odgovor na začetku postavljeno vprašanje - Ali se lahko zanesemo na arhive, da se bo gradivo ohranilo? Glede na njihovo dosedanje delo lahko z gotovostjo trdimo da je odgovor da.

10 Documenting the COVID-19 Pandemic - Archiving the Present for Future Research, pridobljeno na https://sr.ithaka.org/blog/documenting-the-covid-19-pandemic/. Pridobljeno 16.5.2020

Za zaključek pa še odgovor na naše drugo na začetku postavljeno vprašanje - Bi morali biti arhivi bolj aktivni pri zbiranju gradiva, dokler je to še na voljo?, za katerega pa se zahvaljujem dr. Miroslavu Novaku, ki je zapisal:

»Če muzealci zbirajo snovno in nesnovno dediščino – to je različne predmete in druge stvaritve, npr. šale, karikature itd. v zvezi s pandemijo; domoznanci podatke o osebnih in lokalnih zgodbah v zvezi s tem pojavom; bibliotekarji »požanjejo« spletne strani ter npr. ohranijo časopise; TV in radijski arhivi poskrbijo za prispevke na to temo, izjave itd. Torej, če bo vsak deležnikov s področja ohranjanja kulturne dediščine opravil svoj del poslanstva, potem ni bojazni, da ne bi bilo ostalo kar nekaj informacij za bodočnost v zvezi s tem nesrečnim časom.«

VIRI

Internet 1: COVID-19: The duty to document does not cease in a crisis, it becomes more Essential, dostopno na: https://www.ica.org/en/covid-19-the-duty-to-document-does-not-cease-in-a-crisis-it-becomes-more-essential. Pridobljeno: 6.6.2020

Internet 2: Turning the threat of COVID-19 into an opportunity for greater support to documentary heritage, dostopno na https://en.unesco.org/news/turning-threat-covid-19-opportunity-greater-support-documentary-heritage. Pridobljeno: 5.4.2020

ZOIPub (2006). Zakon o obveznem izvodu publikacij. Uradni list 69/06. Dostopno na: https://www.uradni-list.si/glasilo-uradni-list-rs/vsebina/2006-01-2977?sop=2006-01-2977. Pridobljeno: 1.7.2020

Internet 3: The ‚Bit List' of Digitally Endangered Species, dostopno na https://www.dpconline.org/digipres/champion-digital-preservation/bit-list. Pridobljeno 15.4.2020

Typology: 1.04 Professional Article

Nežika Erzetič Drnovšek[1]
(Slovenia)

IS THE PRESERVATION OF ELECTRONIC MEDICAL RECORDS SAFER FOR PATIENTS THAN PRESERVATION IN PAPER FORM?

ABSTRACT

Purpose: *In medical institutions there is a lot of documentation created during treatment of patients. Most of their medical documentation is still archived in paper form at most Slovenian medical institutions. The storage and accessibility of that documentation is a major challenge for both medical institutions and patients. In this article, we consider how, with the complete digitization of patients' medical documentation, we would improve the patient's medical treatment in order to make it faster and with better quality.*

Method/approach: *We studied Slovenian and European legislation and various professional literature of archiving patients' medical documentation. We conducted a short survey among patients on social media. We also reviewed procedures in medical institutions that produce and maintain patient medical documentation.*

Results: *There is not much professional literature on a clearly defined procedure of archiving medical documentation. The results of the survey showed that patients generally wait for a doctor's report immediately after the end of treatment or receive the results by mail within a few days. So far, only about half of the respondents have used the e-zdravje portal, and approximately the same share of respondents has on their computers a qualified digital certificate for authentication issued in Slovenia.*

Conclusions / Findings: *If we try to imagine how many medical examinations are performed every day in Slovenia and consequently how much documentation is produced, we quickly find that we are talking about a very large amount of data that must be up-to-date, quickly accessible and safe from various abuses.*

Key words: *medical records, personal data, digital archiving, medical institution, patient safety*

LA CONSERVAZIONE DELLE CARTELLE CLINICHE ELETTRONICHE È PIÙ SICURA PER I PAZIENTI RISPETTO ALLA CONSERVAZIONE IN FORMATO CARTACEO?

