

# Conversion of Archival Documents and Improvement of Descriptions of Permanent Storage Cases\*

Lesia Kovalska<sup>\*1,†</sup>, Hryhorii Kovalskyi<sup>2, †</sup>, Fedir Rudychenko<sup>3,†</sup> and Tetiana Klynina<sup>4</sup>

<sup>1</sup> State University of Information and Communication Technologies, Kyiv, 03110, Ukraine

<sup>2</sup> Ukrainian Research Institute of Archival and Document Studies, Kyiv, 04107, Ukraine

<sup>3</sup> State University of Information and Communication Technologies, Kyiv, 03110, Ukraine

<sup>4</sup> University of Texas at Austin 2515, TX 78712 Speedway Str., Texas, USA

## Abstract

The article substantiates the need to improve archival descriptions of permanent storage files during the conversion from printed to electronic format, which is a relevant direction in the development of archival work in the context of digital transformation and the introduction of socio-communication technologies. The process of improving the description of archival documents is traced, which involves clarifying the names of storage units/accounting units, adding the necessary reference apparatus to the description. The importance of using the latest technologies for transforming document formats, processing information, creating databases and adapting archival files to the requirements of digitalization is highlighted.

## Keywords

conversion, archival documents, information activities, sociocommunication technologies

## 1. Introduction

Improving archival descriptions of permanent storage cases during conversion from printed to electronic format is a relevant direction of development of archival affairs in the conditions of digital transformation. As of 2024, the state archives of Ukraine digitized 47% of the descriptions of cases of the National Archival Fund (hereinafter referred to as the NAF), stored in the central state and regional archives, including Kyiv. The central state archives subordinate to the State Archival Service of Ukraine have reached 80% of the level of digitization of case descriptions [12].

Modern archival institutions are faced with the need to adapt traditional methods of description to the requirements of electronic document management and international standards of archival information. Conversion of archival descriptions contributes to increasing the accessibility of documents, optimizing the processes of searching and using information. An important aspect is preserving the authenticity, structural integrity and legal significance of archival descriptions during their digital conversion.

A significant role in this process is played by the use of standards such as ISAD (G) and EAD, which ensure the unification and compatibility of archival descriptions in digital systems. Automation of the conversion process allows reducing the risks of data loss, increasing the efficiency of archivists and creating a unified system of access to archival information. A single electronic window has already been created in Ukraine – the Interarchival Search Portal of the Ukrainian State Archives [7]. The use of electronic descriptions and their integration into national and international

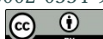
\*SCIA-2025: 4th International Workshop on Social Communication and Information Activity in Digital Humanities, October 30, 2025, Lviv, Ukraine

<sup>1\*</sup> Corresponding author.

<sup>†</sup> These authors contributed equally.

✉ dreamlife.lesya@gmail.com (L. Kovalska); kgrigorii@gmail.com (H. Kovalskyi); f.rudychenko@stud.duikt.edu.ua (F. Rudychenko); tetiana.klynina@austin.utexas.edu (T. Klynina)

ORCID 0000-0002-1579-7708 (L. Kovalska); 0000-0002-3352-4754 (H. Kovalskyi); 0009-0003-8478-8658 (F. Rudychenko); 0000-0002-0334-9852 (T. Klynina)



© 2025 Copyright for this paper by its authors. Use permitted under Creative Commons License Attribution 4.0 International (CC BY 4.0).



digital archival platforms contributes to the preservation of documentary heritage and its popularization.

At the same time, Ukrainian archivists are working on methodological recommendations for the formation of electronic archival descriptions, their verification and support for long-term preservation. Given the dynamic development of digital technologies, archival institutions need a comprehensive approach to the conversion of archival descriptions, which includes standardization, automation and development of tools for checking the quality of digital records. The introduction of modern electronic archival information management systems will ensure not only the efficiency of the archives, but also the possibility of prompt access for users to documentary and information resources of a socio-historical and legal nature. Improving the process of converting archival descriptions of permanent storage cases is a strategically important task that contributes to the modernization of the archival industry and ensuring its compliance with modern challenges.

The purpose of the study is to establish the features and identify problems of the process of conversion of descriptions of permanent storage cases with the subsequent determination of areas for their improvement.

The research methodology is based on a combination of general scientific, special and interdisciplinary approaches, which provided a comprehensive study of the process of conversion of archival descriptions of permanent storage cases. These include empirical (experiment, observation, description) and theoretical (analysis, synthesis, abstraction, generalization, induction, deduction, explanation, classification, etc.), as well as systemic and functional.

The systemic approach allowed us to analyze the archival description as a structured information object that changes its format from paper to digital, but retains logical connections. The comparative analysis method was used to assess the differences between printed and electronic descriptions, as well as to study the international experience of digitizing archival descriptions. Classification and standardization methods contribute to the development of unified requirements for electronic archival descriptions in accordance with ISAD (G) and EAD standards.