ABSTRACT

Scopo: *Negli istituti medici c'è molta documentazione creata durante il trattamento dei pazienti. La maggior parte della documentazione medica dei pazienti è ancora archiviata in forma cartacea presso la maggior parte delle istituzioni mediche slovene. L'archiviazione e l'accessibilità di tale documentazione sono una sfida importante, sia per le istituzioni mediche che per i pazienti. In questo articolo si considera come, con la digitalizzazione completa della documentazione medica dei pazienti, verrà migliorato il trattamento medico del paziente al fine di renderlo più veloce e con una migliore qualità.*

1 Nežika Erzetič Drnovšek, mag. posl. Ved, nezkaerzetic@gmail.com

Metodo/approccio: *E' stata studiata la legislazione slovena ed europea e varie letterature professionali sull'archiviazione della documentazione medica dei pazienti. Si è condotto un breve sondaggio tra i pazienti sui social media. Sono state anche esaminate le procedure nelle istituzioni mediche che producono e mantengono la documentazione medica del paziente.*

Risultati: *Non c'è molta letteratura professionale su una procedura chiaramente definita di archiviazione della documentazione medica. I risultati dell'indagine hanno mostrato che i pazienti generalmente attendono il rapporto di un medico immediatamente dopo la fine del trattamento o ricevono i risultati per posta entro pochi giorni. Finora, solo circa la metà degli intervistati ha utilizzato il portale "e-zdravje", e circa la stessa percentuale di intervistati ha sui propri computer un certificato digitale qualificato per l'autenticazione rilasciato in Slovenia.*

Conclusioni / Risultati: *Se si cerca di immaginare quante visite mediche vengano eseguite ogni giorno in Slovenia e di conseguenza quanta documentazione venga prodotta, si scopre rapidamente che si sta parlando di una quantità molto grande di dati che devono essere aggiornati, resi rapidamente accessibili e al sicuro da abusi.*

Parole chiave: *cartelle cliniche, dati personali, archiviazione digitale, istituzione medica, sicurezza dei pazienti.*

ALI JE DIGITALNA HRAMBA ZDRAVSTVENE DOKUMENTACIJE ZA PACIENTE BOLJ VARNA KOT HRAMBA V PAPIRNATI OBLIKI?

Izvleček

Namen: *Pri zdravljenju pacientov nastaja v zdravstvenih institucijah zelo veliko dokumentacije. Večino zdravstvene dokumentacije pacientov se v večini bolnišničnih ustanov v Sloveniji še vedno hrani v papirnati obliki. Hramba in dostopnost tega gradiva predstavlja tako za zdravstvene institucije, kot tudi za paciente velik izziv. V prispevku razmišljamo, kako bi s popolno digitalizacijo zdravstvene dokumentacije pacientov, izboljšali zdravstveno obravnavo pacienta, da bi potekala hitreje in kvalitetnejše.*

Metoda/pristop: *Preučili smo Slovensko in Evropsko zakonodajo in različno strokovno literaturo, ki se ukvarja z arhiviranjem zdravstvene dokumentacije pacientov. Med pacienti na družabnih omrežjih, smo opravili kratko anketo. Pregledali smo postopke v zdravstvenih institucijah, ki proizvajajo in hranijo zdravstveno dokumentacijo pacientov.*

Rezultati: *Obstaja zelo malo strokovne literature o jasno določenem postopku hrambe zdravstvene dokumentacije. Rezultati ankete so nam pokazali, da pacienti v glavnem počakajo na izvid zdravnika takoj po zaključku zdravljenja, oziroma izvide prejmejo po pošti v nekaj dneh. Portal e-zdravje je do sedaj uporabljala le približno polovica anketirancev, približno enak delež anketirancev ima na osebnem računalniku nameščeno kvalificirano digitalno potrdilo za avtentikacijo, ki je bilo izdano v Sloveniji.*

Sklepi/ugotovitve: *Če si poskušamo predstavljati, koliko zdravniških pregledov se vsak dan izvrši v Sloveniji in posledično koliko dokumentacije se proizvede, hitro ugotovimo, da govorimo o zelo veliki količini podatkov, ki morajo biti za dobro zdravljenje pacienta ažurni, hitro dostopni in varni pred različnimi zlorabami.*

Ključne besede: *zdravstvena dokumentacija, osebni podatki, digitalna hramba, zdravstvena institucija, varnost pacientov*