Expert assessment methods involve the analysis of practical experience of archivists in the field of document digitization. Functional analysis allows to determine key aspects of the transformation of archival descriptions and their role in modern information systems. The information modeling method is used to build the optimal structure of an electronic archival description, taking into account the requirements of long-term preservation and access. The practical implementation of the research results involves the development of recommendations for the conversion of archival descriptions, their verification and integration into digital platforms. Thus, the methodological approach provides a deep understanding of the problem and contributes to the development of effective solutions in the field of archival digitization.

## **2. Literature Review**

The scientific development of the study consists of scientific, practical and theoretical, scientific and methodological achievements of Ukrainian and foreign archivists, as well as the regulatory and legal framework of Ukraine and current international standards.

Scientific publications and research topics focus on issues related to the problem of organizing the activities and functioning of institutions for archival preservation of documents, document science and information during the war period, which require further deepening the study of the object-subject component, specifying new forms of interaction and achieving the main task – satisfying information requests of users and forming a collective whole around the national memory of the people.

Today, the issues of modernization of the activities of archival documentation institutions, national memory, and documentary and information communication require comprehensive coverage and design in accordance with the conditions of digitalization and digitalization requests



with the support of the world community and the Ukrainian state, which became the subject of research in the proposed article.

The scientific development of the research topic can be conditionally grouped into theoretical developments of archivists, methodological developments of Ukrainian and foreign archivists, as well as a regulatory and legal framework of appropriate quality. The theoretical justification of the process of improving and technologizing the process of converting archival descriptions of permanent storage cases is presented by scientists Ya. Kalakura, L. Kovalska, M. Palienko, T. Yemelyanova and others [5; 6; 26]. Applied industry research and methodological recommendations are presented by scientists of the Ukrainian Research Institute of Archival and Document Studies, as well as practicing archivists of central, regional and sectoral state archives of Ukraine, who substantiate the practical experience of archivists and summarize the information obtained in the form of methodological recommendations for the unification of the compilation of descriptions of permanent storage cases [1] and [3] and [13]. The basis of the regulatory framework regulating the compilation of descriptions of permanent storage cases is the Law of Ukraine On the National Archival Fund and Archival Institutions, the Standard Provision on the Archival Unit and the Office Management Service of the Institution, the Rules for the Organization of Office Management and Archival Storage of Documents [10], the List of Standard Documents with an Indication of Their Storage Periods, and other related legislative acts and regulatory documents of a regulatory nature of Ukrainian legislation, as well as international standards in the field of regulation of archival activities. International standards allow us to trace the latest trends in electronic archiving and document storage, which at the same time reveal how changing formats affect the accessibility and usability of archival documents for researchers, institutions, and the public.

### 3. Basic points statement

Drawing up a description of permanent storage files is an important stage of archival work, ensuring the orderliness and preservation of documents. This process is carried out on the basis of the institution's file nomenclature, which is a systematized list of all documents formed in its activities. The archival unit / responsible person conducts a thorough analysis of the existing files, determining their value in accordance with regulatory legal acts. Then, the files are grouped by funds, chronological principle or thematic features, which contributes to the structuring of archival storage. Based on these data, an initial version of the description is drawn up, which is further specified and supplemented.

A description of permanent storage files is an archival document that is an integral part of the documentation support of the activities of institutions, organizations, enterprises. Descriptions of permanent storage files are drawn up in structural units of enterprises that are sources of the formation of the NAF. The descriptions contain a systematized list of files that have historical, scientific, social or cultural value and are subject to storage in the institution's archive or transfer to the state archive. More clearly, the features of compiling a case description and their essential elements are presented in Table 1 [11].

**Table 1**  
Elements of the structure of a case description for permanent storage

Elements of the structure of the description of permanent storage cases
<i>title page</i>
contains the name of the institution, the title of the document, the description number, the date of compilation
<i>introductory part</i>



---

the basis for compiling the description, the period of coverage of documents, the features of their grouping are indicated

*main part*

is presented in the form of a table with such elements as the case serial number, case index by nomenclature, case title, years of creation of documents, number of sheets in the case

*notes*

---

The description is compiled by the archival department of the institution based on the nomenclature of cases, checked and approved by the expert commission of the institution, and after approval is used to organize the preservation of documents and their transfer to the state archive.

After the description is formed, it must be checked for compliance with the requirements of state archival standards. The responsibility for this lies with the expert commission of the institution, which assesses the correctness of the naming of cases, their numbering and the general structure of the description. The commission also checks the correctness of determining the number of sheets in each case, the correspondence of their titles to the content of the documents [2]. After approval by the commission, the document is transferred for approval to the relevant archival institution or the expert verification commission of the state archive. This is necessary to confirm the reliability and correctness of the compiled description.

Approval of the description of permanent storage cases is the final stage of this procedure. After approval in the archival institution, the document is approved by the head of the institution or the head of the expert commission. The approved description becomes an official accounting document used to organize the storage of files in the internal archive of the institution [8]. In the future, this description serves as the basis for transferring documents to the state archive if necessary. It also allows for effective search and use of archival materials.

Regular updating and clarification of the description is an important aspect of archival activities. In case of errors or changes in the composition of files, appropriate adjustments must be made. This may be associated with the removal or revision of documents that have acquired new value or lost relevance. The elements of the descriptive article are shown in Table 2 .