1 UVOD

Vsak državljan prej ali slej potrebuje takšno ali drugačno bolnišnično obravnavo. Če si skušamo predstavljati, koliko zdravstvenih obravnav dnevno se opravi v Sloveniji hitro ugotovimo, da se dnevno proizvede ogromna količina dokumentov. Zdravstvena dokumentacija vsebuje med drugim tudi podatke o zdravstvenem stanju pacienta. V 4. členu GDPR (2016) je obrazloženo, da so to podatki, ki se nanašajo na telesno ali duševno zdravje posameznika, vključno z zagotavljanjem zdravstvenih storitev, in razkrivajo informacijo o njegovem zdravstvenem stanju. V literaturi (Pirc Musar in drugi 2020, 121) strokovnjaki navajajo, da podatki o zdravstvenem stanju lahko vključujejo paleto osebnih podatkov, na primer kakršnekoli informacije o bolezni, poškodbah, invalidnosti ali bolezenskih tveganjih, vključno z anamnezo, medicinsko analizo, diagnozo in kliničnim zdravljenjem. V 6. členu ZVOP-1 pa je definirano, da se podatki o zdravstvenem stanju oseb uvrščajo med občutljive osebne podatke oziroma med podatke posebne vrste.

V temu članku razmišljamo, na kakšen način bi dosegli ravnovesje med čim lažjo dostopnostjo do medicinske dokumentacije in varno hrambo le-te.

2 PROBLEM PAPIRNATEGA POSLOVANJA

Erzetič Drnovšek 2020, 131 opisuje problem papirnatega poslovanja v dveh izmed vseh splošnih bolnišnic v Sloveniji. S podobnimi težavami se srečujejo tudi v ostalih zdravstvenih institucijah. Našteli bomo nekaj največjih problemov s katerimi se zdravstvene institucije srečujejo pri hrambi zdravstvene dokumentacije pacientov v papirnati obliki.

2.1 Prostorska stiska

Že leta 2008 Erzetič Drnovšek v nalogi opisuje problem prostorske stiske v eni izmed zdravstvenih institucij v Sloveniji. Zdravstvene dokumentacije je bilo leta 2008 bistveno manj kot sedaj. Da se količina zapisanih dokumentov na klasičen način zaradi razvoja novih tehnologij ni zmanjšala, ampak celo povečala pritrjuje tudi Klasinc (2009, 45). Povečanju količine zdravstvene dokumentacije botruje predvsem enostaven način tiskanja računalniško napisanih dokumentov in nejasna navodila, kaj v centralni arhiv bolnišničnih institucij sodi in kaj ne. Pred leti, ko so se izvidi pisali še na pisalni stroj, je bil vsak izvid napisan samo v dveh izvodih. En izvod za pacienta, en izvod za centralni arhiv bolnišnice. V nekaterih zdravstvenih institucijah so vodili oziroma še vedno vodijo v zdravstvenih kartonih pacientov samo ročne zabeležke o zdravstvenem stanju pacienta. Z vodenjem zdravstvene dokumentacije pacientov vzporedno v papirnati in digitalni obliki pa prinese enostavno produkcijo enormnih količin balasta (npr. duplikati izvidov, izvidi, ki so že avtorizirani in hranjeni v zdravstvenem informacijskem sistemu, fotokopije izvidov iz drugih ustanov...), ki v večjem deležu pristanejo v arhivu.

2.2 (Ne)sledljivost dokumentacije

Erzetič Drnovšek (2020, 133) opisuje tudi ne sledljivost vpogledov oziroma neupravičene obdelave podatkov (posebne vrste). Pri papirnati hrambi medicinske dokumentacije zelo težko osebne podatke (posebne vrste) pacientov, skladno s 14. členom ZVOP-1 (2007), zavarujemo tako, da se nepooblaščenim osebam onemogoči dostop do njih. Predvsem se revizijska sled obdelave podatkov izgubi takrat, ko nekdo podatek vidi in o tem govori nepooblaščenim osebam (prijateljem, znancem,...).

2.3 (Ne)sterilnost prostorov, v katerih se dokumentacija hrani

Če je zdravstvena dokumentacija pacientov v fizični obliki, se na njej neizogibno nabira prah, pršice in druga umazanija. Zdravstveno dokumentacijo pacienta se nato prinese v ambulanto oziroma na oddelek. Sterilnost prostorov, kjer se dokumentacija hrani je zato vprašljiva (Erzetič Drnovšek 2020, 133). Obdobje Covid-19 je v nekaterih zdravstvenih institucijah popolnoma spremenilo postopke dela. Zaradi morebitne kužnosti papirnate (fizične) zdravstvene dokumentacije pacientov le-te, razen ob nujnih primerih, zdravniki v času obdobja Covid-19 niso uporabljali.