**Table 2**

Descriptive metadata of the descriptive article

---

A descriptive description article contains the following descriptive metadata:

---

search and reference data
title of storage unit / accounting unit
information carrier
document annotation of storage unit / accounting unit
information on access conditions
availability of copies of the insurance fund and the user fund

---

### **3.1. Standards for compiling descriptions of archival files for permanent storage, used in archival institutions around the world**

Archival work is an important component of document science, and the standards for its maintenance determine the procedure for preserving historical, scientific and administrative



documents. National and international standards are used in different countries to regulate the creation of descriptions of archival files for permanent storage. Such standards establish requirements for the structure of the description, mandatory details, the procedure for keeping records and classifying documents. They contribute to the unification of archival processes and facilitate access to information.

The development of digital technologies in archival affairs has led to the need to introduce international and national standards for compiling electronic descriptions of archival cases for permanent storage. The main goal of such standards is to provide a unified description structure that facilitates the accounting, search and use of archival documents in a digital environment. Electronic descriptions allow you to automate the processes of managing archival documentation, as well as integrate archival databases into global information systems. Electronic description standards regulate metadata formats, cataloging rules and preservation of digital archival materials (see Table 3).

**Table 3**

International description standards

<i>name</i>	<i>description features</i>
General International Standard Archival Description (ISAD(G))	general principles of describing archival documents, providing for the creation of a multi-level system of descriptions: case title, dates of creation, volume of documents, their origin and access conditions
International Standard Archival Authority Record for Corporate Bodies, Persons, and Families (ISAAR (CPF))	ensures unity in identifying document creators – organizations, institutions, individuals and families
Encoded Archival Description (EAD)	is based on the XML standard for encoding descriptive information about archival materials and a structured representation of archival descriptions, allowing for easy integration of data into digital catalogs and archival systems
Describing Archives: A Content Standard (DACS)	contains recommendations for naming archival holdings, identifying the content of documents, and their historical significance. DACS can be applied to all types of materials at all levels of description, and the rules are intended to be used by any type of descriptive output, including MARC 21, Encoded Archival Description (EAD), and Encoded Archival Context (EAC)
UK Archival Description Standard	a flexible document description system, for both public and private archives, based on the principles of multi-level description, mandatory metadata, and rules for cataloging archival materials
Regeln für die Erschließung von Nachlässen und Autographen (RNA)	establishes requirements for the description of archival funds and personal documents
Norme Générale et Internationale de Description Archivistique	ensures writing compatible, relevant and clear descriptions,



(NGIDA)	based on ISAD(G)
Metadata Encoding and Transmission Standard (METS)	defines a format for representing and storing metadata for digital objects. METS is used to describe traditional archival documents, digital copies, multimedia materials, and electronic records. The METS schema is implemented using the World Wide Web Consortium's XML algorithms
Dublin Core Metadata Initiative (DCMI)	creation of simple, effective metadata; contains 15 basic elements (document title, author, creation date, format, language characteristics, etc.); simplifies document search across web resources and integrates them into international information platforms
Rules for organizing office work and archiving documents	structure, procedure for registration and transfer of documents for state storage; Unified State Electronic System of Archival Information (UESESAI) centrally manages archival funds and ensures the preservation of digital copies of documents

One of the most important international standards in this area is the General International Standard Archival Description (ISAD (G) [18], developed by the International Council on Archives (ICA) [19]. It contains general principles for describing archival documents, providing for the creation of a multi-level system of descriptions - from collections to individual documents. This standard defines such basic elements of description as the title of the case, dates of creation, volume of documents, their origin and access conditions. The use of ISAD (G) provides a unified approach to archival work in world practice. It is used in many countries, including public and private archives.

An important standard is the International Standard Archival Authority Record for Corporate Bodies, Persons, and Families (ISAAR (CPF)) [20], which regulates the compilation of archival authority records. This standard is designed to ensure uniformity in the identification of document creators - organizations, institutions, individuals and families. ISAAR (CPF) allows you to establish links between different archival materials originating from the same source, which facilitates their search and analysis. Its use contributes to a systematic approach to maintaining archival descriptions on an international scale.

In the countries of the European Union, Encoded Archival Description (EAD) [17] is actively used - a standard for electronic archival description. It is based on the XML standard for encoding descriptive information about archival materials and a structured representation of archival descriptions, which allows easy integration of data into digital catalogs and archival systems. It allows archival descriptions to be structured in such a way that they can be used in electronic databases. EAD provides a multi-level description of archival funds, individual cases and documents, which simplifies navigation and information search. Due to its flexibility, EAD supports different methods of organizing archival materials and adapts to the needs of different archival institutions. This ensures the integration of archival information resources between different countries and institutions. The use of EAD facilitates automated accounting and exchange of information about archival documents.