2.4 Zaposleni, ki z zdravstveno dokumentacijo vsakodnevno rokujejo

Opisano je že bilo (Erzetič Drnovšek 2020,133) delo zaposlenih, ki z zdravstveno dokumentacijo vsakodnevno rokujejo. Predvsem zaradi prenatrpanosti arhivskih polic z zdravstveno dokumentacijo pacientov je delo v nekaterih zdravstvenih ustanovah tako fizično, kot tudi psihično zelo zahtevno. Dokumentacija se zaradi velike količine podatkov zameša, kar pa predstavlja veliko težavo tako za proces dela, kot tudi, zaradi ponovnih preiskav, dodatno finančno obremenitev bolnišnice.

2.5 Dostopnost zdravstvene dokumentacije

Zdravstvena dejavnost obsega ukrepe in aktivnosti, ki jih po medicinski doktrini in ob uporabi medicinske tehnologije opravljajo zdravstveni delavci oziroma delavke in zdravstveni sodelavci oziroma sodelavke pri varovanju zdravja, preprečevanju, odkrivanju in zdravljenju bolnikov in poškodovancev (ZZDej 1992, 1. čl.).

Kuhar 2012 je na spodnji sliki povzela in slikovno prikazala strukturo zdravstvenega varstva in/ali zdravstvene dejavnosti ter primarno zdravstveno varstvo. Povzetek je bil prirejen na podlagi Komadina (1995, 74), Toth (2003, 140) in Kuhar (2007, 3).

Slika 1: Struktura zdravstvenega varstva in/ali zdravstvene dejavnosti ter primarno zdravstveno varstvo

Vir: Kuhar (2012, 26)

Na spletni strani (RS MZ 2016, 23 – 26) je v poglavju Optimizacija zagotavljanja zdravstvenih storitev omenjena potreba po okrepitvi koordinacije, sodelovanja med različnimi izvajalci zdravstvene dejavnosti, znotraj zdravstvenih ustanov in institucij v procesu zdravstvene oskrbe od preventive in zgodnjega odkrivanja bolezni do tistih, ki majo več zdravstvenih potreb hkrati in je zanje pogosto ključen prehod iz bolnišnične obravnave v dolgotrajno oskrbo. Tudi v intervjujih z izvajalci v različnih delih sistema glede zagotavljanja zdravstvene oskrbe za tiste, ki imajo več zdravstvenih potreb hkrati se je poročalo (RS MZ 2016, 25) o pomanjkanju standardiziranih procesov in postopkov za predajo pacientov med izvajalci in ravnmi zdravstvene oskrbe ter o pomanjkljivostih glede tega, kako si različne ravni izmenjujejo informacije o pacientu z vidika vsebine, strukture in načina prehoda. Bolje povezani informacijski sistemi so po mnenju izvajalcev ključni za izboljšanje koordinacije oskrbe med ravnmi, kar je še posebej pomembno za izboljšanje kakovosti in varnosti oskrbe pacientov, zlasti tistih, ki imajo več zdravstvenih potreb hkrati. Stroka se torej zaveda, da je informacijski sistem pomanjkljiv. S poenotenjem le-tega bi se kakovost zdravstva bistveno izboljšala, stroški za zdravljenje pacientov pa bi se znižali.

3 PRAVICE PACIENTOV

V Zakonu o zdravstveni dejavnosti (ZZDej) je v 54. členu zapisano:

»Zdravstveni zavodi in drugi izvajalci zdravstvene dejavnosti so dolžni voditi zdravstveno dokumentacijo in druge evidence v skladu s posebnim zakonom. V ta namen se zdravstveni zavodi in drugi izvajalci zdravstvene dejavnosti vključujejo v enoten in usklajen informacijski sistem.«.