In the United States, specific archival standards exist, including Describing Archives: A Content Standard (DACS) [15], developed by the Society of American Archivists. DACS defines the requirements for creating archival descriptions within the context of the American records management system. It includes recommendations for naming archival holdings, defining the content of documents, and their historical significance. DACS can be applied to all types of materials at all levels of description, and the rules are designed to be used by any type of descriptive output,



including MARC 21, Encoded Archival Description (EAD), and Encoded Archival Context (EAC). DACS is compatible with international standards such as ISAD(G) and ISAAR (CPF), allowing American archives to integrate into the global archival accounting system.

In the UK, the archival service is guided by the UK Archival Description Standard [24], which was developed by the National Archives of the UK. It provides a flexible system of document description that can be used for both public and private archives. The standard defines the principles of multi-level description, mandatory metadata and rules for cataloguing archival materials. This standard is actively used in university, government and commercial archives in the country.

In Germany, there are Regeln für die Erschließung von Nachlässen und Autographen (RNA) [23], which set out the requirements for the description of archival collections and personal documents. The main emphasis is on the scientific processing of documents and the preservation of the context in which they were created.

In French archives, there is the Norme Générale et Internationale de Description Archivistique (NGIDA), which is based on ISAD(G) [22] and adapted to the national characteristics of archival work. The aim of the standard is to enable research and the exchange of information on the content and interest of archival collections, both between archival services and for researchers, by ensuring that compatible, relevant and clear descriptions are written, and by allowing the use of common authoritative data to enable the integration of descriptions from different storage locations.

Another important standard is the Metadata Encoding and Transmission Standard (METS) [21], which defines a format for representing and storing metadata for digital objects. The standard is supported by the METS Board in collaboration with the MARC Network and Standards Development Office of the Library of Congress, and was initiated as an initiative of the Federation of Digital Libraries. METS is used to describe not only traditional archival documents, but also digital copies, multimedia materials, and electronic records. The METS schema is implemented using the World Wide Web Consortium's XML algorithms. It provides a description of the structural, administrative, and technical characteristics of electronic archival resources, making it an effective tool for long-term preservation and management of digital documents. METS allows for the integration of archival databases with library and museum information systems.

The Dublin Core Metadata Initiative (DCMI) standard [16] is important for the electronic description of archival documents, and is used to create simple but effective metadata. It contains 15 basic elements, including the document title, author, creation date, format, language characteristics, etc. This standard is widely used in digital archives to facilitate data exchange between different institutions and ensure the compatibility of archival systems. The use of Dublin Core allows you to simplify the search for documents through web resources and integrate them into international information platforms.

In Ukraine, the compilation of electronic descriptions of archival files is regulated by national regulations that are harmonized with international standards. The implementation of electronic archival accounting is carried out in accordance with the requirements of the Rules for the Organization of Office Management and Archival Storage of Documents, approved by the Ministry of Justice. They contain requirements for the compilation of descriptions of archival files, determining their structure, the procedure for registration and transfer to state storage. Ukrainian archival standards are oriented towards international experience and harmonized with European approaches to archival description. The use of systems such as the Unified State Electronic System of Archival Information (UESESAI) allows for centralized management of archival funds and ensuring the preservation of digital copies of documents.

The above standards for compiling descriptions of archival files for permanent storage provide a unified approach to preserving documents on different media in different countries. The use of international standards allows archives to more effectively manage information resources and maintain the historical heritage of mankind. Standards for electronic description of archival files contribute to effective information management, long-term preservation of archival materials and their accessibility for users. They contribute to the unification of archival processes, convenient



information search and international cooperation in the field of archival science and document studies.

### 3.2. Interarchival search portal of the Ukrainian State Archives

The interarchival search portal of the Ukrainian State Archives functions as a single window of access to the digital resources of Ukrainian archives, providing centralized search and access to archival materials. To ensure a unified approach to the description and presentation of archival documents in digital format, the portal uses the ARCHIUM software package. This package is based on a single database, the structure of which corresponds to the document accounting system of the National Archival Fund (see Figure 1 ).

<b>Creating a digital archive</b>
Platform provides tools for digitizing, systematizing, and fully storing archival documents in digital format
<b>Archival document management</b>
Allows you to effectively manage documents contained in an electronic archive
<b>Use of information</b>
Provides access to information stored in the archive for various purposes

**Figure 1:** Main functions and purposes of ARCHIUM (developed by the authors)

The ARCHIUM software package uses the General International Standard Archival Description, which provides a unified approach to describing archival documents. The implementation of this standard allows you to create structured descriptions that facilitate navigation in archival funds and increase the efficiency of information search. The hierarchy of objects in ARCHIUM reflects the traditional system of archival storage and description:

<i><b>fund → description → case → document</b></i>
--

**Figure 2:** Hierarchy of objects in ARCHIUM (developed by the authors)

This ensures consistency and logic in the presentation of archival materials, which makes it easier for users to navigate and search for the necessary information (see Figure 2 ).

In addition, ARCHIUM supports a file repository for digital copies of archival documents with the ability to attach files at the case or document level, which contributes to the integration of digital resources into the general accounting system. Thanks to the modular architecture, the software complex supports a multi-level organization of archival materials, which meets international requirements for classification and document management. This is especially important for the integration of archival institutions of Ukraine into the European information space and the standardization of archival description.

An important aspect of ARCHIUM's work is support for the Encoded Archival Description standard, which allows you to create XML descriptions of archival resources. This ensures compatibility of archival data with modern digital platforms and international archival portals [17]. Thanks to the use of EAD, documents described in ARCHIUM can be integrated into global systems for accessing archival information, which helps to expand opportunities for researchers. In addition, the system supports automated creation of a reference apparatus, which facilitates the work of archivists with stock materials.

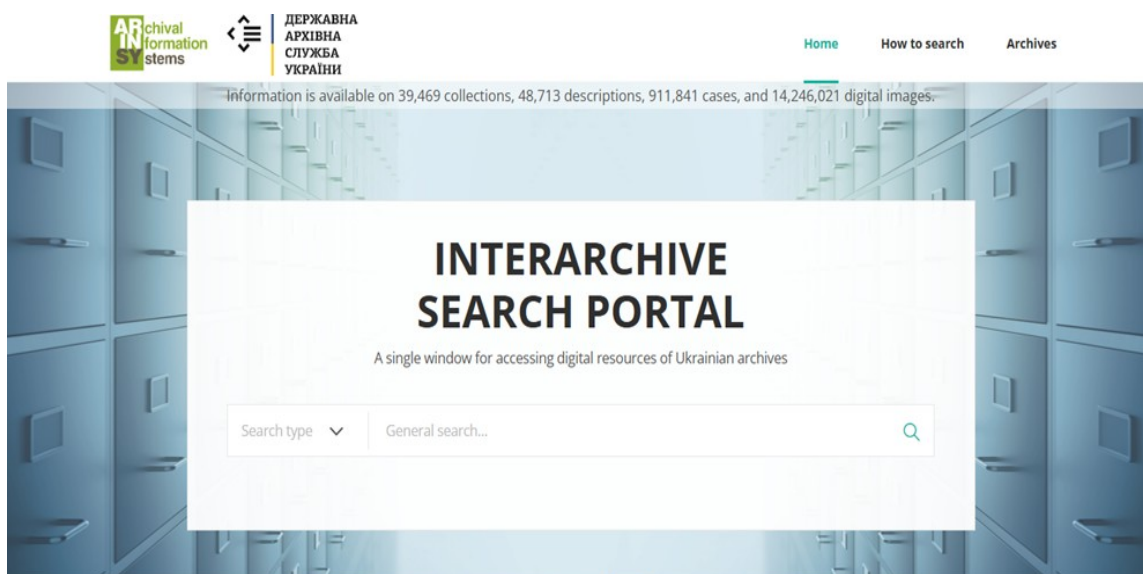
Also, ARCHIUM meets the requirements of the Open Archival Information System standard, which regulates the processes of preserving digital documents in the long term. This ensures reliable archiving of electronic materials, their integrity and authenticity over a long period of time. An



important element is the implementation of a digital preservation policy, which includes regular verification of file integrity and the possibility of their migration to new technological platforms. Given this, ARCHIUM is an effective tool for managing both traditional and digital archives.

An additional advantage of the software package is support for Records Management, which allows you to implement modern approaches to document management at all stages of their life cycle. This is especially important for government agencies that work with a large amount of information and are required to comply with regulatory requirements for accounting and preserving documents. Automated control over storage periods, access management and electronic approval of processes significantly increase the efficiency of archival departments.

To ensure effective information search on the portal, a full-text search has been implemented for the reference apparatus presented on local archive resources. This includes searching by fund names, historical references to them, fund annotations and descriptions, case and document titles (if available), as well as among index positions. This approach allows users to quickly find the necessary materials using various search criteria [3].



**Figure 3:** Interarchival search portal. A single window for accessing digital resources of Ukrainian archives (screenshot created by the author)

The use of the ARCHIUM software complex in the Interarchive Search Portal of the Ukrainian State Archives ensures the standardization of the processes of description and storage of electronic archival files of permanent storage (see Figure 3). This contributes to increasing the efficiency of the work of archival institutions, ensures the preservation of the national documentary heritage and facilitates access to it for a wide range of users. The user aspect of archival document conversion is of particular importance in the context of increasing the efficiency of access to information resources. Taking into account the needs of different user groups contributes to the formation of a more inclusive and functional digital environment of archival communication. In addition, this approach corresponds to modern trends in the digital conversion of archival descriptions and documents, as well as the integration of archival resources into the global information space. The introduction of unified standards for compiling electronic descriptions of archival files of permanent storage based on the ARCHIUM software complex in the Interarchive Search Portal of the Ukrainian State Archives provides a unified approach to the description, storage and access to archival materials, which meets international standards and contributes to the preservation of the national historical and cultural heritage.



3.3. Directions for improving the process of converting archival descriptions

The process of digital conversion of archival descriptions of permanent storage cases from printed to electronic format is an important stage in the modernization of archival affairs. The main goal of this process is to ensure quick access to archival documents, increase their usability and improve the accounting system [9].