V 41. členu ZpacP 2008 je navedeno, da ima pacient ob prisotnosti zdravnika ali drugega zdravstvenega delavca oziroma zdravstvenega sodelavca pravico do neoviranega vpogleda in prepisa zdravstvene dokumentacije, ki se nanaša nanj. Fotokopiranje ali drugo reprodukcijo zdravstvene dokumentacije mora zagotoviti izvajalec zdravstvene dejavnosti. Verodostojno reprodukcijo slikovne dokumentacije, ki se ne hrani v elektronski obliki, je izvajalec zdravstvene dejavnosti dolžan zagotoviti, če razpolaga s tehničnimi sredstvi, ki to omogočajo.«

Zakonodaja je torej jasna. Zdravstvene institucije morajo hraniti zdravstveno dokumentacijo pacientov, pacienti pa so upravičeni do seznanitve s svojo zdravstveno dokumentacijo oziroma do njene reprodukcije.

V kratki anketi, ki sem jo naredila novembra 2020 na družabnem omrežju me je zanimalo, ali uporabniki zdravstvenih storitev poznajo postopek pridobitve svoje zdravstvene dokumentacije. Večina od 300 anketirancev je izvid po obravnavi v nekaj dneh prejela po pošti na domači naslov in se s postopkom ponovne pridobitve zdravstvene dokumentacije ni srečevala.

Čeprav 22% anketirancev meni, da postopek ponovne pridobitve zdravstvene dokumentacije ni zapleten, je pred (ponovno) pridobitvijo zdravstvene dokumentacije potrebno predložiti pravno podlago (8. in 9. čl. ZVOP-1) oziroma se morajo identificirati (ZpacP 2008, 41. čl.). Po identifikaciji mora pacient podati pisno in ročno oziroma digitalno podpisano prošnjo. V tem času, ko se (ponovno) pripravlja dokumentacija pacienta lahko nastanejo že novi izvidi, ki jih bo pacient prejel morda šele čez nekaj dni. Če se gre ta pacient zdraviti k drugemu zdravniku, na takšen način seznanitve z dokumentacijo, s seboj ne bo prinesel izvidov z zadnjo verzijo. Drugi zdravnik, ki iz različnih razlogov ne dostopa do enotnega zdravstveno informacijskega sistema ne bo imel rezultatov zahtevanih preiskav, kar pomeni, da bo zdravnik ponovno naročil že opravljene preiskave

in s tem povzročil zdravstvu dodatne stroške, pacientu nevšečnosti, oziroma obravnava pacienta ne bo tako kvalitetna, kot bi lahko bila v primeru predložitve popolne dokumentacije pacienta. Ali pa dokaj sveži primer, ko so po odvzemu brisa za Covid-19 pacientom telefonsko sporočali rezultate preiskav. Z avtorizacijo izvida podatki preidejo v centralni register pacientovih podatkov oz. CRPP bazo. Preko portala e-zdravje oziroma CRPP baze sta tako pacient, kot tudi zdravnik, ki tega pacienta zdravi, v istemu trenutku seznanjena o rezultatu preiskave.

Za pacienta je najenostavnejši, najhitrejši in najbolj ažuren način za pridobitev zadnjega izvoda izvida uporaba portala e-zdravje. Po podatkih, ki sem jih pridobila iz moje ankete pa žal do portala e-zdravje dostopa le približno polovica anketirancev. Še bolj me je presenetilo dejstvo, da ima samo polovica anketirancev na svojem domačem računalniku nameščeno kvalificirano digitalno potrdilo za avtentikacijo in je bilo izdano v Sloveniji. Da bi uporabnikom zagotovili popolno varnost, je za dostop do nekaterih storitev na portalu zVem potrebno uporabiti kvalificirano potrdilo za avtentikacijo spletišč, ki ga izda ponudnik kvalificiranih storitev zaupanja v Sloveniji (ZVEM, 2020).

4 RAZPRAVA

Maja 2018 je tudi v Sloveniji pričela veljati Uredba Evropskega parlamenta in Sveta o varstvu posameznikov pri obdelavi osebnih podatkov in o prostem pretoku takih podatkov ali splošno znana kot s kratico GDPR, ki je prinesla nekatere novosti, v glavnem pa strahove pred visokimi globami. V 143. členu kazenskega zakonika je že od leta 2008 zagrožena denarna kazen ali z zaporom do enega leta za tistega, ki brez podlage v zakonu ali v osebni privolitvi posameznika, na katerega se osebni podatki nanašajo, osebne podatke, ki se obdelujejo na podlagi zakona ali osebne privolitve posameznika, posreduje v javno objavo ali jih javno objavi.