The term conversion of an archival document itself is used in the article as an interpretation of the process of changing the form of its existence in order to ensure long-term preservation, ease of use and increased accessibility, which can include both the technical conversion of a material medium into an electronic format (digitization, scanning) and the substantive transformation of the methods of presenting, describing and interpreting information.

The conversion involves transferring descriptions to a digital format while preserving all structural elements necessary for the identification of archival cases. An important aspect of this process is the use of standardized formats of electronic archival descriptions, which ensures their compatibility with international archival systems. For this, it is worth using the most common archival formats, such as Encoded Archival Description or Metadata Encoding and Transmission Standard (see Figure 4), which allow structuring metadata and ensuring their integration into archival databases.

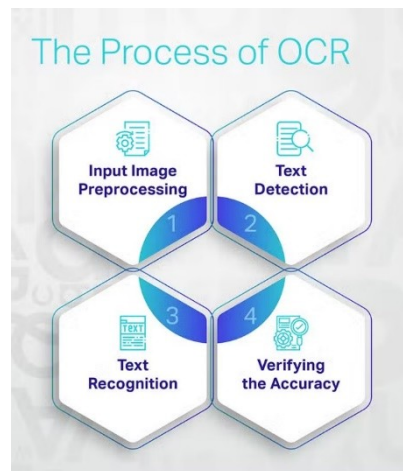
Encoded Archival Description	Metadata Encoding and Transmission Standard
An XML standard for describing archival collections that enables the creation of digital catalogs that contain detailed data about documents and their context, improving the accessibility and searchability of information in archives. EAD provides a unified structure for describing archival materials, facilitating their publication and integration into online catalogs	a standard for encoding and transmitting metadata about digital library objects and the complex relationships between them. It is used for descriptive, administrative, and structural metadata represented in XML format
Key Aspects of EAD	Key Aspects of METS
XML format	Purpose
Structured description	Metadata Types
Contextual information	Format
Improved access	XML Schema Language (W3C)
International standard	Support
Use of EAD	Developed and maintained by the Library of Congress and the Digital Library Federation (DLF)
Digital catalogs	Specialized
Information exchange	
Research	

Figure 4: Application of standardized formats for conversion of electronic archival descriptions (developed by the authors)

During the conversion process, there is often a need for text recognition and automated entry of information into electronic accounting systems.

For this purpose, it is advisable to use Optical Character Recognition (OCR) technologies, which allow for rapid digitization of printed texts (see Figure 5).





**Figure 5:** The process of optical character recognition using NLP (borrowed from open sources)

However, possible errors in recognition require an additional stage of verification and editing, which requires the participation of archival specialists (see Figure 7). In addition, it is necessary to adapt printed archival descriptions to modern requirements. In particular, to supplement them with new attributes, such as digital identifiers or hyperlinks to electronic copies of documents.

The use of artificial intelligence and machine learning algorithms can significantly improve the quality and speed of recognition of archival descriptions.

Converting printed descriptions into a digital format requires standardization of case names, indexing and the creation of a single data structure. To do this, archival institutions should use authoritative files and controlled dictionaries that allow avoiding duplication and discrepancies in the spelling of names. Case descriptions in printed catalogs may contain outdated wording or abbreviations that need to be updated in accordance with modern requirements of electronic document management. An important component is checking the compliance of digital descriptions with regulatory legal acts regulating archival matters (see Figure 6).

## Benefits of Automated OCR Workflows



**Figure 6:** Benefits of automated OCR workflows (borrowed from open sources)

The conversion of printed archival descriptions should be accompanied by careful analysis and unification of the data structure.





**Figure 7:** OCR problems (borrowed from open sources)

Some of the challenges for OCR include (see Figure 7): blurred text distorted by shadows; background and text colors are similar; parts of the image are cut off or completely cut off (e.g., the bottom of “this”); faint marks on the top of some letters (e.g., “i”) can confuse OCR software into thinking they are part of the letter rather than marks on the top; different font types and sizes can be difficult to identify; lighting conditions when photographing or scanning a document.

An important aspect of improving the conversion process is to maintain the link between archival descriptions and the files themselves, including through the use of unique identifiers and QR codes. This allows for a rapid transition from descriptions to digitized documents or physical archival items. The use of geographic information systems (GIS) can help visualize the location of archival documents in storage. The implementation of electronic archival platforms based on blockchain technology can ensure long-term authenticity and protection of digital records from unauthorized changes. Such new technologies significantly increase the efficiency of archival information management.

At the final stage of improving electronic archival descriptions, their integration into national and international archival systems plays an important role. This allows expanding the possibilities of access to archival information for scientists, historians and a wide range of users. In addition, it is necessary to implement mechanisms for long-term preservation of digital descriptions, which involves the use of stable data formats and regular backups. It is important to train archivists to work with digital descriptions and new archival technologies, which will ensure effective document management.

## 4. Our approach

Improving archival descriptions of permanent storage cases during conversion from paper to electronic format is a key task of modernizing archival records in the context of digital transformation. The transition to an electronic format contributes to increasing the accessibility, preservation and efficiency of archival information management. The use of international standards, such as ISAD(G) and EAD, ensures the unification of electronic descriptions and their integration into global archival platforms. At the same time, the issue of preserving the authenticity of archival data and compliance with the requirements for their long-term storage remains important.

The development of digital technologies allows you to automate conversion processes, minimizing the human factor and possible errors when transferring archival descriptions to digital



format. Optimization of metadata, standardization of descriptive fields and development of algorithms for checking the integrity of records contribute to the creation of an effective system for managing electronic archival descriptions. It is important to introduce information systems that will provide convenient search, navigation and access to documents, as well as maintaining their relevance. In addition, issues of cybersecurity and protection of archival information require special attention when developing electronic storage and accounting platforms.

To address the updated methodological issues that arise during the conversion of archival descriptions of permanent storage cases, Ukrainian archivists have introduced the ARCHIUM software package, which integrates international archival standards and provides a high level of automation of archival processes. Its implementation contributes to the harmonization of Ukrainian archival affairs with international practices, improving access to documents and long-term preservation of digital resources. The use of modern information technologies in combination with international standards allows Ukrainian archival institutions to effectively manage their funds and meet the requirements of the digital age.

The continuous process of improving the conversion process of archival descriptions is a necessary step to harmonize the archival industry with international requirements and ensure access to information in the digital age. The integration of new technologies into the field of archival affairs will contribute not only to the preservation of documentary heritage, but also to its effective use in scientific, educational and managerial activities. Further research should be aimed at developing a methodology for digital description, implementing automated analysis tools and further developing a single national platform for archival information. The above directions for improving archival descriptions of permanent storage cases during their conversion from printed to digital format contribute to improving the accounting, preservation and accessibility of documents in the modern digital environment.

## **5. Conclusions**

The description of permanent storage cases is an important document in the organization of archival affairs to ensure proper archival storage, search and use of archival documents information and develop the prospects for further activities of the institution and society. The challenges of the present and the requests of users require the improvement of descriptions of permanent storage cases created during past historical periods, which no longer meet the modern technical requirements of information and communication activities and documentation support and the needs of users, as well as the completeness of information in order to improve, adapt to the processes of digitalization, decommunization and decolonization of the scientific and reference apparatus of archival institutions.

In the conditions of digitalization and the need to adapt archival services in accordance with the needs of information consumers, it is important to transfer documents from paper to digital format, while preserving historical and cultural heritage, to adapt archival information to the latest conditions for processing information arrays, their search and analysis. The conversion of a document from printed to electronic format is an important part of the process of digitization, digitalization and creating access to archival information in the modern information environment. In addition, it is necessary to initiate the development of a generalized methodology for ensuring the updating of case descriptions of archival documents, which will have a significant applied emphasis on the unification of documents in the conversion process.

This process has both its advantages and disadvantages. The advantages of conversion include ease of access, preservation and archiving, improved search, scalability and accessibility, preservation of historical and cultural heritage. The group of disadvantages / challenges in organizing conversion is represented by the high cost and duration of conversion, the need to check the quality of OCR / technological component, legal issues (copyright and license for a digitized document). However, the axiom here is the thesis that the conversion of printed to electronic format



is an irreversible step in the process of digitization and digitalization of information activities and ensuring wide access to information [2]. Therefore, the conversion of documents on physical media to electronic format is an important stage in the process of preservation, access and effective use of documentary information. Scanning, OCR, metadata processing and formatting are components of this process. Transferring documentary information from physical media to electronic format is an important step in the process of digitization and virtualization of information activities. The digitization process requires significant resources and attention to the quality of the results to ensure the efficiency and accuracy of working with documents in digital format. The development of conversion technologies allows to significantly facilitate the work with documents, preserve them in digital form and improve the interaction of information users through various platforms and systems.

In addition, it is necessary to initiate the development of a generalized methodology for ensuring the updating of case descriptions of archival documents, which will have a significant applied emphasis on the unification of documents in the conversion process.

## Declaration on Generative AI

During the preparation of this work, the authors used Grammarly in order to: Grammar and spelling check. After using these tools/services, the authors reviewed and edited the content as needed and takes full responsibility for the publication's content.