Kot sem že v začetku omenila, se v zdravstveni dokumentaciji pacientov obdelujejo tudi zelo občutljivi osebni podatki oziroma podatki posebne vrste. Razkritje teh podatkov lahko predstavlja za pacienta zelo veliko, celo nepopravljivo škodo.

K varovanju osebnih podatkov pacienta zdravstveno osebje zavezuje zakon (ZPacP 2008, 44. čl). Isti zakon (ZPacP 2008, 45. čl.) zdravstvenim delavcem in zdravstvenim sodelavcem ter osebam, ki so jim zaradi narave njihovega dela podatki dosegljivi, so dolžni kot poklicno skrivnost varovati informacije o zdravstvenem stanju pacienta. Uredba (GDPR 2016) v 47. členu v zavezujočih poslovnih pravilih omejuje uporabo osebnih podatkov. Vendar iz drugega vidika pacient ne more biti ustrezno zdravljen, če zdravstveno osebje nima dovolj oziroma točnih podatkov o pacientovem zdravstvenem stanju. Zato mora nabor osebnih podatkov (posebne vrste) pacientov določiti stroka.

Digitalizacija v zdravstvenem sistemu še vedno predstavlja neko novost in tabu temo. Iz strani zdravstvenega osebja predstavlja bojazen, da se bo delo preselilo od pacienta k računalniku. Uvajanje novosti na vseh delovnih področjih predstavlja izzive pri zaposlenih, lahko pa prihaja tudi do odpora, saj z uvajanjem novosti spreminjamo rutino dela (Perme in Vrabec 2019, 55). A ravno spremenjena rutina dela, s katero lahko v trenutku pridobimo najbolj ažurne podatke pacienta prinaša boljšo, cenejšo, kvalitetnejšo in varnejšo obravnavo pacienta. Zamenjava oziroma izguba izvidov pri pacientu je pri digitalni hrambi praktično nemogoča, medtem, ko je v fizičnem arhivu ta možnost bistveno večja.

Tudi na strani pacientov obstaja določen strah pred digitalizacijo. Predvsem jih skrbi dejstvo, da niso dobili »ničesar v roke«. Ampak ravno digitalizacija omogoča dostop do njihovih podatkov samo osebam, ki so za to pooblaščene. Če se spomnimo lanskih afer (Škerl Kramberger 2019) o nedovoljenih vpogledih v podatke tedanje ministrice Milojke

Kolar Celarc v UKC Ljubljana, vpogledov nepooblaščenih oseb v zdravstveno dokumentacijo vodilnega osebja Splošne bolnišnice Celje ali v Splošni bolnišnici Trbovlje, ko so kukali v zdravstveno dokumentacijo članov družine Sama Fakina (Malovrh 2019) hitro ugotovimo, da je revizijska sled v zdravstveno informacijskem sistemu dobro delujoča. S klasičnim (papirnatim) načinom obdelave podatke bi bilo nemogoče odkriti, kje osebni podatki (posebne vrste) neupravičeno odtekajo iz zdravstvene institucije.

5 ZAKLJUČEK

Z uvedbo digitalizacije medicinske dokumentacije pacientov in veljavno slovensko zakonodajo je potrebno vzpostaviti ravnovesje med dostopnostjo in varnostjo podatkov tako na strani pacientov, kot tudi na strani stroke. Medicinsko osebje mora razpolagati s čim več podatki o pacientu, da lažje in hitreje diagnosticira bolezen. Do ažurirane zdravstvene dokumentacije pacientov mora medicinsko osebje dostopati hitro in enostavno tako znotraj posameznih institucij, kot tudi med različnimi, zunanjimi institucijami. Pacienti želijo biti takoj seznanjeni s svojim zdravstvenim stanjem in čim hitreje pridobiti svojo zdravstveno dokumentacijo oziroma izvide. Pri morebitni izgubi zdravstvene dokumentacije bi moral biti postopek hiter in enostaven. Ampak varnost pacientovega zdravja, ažurnost podatkov o pacientovem zdravstvenem stanju in zaščita pacientovih osebnih podatkov posebne vrste so ključnega pomena v zdravstvu. Če pa celoti dodamo še ekonomsko upravičenost projekta se nam poraja vprašanje: zakaj popolna digitalizacija v zdravstvenem sistemu še ne deluje?

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