## References

- [1] Requirements for the structure and content of the XML-scheme of metadata of an electronic copy of the descriptions of cases for permanent storage: methodological recommendations / State Archival Service of Ukraine, UNDIASD; Compiled by: Garanin O. Ya., Kuprunets T. Ya. Kyiv, 2015. 28 p.
- [2] Denysenko O. Compiling descriptions of the cases of a structural unit. Handbook of the clerk and secretary. No. 8. 2011. Pp. 4-20.
- [3] Access to the digital fund for using documents of the National Archival Fund: methodological recommendations / State Archival Service of Ukraine, Ukrainian Scientific Research Institute of Archival and Document Studies; compiled by: L. V. Didukh, T. M. Kovtanyuk. Kyiv, 2022. 85 p.
- [4] General International Standard for Archival Description ISAD(G) / State Committee for Archives of Ukraine. UDNDIASD; Ukrainian version by G. V. Papakin. 2nd ed. K., 2002. 48 p.
- [5] Kovalska L.A., Kovalsky G.E. Digital marketing activities and new forms of using archival information. UZH BIN. Kyiv: Publishing house of KNUKiM Center, 2024. Issue 14. P. 76-93. URL: <http://librinfosciences.knukim.edu.ua/article/view/31831>. <https://doi.org/10.31866/2616-7654.14.2024.318318>
- [6] Kovalskiyi G., Khromov A., Shevchenko T. Paid services of national archives of the European Union countries and the need to update the tariff policy in the archives of Ukraine. Archives of Ukraine. Issue 3 (340): July-September, 2024. <https://doi.org/10.47315/archives2024.340>
- [7] Interarchival search portal of the Ukrainian State Archives. URL: <https://searcharchives.net.ua/>
- [8] Ozhehova G. Compilation of case descriptions (orders). Act on the seizure for destruction of documents not included in the National Archival Fund. Legal Advisor. No. 2(74), 2014. URL: <https://surl.lu/bxdvid>
- [9] Description and organization of storage of electronic information resources of state authorities, local self-government bodies, enterprises, institutions and organizations: methodological recommendations / Ukrderzhzhiv Ukrainy, UNDIASD; compiled by: Y. S. Kovtanyuk, P. M. Marchenko, L. A. Dubrovina. K, 2010. 30 p.
- [10] The rules for organizing office work and archival storage of documents in state bodies, local governments, enterprises, institutions and organizations are approved by Order of the Ministry of Justice of Ukraine dated June 18, 2015 No. 1000/5. URL: <https://zakon.rada.gov.ua/laws/show/z0736-15#Text>



- [11] Compilation of archival descriptions: methodical recommendations / State Archival Service of Ukraine, UNDIASD; Compiled by: N. M. Hristova. Kyiv: UNDIASD, 2013. 137 p.
- [12] In 2023, state archives digitized 15 times more documents than in 2018 URL: [https://chytomo.com/u-2023-rotsi-derzhavni-arkhivy-otsyfruvaty-u-15-raziv-bilshe-dokumentiv-nizh-u-2018/?utm\\_source=chatgpt.com](https://chytomo.com/u-2023-rotsi-derzhavni-arkhivy-otsyfruvaty-u-15-raziv-bilshe-dokumentiv-nizh-u-2018/?utm_source=chatgpt.com)
- [13] Digital fund for using documents of the National Archival Fund: creation, storage, accounting and access to it: methodological recommendations / State Archival Service of Ukraine, Ukrainian Research Institute of Archival and Document Studies; compiled by: L.V. Didukh, N.V. Zaletok, T.M. Kovtanyuk. Kyiv, 2018. 131 p.
- [14] Claire Sibille - de Grimoüard. Les normes internationales de description archivistique: origines, développements, perspectives. La Gazette des archives. Année 2012. № 228. pp. 77-90. URL: [https://www.persee.fr/doc/gazar\\_0016-5522\\_2012\\_num\\_228\\_4\\_4985](https://www.persee.fr/doc/gazar_0016-5522_2012_num_228_4_4985)
- [15] Describing Archives: A Content Standard. URL: <https://surl.li/uqedka>
- [16] Dublin Core Metadata Initiative. URL: <https://www.dublincore.org/specifications/>
- [17] Encoded Archival Description. URL: <https://www.loc.gov/ead/>
- [18] General International Standard Archival Description. URL: <https://surl.li/cjwpcp>
- [19] International Council on Archives. URL: <https://www.ica.org/>
- [20] International Standard Archival Authority Record for Corporate Bodies, Persons, and Families. URL: <https://surl.li/loaszl>
- [21] Metadata Encoding and Transmission Standard. URL: <https://www.loc.gov/standards/mets/>
- [22] Norme Générale et Internationale de Description Archivistique. URL: <https://surl.li/mthgui>
- [23] Regeln für die Erschließung von Nachlässen und Autographen. URL: <https://surl.li/gmxobz>
- [24] UK Archival Description Standard: The British Move toward Standards of Archival Description: The "MAD" Standard. The American Archivist. Vol. 53, No. 1 (Winter, 1990), pp. 130-138. URL: <https://www.jstor.org/stable/40293432P>. S. Abril, R. Plant, The patent holder's dilemma: Buy, sell, or troll? Communications of the ACM 50 (2007) 36–44. doi:10.1145/1188913.1188915.
- [25] On approval and implementation of methodological recommendations "Digital Fund for the Use of Documents of the National Archival Fund: Creation, Storage, Accounting and Access to It". Order of the State Archival Service of Ukraine dated April 16, 2019 No. 3 6. URL: <https://ips.ligazakon.net/document/FN052225>
- [26] Kolesnyk N., Kartuzov K. Digitization of archival documents in wartime: experience of the state archive of Mykolaiv region. Archives of Ukraine. DOI: <https://doi.org/10.47315/archives2024.340>
- [27] Kalakura Ya., Palienko M. Conceptualization of electronic archival science in the context of digitalization of Ukrainian society. Archives of Ukraine. 2021. No. 3. pp. 36–65.